June 2016 Volume 7 Supplement 1

7
S1

Volume 7 Supplement 1 Pages A1–A310

GUT

June 2016

# Gut

An International Journal of
Gastroenterology
and Hepatology

*British Society of Gastroenterology*
*Annual General Meeting*
*20–23 June 2016*
*Abstracts*

gut.bmj.com

BMJ

# Gut

Journal of the British Society of Gastroenterology, a registered charity



**Guidelines for Authors and Reviewers**
Full instructions are available online at http://gut.bmj.com/ifora. Articles must be submitted electronically http://mc.manuscriptcentral.com/gut. Authors retain copyright but are required to grant *Gut* an exclusive licence to publish http://gut.bmj.com/ifora/licence.dtl

**Aims and Scope:** ***Gut*** **is a leading international journal in gastroenterology and hepatology with an established reputation for publishing first class clinical research of the alimentary tract, the liver, biliary tree and pancreas likely to impact on clinical practice within the foreseeable future.** ***Gut*** **delivers up-to-date, authoritative, clinically oriented coverage of all areas in gastroenterology. Regular features include articles by leading authorities, commentaries on published papers, recent advances in basic science and clinical practice, images illustrating important clinical messages (GI snapshots) and letters. The Journal has an authoritative global Editorial Board and a growing international readership.**

## Editorial Board



facebook.com/Gut.BMJ

soundcloud.com/bmjpodcasts/sets/gut-podcast

@Gut_BMJ

## Subscription Information

*Gut* is published monthly; subscribers receive all supplements

### Institutional Rates 2016

**Print**
£816; US$1592; €1102

**Online**
Site licences are priced on FTE basis and allow access by the whole institution. Details available online at http://group.bmj.com/group/subs-sales/subscriptions or contact the Subscription Manager in the UK (see above right).

### Personal Rates 2016

**Print** (includes online access at no additional cost)
£325; US$634; €439

**Online only**
£174; US$340; €235

ISSN 0017-5749 (print); 1468-3288 (online)

Personal print or online only and institutional print subscriptions may be purchased online at http://group.bmj.com/group/subs-sales/subscriptions (payment by Visa/Mastercard only).

Residents of some EC countries must pay VAT; for details, call us or visit www.bmj.com/subscriptions/vatandpaymentinfo.dtl

## Contact Details

**Editorial Office**
*Gut*, BMJ Journals
BMA House, Tavistock Square
London, WC1H 9JR, UK
T: **+44 (0)20 7383 6318**
E: **info.gut@bmj.com**

**Production Editor**
Teresa Jobson
E: **production.gut@bmj.com**

**Permissions**
http://journals.bmj.com/misc/permissions.dtl

**Supplement Enquiries**
T: **+44 (0)20 7383 6057**
E: **journals@bmj.com**

**Subscriptions**
For all subscription enquiries and orders
T: **+44 (0)20 7111 1105**
**http://support.bmj.com**

**Display Advertising Sales**
Sophie Fitzsimmons
T: **+44 (0)20 7383 6783**
E: **sfitzsimmons@bmj.com**
**http://group.bmj.com/group/advertising**

**Online Advertising Sales**
Marc Clifford
T: **+44 (0)20 7383 6161**
E: **mclifford@bmj.com**
**http://group.bmj.com/group/advertising**

**Display & Online Advertising Sales** (USA)
Jim Cunningham
T: **+1 201 767 4170**
E: **jcunningham@cunnasso.com**

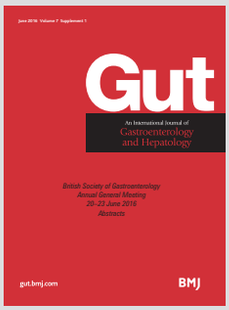
**Author Reprints**
Reprints Administrator
E: **admin.reprints@bmj.com**

**Commercial Reprints** (except USA & Canada)
Nadia Gurney-Randall
T: **+44 (0)20 8445 5825**
M: **+44 (0)7866 262 344**
E: **ngurneyrandall@bmj.com**

**Commercial Reprints** (USA & Canada)
Ray Thibodeau
T: **+1 267 895 1758**
M: **+1 215 933 8484**
E: **ray.thibodeau@contentednet.com**

**British Society of Gastroenterology**
3 St Andrew's Place, Regents Park,
London NW1 4LB, UK
T: **+44 (0)20 7935 2815**
E: **bsg@mailbox.ulcc.ac.uk**
**www.bsg.org.uk**

**For all other Gut journal contacts**
**http://gut.bmj.com/site/help/index.xhtml**




*An international journal of gastroenterology and hepatology*



**Editorial Office**
*Gut*
BMJ Journals
BMA House, Tavistock Square
London, WC1H 9JR, UK
T: **+44 (0)20 7383 6394**
F: **+44 (0)20 7383 6668**
E: **guteditorial@bmjgroup.com**

ISSN: 0017-5749 (print)
ISSN: 1468-3288 (online)



*Gut* is published by BMJ Publishing Group Ltd, typeset by Exeter Premedia Services Private Ltd.

*Gut* (ISSN: 0017-5749) is published monthly by BMJ Publishing Group and is distributed in the USA by Air Business Ltd. Periodicals postage paid at Jamaica NY 11431 POSTMASTER: send address changes to *Gut*, Air Business Ltd, c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA.

# Contents

# BSG 2016

## OC-001 CLINICAL FACTORS THAT DETERMINE PRIMARY NON-RESPONSE (PNR) TO ANTI-TNF DRUGS IN PATIENTS WITH ACTIVE LUMINAL CROHN'S DISEASE (CD)

[1,2]GA Heap*, [1,2]T Ahmad, on behalf of Pants Consortium. [1]*Department of Gastroenterology, Royal Devon & Exeter Hospital*; [2]*Precision Medicine Exeter, University of Exeter, Exeter, UK*

10.1136/gutjnl-2016-312388.1

**Introduction** 10–40% of patients with CD fail to respond to anti-TNF induction therapy at 10–14 weeks. The mechanisms underlying PNR are uncertain but a better understanding of these factors might allow more cost-effective, individualised anti-TNF treatment. We present an interim analysis of PNR in the PANTS cohort.

**Methods** The PANTS study is a UK wide, multi-centre 3 year prospective, observational cohort study investigating PNR to Infliximab (IFX) and Adalimumab (ADA). Serial collection of clinical data and sampling of DNA, RNA, serum and stool will allow down-stream multi-omic studies. Inclusion criteria include active luminal Crohn's disease supported by raised CRP or Calprotectin and no prior exposure to anti-TNF therapy. PNR was defined as failure of HBI to fall by $\geq$3 points or to $\leq$4 AND failure of CRP to fall by $\geq$50% or to $\leq$3 mg/dL OR failed steroid withdrawal. Drug and anti-drug antibody levels were measured using Immunodiagnostic drug tolerant assays.

**Results** 1176 (568 male) patients aged 4.0–77.2 years have been recruited from 106 sites and reached 14 weeks after quality control. Patients were treated with IFX (695, 59.1%) or ADA (481, 40.9%). At entry 39.7% of patients had an HBI of $\leq$4, 32.14% $\geq$ 8, and 29.4% of patients had a CRP $\leq$ 3, 42.4% had a CRP $\geq$ 10. Concomitant drugs at entry included steroids 18.5%, azathioprine 39.2%, mercaptopurine 7.40%, methotrexate 5.4%. PNR could be assessed at week 14 for 1090 (92.7%) patients. PNR was observed in 16.9% and 23.7% of the IFX and ADA treated patients respectively. This difference was not significant once adjusted for baseline disease activity (P = 0.2). To date only 2 patients who met the week 14 PNR criteria achieved remission on anti-TNF at 1 year (sensitivity 0.99, specificity 0.4). A multivariate regression identified albumin (P = 0.0036) as associated with PNR at Week 14 in the IFX group and drug level (P = 0.00035), calprotectin (P = 0.033), albumin (P = 0.037) and anti-drug antibody level (P = 0.024) in the ADA group. In combined analysis BMI (P = 0.017) and drug level (P = 0.024) were associated with PNR. 75 IFX and 36 ADA patients had anti-drug antibodies at week 14, of which 33 and 6 patients had no detectable drug. Development of anti-drug antibodies in the first 14 weeks was associated with monotherapy (P = 0.00021) and was seen more commonly in patients with early infusion reactions ($P = 2x10^{-16}$).

**Conclusion** The PANTS study has provided a real world estimate of PNR and associated risk factors in a large prospective cohort using a simple clinical and biochemical definition at week 14 that predicts non-remission at week 54. Low drug level and immunogenicity are associated with PNR, infusion reactions and monotherapy suggesting early measurement might help prevent and manage PNR.

**Disclosure of Interest** G. Heap Conflict with: Abbvie, T. Ahmad Grant/research support from: Abbvie, MSD, Hospira, Inflectra, Conflict with: Abbvie, MSD

## OC-002 CIRCULATING DENDRITIC CELL SUBSETS IN CROHN'S DISEASE SHOW ALTERATIONS IN TISSUE HOMING AND CYTOKINE PRODUCTION

[1,2]PA Hendy*, [1]D Reddi, [3]D Barnardo, [1]L Durant, [1]A Noble, [1]P Bhat, [1]N English, [1]SC Knight, [1,2]AL Hart. [1]*APRG, Imperial College*; [2]*Gastroenterology, St Mark's Hospital, London, UK*; [3]*Research Unit (7th floor), Hospital Universitario de la Princesa, Madrid, Spain*

10.1136/gutjnl-2016-312388.2

**Introduction** Crohn's disease (CD) is characterised by an exaggerated immune response to mucosal antigen. Dendritic cells (DC) are the primary antigen presenting cells and may promote either tolerogenic or inflammatory T cell responses to mucosal antigens. We characterised homing marker profile and ongoing cytokine production of circulating DC subsets from patients with Crohn's disease.

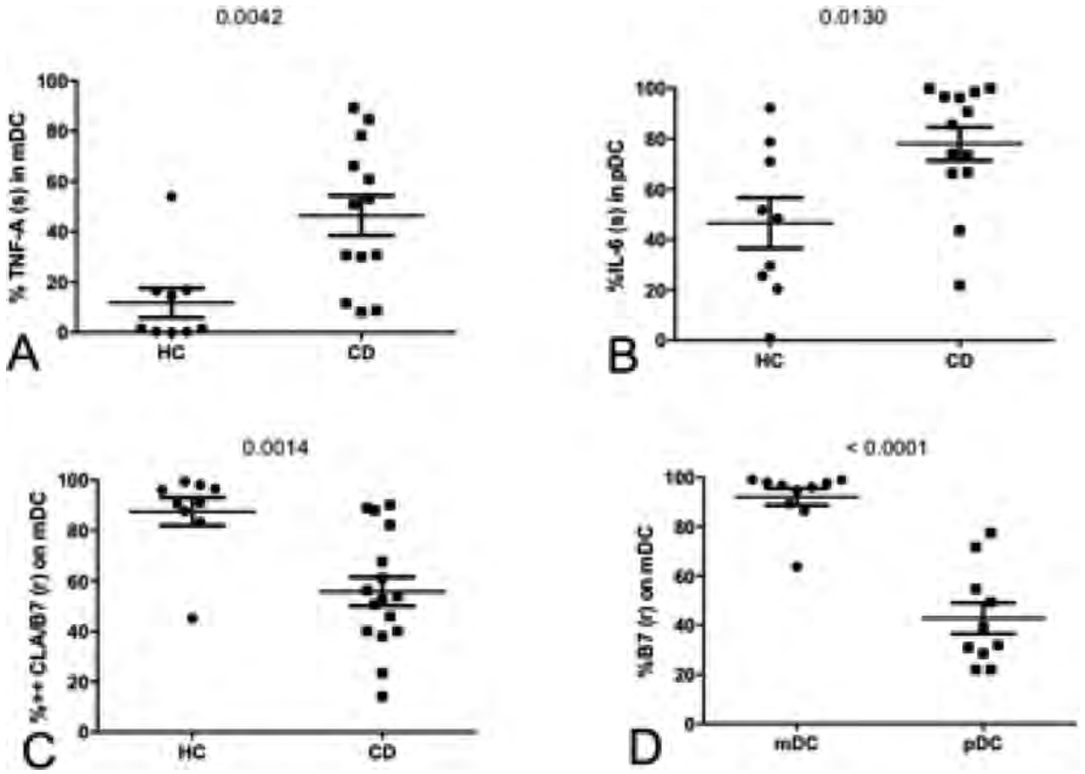
**Methods** DC within peripheral blood mononuclear cells from adults with active luminal Crohn's or from healthy controls (HC) were characterised using flow cytometry. DC were identified as HLA-$DR^+$ and negative for markers of other cell lineages (CD3, CD14, CD16, CD19, CD34). Myeloid DC (mDC, $CD11c^+CD123^-$) and plasmacytoid DC (pDC, $CD11c^-CD123^+$) were assessed for phenotype (maturation status, homing markers and pattern recognition receptors) and on-going cytokine production by surface and intracellular staining, respectively.

**Results** In patients with Crohn's (n = 16), a greater proportion of myeloid DC expressed a gut-homing profile ($CLA^-\beta7^+$, p = 0.0022) compared to controls (n = 10) where most myeloid DC were not tissue-specific ($CLA^+\beta7^+$, p = 0.0014, Fig C). In Crohn's and controls, myeloid DC were largely gut-homing ($CLA^-\beta7^+$, p = 0.003) whilst plasmacytoid DC were strongly skin ($CLA^+\beta7^-$) and lymph node ($CCR7^+$) homing (p < 0.0001 e.g. Fig D). Production of pro-inflammatory cytokines was up-regulated in Crohn's, with myeloid DC producing higher levels of TNFα (p = 0.0042, Fig A) and plasmacytoid DC producing higher levels of IL-6 (p = 0.013, Fig B). Expression of maturation marker CD86 was increased on myeloid DC in Crohn's but not on plasmacytoid DC (p = 0.027 and p = 0.13 respectively). Expression of IFN-α, Il-1β, Il-12, CD40, CD80, TLR2 and TLR4 on DC were not different between Crohn's and controls for either DC subset.

**Conclusion** The increased myeloid DC expression of gut homing phenotype markers and production of TNFα in Crohn's compared with controls highlights the central role that DC play in the pathogenesis of Crohn's disease.

Differences between homing markers on myeloid DC (gut homing) and plasmacytoid DC (skin homing) suggest that they may have different roles in different manifestations of Crohn's, with myeloid DC being central to gut inflammation whilst plasmacytoid DC might be involved in cutaneous Crohn's disease and the skin sequelae of anti-TNFα therapy.

**Disclosure of Interest** None Declared




**Abstract OC-002 Figure 1** A–D: DC production of TNFα (A) IL-6 (B) & frequency of CLA+/β7+ mDC (C) in HC and CD and of $\beta7^+$ mDC and pDC in Crohn's (D) (shown as % DC expression)

OC-003 **EFFICACY AND SAFETY OF GOLIMUMAB INDUCTION FOR MODERATE TO SEVERE ULCERATIVE COLITIS IN THE UNITED KINGDOM: RESULTS FROM THE GO-COLITIS STUDY**

[1]C Probert*, [2]D Gaya, [3]PJ Hamlin, [4]P Irving, [5]S Sebastian, [6]G Gillespie, [6]H Tate, [6]C Wheeler. *[1]University of Liverpool, Liverpool; [2]Glasgow Royal Infirmary, Glasgow; [3]Leeds Teaching Hospital Trust, Leeds; [4]Guy's and St. Thomas' Hospitals, London; [5]Hull & East Yorkshire NHS Trust, Hull; [6]MSD UK, Hoddesdon, UK*

10.1136/gutjnl-2016-312388.3

**Introduction** Induction and maintenance of clinical response is a treatment goal for ulcerative colitis (UC). GO-COLITIS (NCT02092285; 2013–004583-56) is a UK phase 4, multicentre, open-label, single-arm trial evaluating the efficacy of golimumab (GLM) in induction and maintenance of clinical response in patients with moderate to severe UC. We report the results of an interim analysis of clinical response at the end of the GLM induction phase.

**Methods** Anti-TNF naive patients (≥18 y) with UC ≥ 3 months and with moderate to severe disease (partial Mayo score 4–9 or Mayo score 6–12) at baseline, Mayo rectal bleeding subscore ≥1, and Mayo endoscopy subscore ≥2 (if full Mayo was used) were included. Patients received SC GLM on day 0 (200 mg) and day 14 (100 mg) during the 6 week induction phase, followed by GLM 50 or 100 mg every 4 weeks during the 48 week maintenance phase with 12 week follow-up, in line with the Summary of Product Characteristics. Clinical response and remission were summarised descriptively at the end of week 6. Clinical response was defined as decrease in partial Mayo score of ≥2 points and ≥30% from baseline, plus either a decrease in rectal bleeding subscore of ≥1 point or an absolute rectal bleeding score ≤1. Patients without scores were considered nonresponders. Clinical remission was defined as partial Mayo score ≤2 and no individual Mayo subscore >1.

**Results** 205 patients were enrolled (mean [range] age, 39.3 [18–79] years; male, n = 123 [60%]). The mean baseline (SD) partial Mayo score was 6.4 (1.4). All patients received one or two doses of induction GLM. Clinical responses occurred in 141/205 patients (response rate, 68.8%; 95% CI, 62.0%–75.1%). Clinical remission occurred in 79/205 patients (remission rate, 38.5%; 95% CI, 31.8%–45.6%). The mean (SD) change from baseline in partial Mayo score (n = 198) was –3.2 (2.4). AEs (any cause) occurred in 37 (18%) patients. Serious AEs occurred in 17 (8%) patients: UC flare/worsening (n = 11), accidental overdose (n = 2), anaphylaxis (n = 1), constipation (n = 1), rectal fissure (n = 1), and respiratory tract infection (n = 1). Eight patients (4%) discontinued due to serious AEs. There were no fatal AEs.

**Conclusion** During the GLM induction phase of GO-COLITIS, 68.8% of patients had a partial Mayo response and were eligible to continue to the 48 week maintenance phase. AEs were consistent with previous observations; no new safety signals were identified.

**Disclosure of Interest** C. Probert Consultant for: Abbvie, MSD, Napp, Takeda, Speaker bureau with: Abbvie, Falk, Ferring, MSD, Shire, Takeda, Conflict with: Abbvie, Falk, MSD, Shire, Takeda, D. Gaya Speaker bureau with: Abbvie, Falk, Ferring, MSD, Shire, Takeda, Vifor, Conflict with: Abbvie, Falk, Ferring, MSD, Shire, Takeda, Vifor, P. Hamlin Speaker bureau with: Abbvie, Ferring, MSD, Takeda, Tillotts, Warner Chilcott, Conflict with: Abbvie, Falk, MSD, Tillotts, P. Irving Grant/research support from: MSD, Takeda, Consultant for: Abbvie,

MSD, Takeda, Warner Chilcott, Vifor Pharma. Pharmacosmos, Topivert, Genentech, Hospira, Speaker bureau with: Abbvie, Falk Pharma, Ferring, MSD, Takeda, Warner Chilcott, Johnson and Johnson, Shire, S. Sebastian Grant/research support from: Abbvie, Ferring, Warner Chilcott, Consultant for: Falk Pharma, Ferring, MSD, Takeda, Warner Chilcott, Vifor Pharma, Speaker bureau with: Abbvie, Takeda, Warner Chilcott, G. Gillespie Shareholder of: MSD UK, Conflict with: Employment MSD UK, H. Tate Consultant for: MSD UK, C. Wheeler Shareholder of: MSD UK, Conflict with: Employment MSD UK

## OC-004 PREDICTION OF CLINICAL AND ENDOSCOPIC REMISSION AFTER AUTOLOGOUS STEM CELL TRANSPLANTATION IN TREATMENT REFRACTORY CROHN'S DISEASE: POOLED RESULTS FROM THE ASTIC TRIAL

[1]JO Lindsay*, [2]M Allez, [3]M Clark, [4]M Labopin, [5]E Ricart, [6]J Satsangi, [7]G Rogler, [5]M Rovira, [2]D Farge, [3]C Hawkey, on behalf of Astic Trial Group. *[1]Bart's Health NHS Trust, London, UK; [2]Hospital St Louis, Paris, France; [3]Queens Medical Centre, Nottingham, UK; [4]European Group for Blood & Marrow Transplantation, Paris, France; [5]Hospital Clinic, Barcelona, Spain; [6]Western General Hospital, Edinburgh, UK; [7]University Hospital, Zurich, Switzerland*

10.1136/gutjnl-2016-312388.4

**Introduction** The randomised controlled ASTIC trial compared autologous stem cell transplantation (HSCT) with conventional care in treatment refractory Crohn's disease (CD). Although the trial failed its ambitious primary endpoint (clinical remission for >3 months off all CD medication with no ulceration on imaging / endoscopy at 1 year) significant benefit was seen in individual components. Patients randomised to conventional care subsequently underwent HSCT. We report outcome for all patients 1 year after HSCT and identify factors that predict remission.

**Methods** Patients with active CD who were refrctory biologics underwent cyclophosphamide mobilisation and were randomised to immediate (4 weeks) or delayed (52 weeks) HSCT. Clinical (CDAI), endoscopic (SES-CD), and quality of life scores were compared immediately prior to (baseline) and one year after HSCT. An adjudication panel blinded to allocation and visit reviewed radiology and endoscopy.

**Results** 45 patients with successful mobilisation were randomised to early (n = 23) or delayed (n = 22) HSCT. Data from baseline and 1 year after HSCT were available for 40 patients. Compared to baseline, there were significant improvements at 1 year for CDAI, PRO2, quality of life (IBDQ, and EQ5D) and SES CD (see Table). Complete endoscopic regression (SES-CD score of 0 in all segments examined) occurred in 26%, with complete ulcer healing in 50% and partial healing (ulcers ≤5 mm in no more than 2 segments) in 82%. Clinical remission (CDAI < 150) at one year occurred in 46% patients (39% in remission >3 months off steroids). On univariate analysis baseline factors associated with steroid free clinical remission at 1 year include colonic localization (p = 0.006), inflammatory phenotype (p = 0.009), high SES-CD (p = 0.005). Age, CRP and early vs delayed HSCT were not significant. On multivariate analysis high baseline SES CD was associated with steroid free remission at year 1 (OR 1.21 95%CI 1.03–1.41; p = 0.017).

| | Baseline | | One year | | p value |
|---|---|---|---|---|---|
| | *N* | *Mean (IQR)* | *N* | *Mean (IQR)* | *Paired T test* |
| **CDAI** | 40 | 332 (246–418) | 37 | 193 (79–295) | $<10^{-5}$ |
| **PRO2** | 40 | 24 (16–31) | 37 | 12 (4–21) | $<10^{-5}$ |
| **EQ5D** | 34 | 0.7 (0.7–0.8) | 31 | 0.8 (0.7–1) | 0.033 |
| **IBDQ** | 37 | 120 (102–141) | 31 | 154 (120–201) | 0.0007 |
| **SESCD** | 36 | 14 (7–22) | 36 | 5.4 (0.3–7) | $<10^{-5}$ |

**Conclusion** One year outcome in the largest reported cohort of patients undergoing HSCT for refractory Crohn's disease shows a significant reduction in both clinical and endoscopic disease activity with an improvement in quality of life. Endoscopic severity at baseline predict outcome.

**Disclosure of Interest** None Declared

## OC-005 A MULTICENTER, DOUBLE-BLIND, PLACEBO (PBO)-CONTROLLED PH3 STUDY OF USTEKINUMAB (UST), A HUMAN IL-12/23P40 MAB, IN MODERATE-SEVERE CROHN'S DISEASE (CD) REFRACTORY TO ANTI-TNFA: UNITI-1

[1]P Rutgeerts, [2]C Gasink*, [3]M Blank, [2]Y Lang, [2]J Johanns, [2]L-L Gao, [4]B Sands, [5]S Hanauer, [6]B Feagan, [7]S Targan, [8]S Ghosh, [9]W de Villiers, [4]J-F Colombel, [10]SD Lee, [11]P Desreumaux, [12]EV Loftus, [13]S Vermeire, [14]WJ Sandborn. *[1]U Hosp Gasthuisberg, Leuven, Belgium; [2]Janssen R&D, Spring House; [3]Janssen Pharma LLC, Horsham; [4]Mt Sinai Med Ctr, New York; [5]Northwestern U, Chicago, United States; [6]Robarts Res Inst, London, Canada; [7]Cedars-Sinai Med Ctr, Los Angeles, United States; [8]U Calgary, Calgary, Canada; [9]U Cape Town, Cape Town, South Africa; [10]U Washington, Seattle, United States; [11]CHRU de Lille, Hopital Claude Huriez, Lille, France; [12]Mayo Clinic, Rochester, United States; [13]U Hosp, Leuven, Belgium; [14]UCSD, La Jolla, United States*

10.1136/gutjnl-2016-312388.5

**Introduction** In a Ph2b study(CERTIFI),[1] UST intravenous(IV) induction followed by subcutaneous(SC) maintenance was effective in moderate-severe CD refractory to anti-TNF therapy. This Ph3 study examined efficacy&safety of IV UST induction in these pts.

**Methods** Pts with moderate-severe CD(CDAI 220–450) who previously failed/were intolerant to ≥1 TNF-antagonist were randomised 1:1:1 at Wk0 to a single dose of IV PBO, UST 130 mg, or weight-based tiered UST dosing ~6 mg/kg. Primary endpoint was clinical response at Wk6(baseline [BL] CDAI score reduced by ≥100); pts with BL CDAI ≥220 to ≤248 were considered in clinical response if CDAI score of <150 was present. At Wk8, pts transitioned to the IM-UNITI maintenance study or were followed to Wk20.

**Results** The 741 randomised pts had history of TNF-antagonist failure, with BL median CDAI = 317, CRP = 9.9 mg/L, and prior disease duration of 10.1 yrs. Of these, 51% had previously failed ≥2 anti-TNFs with 29.1%, 69.4%, and 36.4% of pts, respectively. Clinical response at Wk6 was observed in 33.7%/34.3% of the ~6 mg/kg/130 mg UST grps vs 21.5% on PBO(p = 0.003, p = 0.002, respectively). Clinical remission(CDAI < 150) at Wk8 was seen in 20.9%/15.9% vs 7.3% on PBO(p < 0.001, p = 0.003, respectively). Clinical response at Wk8 was seen in 37.8%/33.5% vs 20.2% on PBO (each p ≤ 0.001). Proportion of pts with 70 pt CDAI response at Wk6 was 43.8%/46.1% vs 30.4% on PBO (p = 0.002, p < 0.001, respectively) and at first post-BL Wk3 visit, 40.6%/38.4% vs 27.1% on PBO(p = 0.001,

p = 0.009, respectively). Both IV UST induction doses resulted in significant improvements in CDAI, IBDQ, CRP, faecal lactoferrin and calprotectin vs PBO. Rates of AEs, SAEs, and infections were similar in the UST&PBO grps. One opportunistic infection(listeria meningitis) was reported in the ~6 mg/kg UST grp. No malignancies, deaths, major adverse cardiovascular events, or TB occurred in UST-treated pts through Wk20.

**Conclusion** In a population of moderate-severe CD pts refractory to ≥1 prior TNF-antagonists, IV UST induced clinical response and remission and was well-tolerated throughout induction, confirming the previous positive induction data from CERTIFI.

## REFERENCE

1 Sandborn WJ, *et al*. *N Engl J Med* 2012;**367**:1519–1528.

**Disclosure of Interest** P. Rutgeerts Consultant for: J&J, Merck, UCB, AbbVie, Millenium/Takeda, Genentech/Hoffman LaRoche, Medimmune/AstraZeneca/Amgen, Merck/Serono, Bristol Myers Squibb, Robarts, Tillotts Pharma, Conflict with: Lectures for J&J, Merck, AbbVie, C. Gasink Shareholder of: Janssen, Employee of: Janssen, M. Blank Employee of: Janssen, Y. Lang Shareholder of: Janssen, Employee of: Janssen, J. Johanns Shareholder of: Janssen, Employee of: Janssen, L.-L. Gao Shareholder of: Janssen, Employee of: Janssen, B. Sands Grant/research support from: Janssen, Consultant for: Janssen, S. Hanauer Grant/research support from: Janssen, Consultant for: Janssen, Conflict with: Lecturer for Janssen, B. Feagan Grant/research support from: Abbott/AbbVie, Amgen, Astra Zeneca, Bristol-Myers Squibb (BMS), Janssen Biotech (Centocor), JnJ/Janssen, Roche/Genentech, Millennium, Pfizer, Receptos, Santarus, Sanofi, Tillotts, UCB Pharma, Consultant for: Abbott/AbbVie, Actogenix, Akros, Albireo Pharma, Amgen, Astra Zeneca, Avaxia Biologics Inc., Avir Pharma, Axcan, Baxter Healthcare Corp., Biogen Idec, Boehringer-Ingelheim, Bristol-Myers Squibb, Calypso Biotech, Celgene, Elan/Biogen, EnGene, Ferring Pharma, Roche/Genentech, GiCare Pharma, Gilead, Given Imaging Inc., GSK, Ironwood Pharma, Janssen Biotech (Centocor), JnJ/Janssen, Kyowa Kakko Kirin Co Ltd., Lexicon, Lilly, Lycera BioTech, Merck, Mesoblast Pharma, Millennium, Nektar, Nestles, Novonordisk, Pfizer, Prometheus Therapeutics and Diagnostics, Protagonist, Receptos, Salix Pharma, Serono, Shire, Sigmoid Pharma, Synergy Pharma Inc., Takeda, Teva Pharma, TiGenix, Tillotts, UCB Pharma, Vertex Pharma, VHsquared Ltd., Warner-Chilcott, Wyeth, Zealand, Zyngenia, Speaker bureau with: Abbott/AbbVie, JnJ/Janssen, Takeda, Warner-Chilcott, UCB Pharma, Conflict with: Patent holder; Member Scientific Advisory board, Abbott/AbbVie, Amgen, Astra Zeneca, Avaxia Biologics Inc., Bristol-Myers Squibb, Celgene, Centocor Inc., Elan/Biogen, Ferring, JnJ/Janssen, Merck, Nestles, Novartis, Novonordisk, Pfizer, Prometheus Laboratories, Protagonist, Salix Pharma, Takeda, Teva, TiGenix, Tillotts Pharma AG, UCB Pharma; Member, Board of Directors Officer – Robarts Clinical Trials Inc, S. Targan Grant/research support from: Cedars-Sinai Medical Centre, Consultant for: Janssen, NuMedii, Inc., Conflict with: Advisory board for the Seaver Foundation; Scientific Advisory Board Member Symbiotix, S. Ghosh Grant/research support from: Abbvie, Conflict with: International Steering Committees: Janssen, Abbvie, Pfizer, Receptos, BMS, Aerpio; Advisory Committees: Takeda, Abbvie, Janssen, Pfizer, Allergan, W. de Villiers Conflict with: member of steering committee, active participant as investigator, J.-F. Colombel Consultant for: Pfizer, Takeda, Protagonist Therapies, Celgene, Genentech, Second Genome, Vertex, Amgen, Merck Sharp Dohme, Janssen, Nestle, AbbVie, Tigenix, Receptos, Conflict with: Speaker for AbbVie, Ferring, Shire, Takeda, S. Lee Grant/research support from: AbbVie Pharmaceuticals UCB Pharma Janssen Pharmaceuticals, Inc. Salix Pharmaceuticals Takeda Pharmaceuticals, Inc. Celgene Pharmaceuticals, Inc. Amgen Pharmaceuticals, Inc. Pfizer Pharmaceuticals, Inc., Consultant for: UCB Pharma Robarts Mesoblast Cornerstones Janssen Pharmaceuticals, Inc. Takeda Pharmaceuticals, Inc., P. Desreumaux Grant/research support from: 1. Ferring, St Prex, Suisse 2. Ferring, Danemark 3. Giuliani SpA, Milano, Italy 4. Lesaffre, Marcq en Baroeul, France 5. Roquette, Lestrem, France 6. Sanofi-Synthelabo, Paris, France 7. UCB Pharma, Paris, France 8. Yoplait, Paris, France 9. Omega Pharma, Belgium, Consultant for: 1. Biofortis, Nantes, France 2. Ferring, St Prex, Suisse 3. Giuliani SpA, Milano, Italy 4. Roquette, Lestrem, France 5. UCB Pharma, Paris, France 6. Txcell, Nice, France 7. Lesaffre, Marcq en Baroeul, France 8. MSD, France 9. Abbott, France 10. Norgine, France 11. Genfit, France 12. OmegaPharma International 13. Ppm, Switzerland 14. Kitozyme, Belgium 15. LFB, France, Conflict with: Lecture fees: 1. Ferring, Paris, France 2. Ferring, London, UK 3. Shire Pharmaceuticals, USA 4. UCB Pharma, Paris, France 5. MSD, France 6. Norgine, France 7. Abbott, France 8. Pileje, France, E. Loftus Jr Grant/research support from: Takeda, UCB, Janssen, AbbVie, Genentech, Celgene, Amgen, Pfizer, Gilead, Receptos, Robarts Clinical Trials, Consultant for: Takeda, UCB, Janssen, AbbVie, Genentech, Celgene, Theradiag, Seres Therapeutics, Sun Pharmaceuticals, Bristol-Myers Squibb, S. Vermeire Grant/research support from: Abbvie, MSD, Takeda, Consultant for: Abbvie, MSD, Takeda, Ferring, Genentech/Roche, Shire, Pfizer, Galapagos, Mundipharma, Hospira, Celgene, Second Genome, Janssen, Conflict with: Lectures: Abbie, MSD, Takeda, Ferring, Falk Pharma, Hospira, Tillotts, W. Sandborn Grant/research support from: Receptos, Exact Sciences, Amgen, the American College of Gastroenterology, Broad Foundation, Prometheus Laboratories, AbbVie, Boehringer Ingelheim, Takeda, Atlantic Pharmaceuticals, Janssen, Bristol-Myers Squibb, Genentech, Pfizer, and Nutrition Science Partners, Conflict with: Personal fees from Receptos, Prometheus Laboratories, AbbVie, Boehringer Ingelheim, Takeda, Atlantic Pharmaceuticals, Janssen, Bristol-Myers Squibb, Genentech, Pfizer, Nutrition Science Partners, Kyowa Hakko Kirin, Millennium Pharmaceuticals, Celgene Cellular Therapeutics, Santarus, Salix Pharmaceuticals, Catabasis Pharmaceuticals, Vertex Pharmaceuticals, Warner Chilcott, Gilead Sciences, Cosmo Pharmaceuticals, Ferring Pharmaceuticals, Sigmoid Biotechnologies, Tillotts Pharma, Am Pharma BV, Dr. August Wolff, Avaxia Biologics, Zyngenia, Ironwood Pharmaceuticals, Index Pharmaceuticals, Nestle, Lexicon Pharmaceuticals, UCB Pharma, Orexigen, Luitpold Pharmaceuticals, Baxter Healthcare, Ferring Research Institute, Amgen, Novo Nordisk, Mesoblast Inc., Shire, Ardelyx Inc., Actavis, Seattle Genetics, MedImmune (AstraZeneca), Actogenix NV, Lipid Therapeutics Gmbh, Eisai, Qu Biologics, Toray Industries Inc., Teva Pharmaceuticals, Eli Lilly, Chiasma, TiGenix, Adherion Therapeutics, Immune Pharmaceuticals, Celgene, Arena Pharmaceuticals, Ambrx Inc., Akros Pharma, Vascular Biogenics, Theradiag, Forward Pharma, Regeneron, Galapagos, Seres Health, Ritter Pharmaceuticals, Theravance, Palatin, Biogen, and the University of Western Ontario (owner of Robarts Clinical Trials); non-financial support from Receptos

## OC-006 ANTI-TNF THERAPY ALTERS DENDRITIC CELL TRAFFICKING AND CYTOKINE PRODUCTION IN CROHN'S DISEASE

[1,2]PA Hendy*, [1]D Reddi, [3]D Barnardo, [1]L Durant, [1]A Noble, [1]P Bhat, [1]N English, [1]SC Knight, [1,2]AL Hart. [1]*APRG, Imperial College*; [2]*Gastroenterology, St Mark's Hospital, London, UK*; [3]*Research Unit (7th floor), Hospital Universitario de la Princesa, Madrid, Spain*

10.1136/gutjnl-2016-312388.6

**Introduction** Dendritic cells (DC) act as a bridge between the innate and adaptive immune system, sensing and presenting antigen to lymphocytes and mounting either a tolerogenic or inflammatory response. They are able to imprint homing capacity on T-cells, directing them into specific tissues. Abnormal DC function contributes to the pathogenesis of Crohn's disease and thus DC represent a potential therapeutic target. In this study we have investigated the effect of anti-TNFα therapy on circulating DC of patients with Crohn's disease.

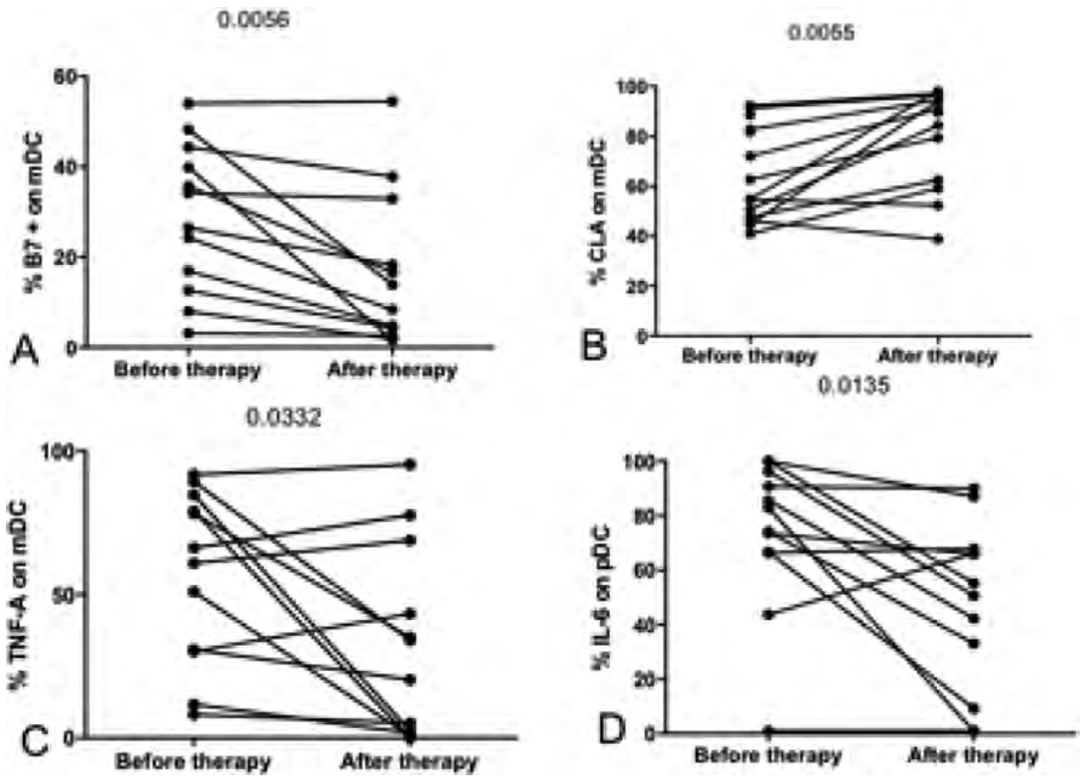
**Methods** We recruited 13 consecutive patients with active luminal Crohn's due to start anti-TNFα therapy. Clinical parameters including the Harvey-Bradshaw index, C-reactive protein and faecal calprotectin were measured. Peripheral blood mononuclear cells were isolated from each patient immediately before and six weeks after commencing anti-TNFα therapy. At both time points flow cytometry was performed to assess DC phenotype and function. We also analysed subsets of DC: myeloid (mDC, $CD11c^{+}CD123^{-}$) and plasmacytoid (pDC, $CD11c^{-}CD123^{+}$). Expression of phenotypic markers (including maturation and homing markers and pattern recognition receptors) and intra-cellular on-going DC cytokine production were determined.

**Results** Treatment with anti-TNFα resulted in an alteration of the phenotype of mDC in Crohn's disease. The gut homing phenotype of mDC in Crohn's disease was down-regulated with anti-TNFα ($CLA^{-}\beta7^{+}$p = 0.0056 Fig A) whilst the non-tissue specific phenotype ($CLA^{+}\beta7^{+}$p = 0.0026 Fig not shown) and skin homing phenotype were up-regulated ($CLA^{+}\beta7^{-}$ p = 0.0055 Fig B).

Production of TNFα and IL-6 by mDC and pDC respectively, shown to be increased in Crohn's disease, was significantly reduced by anti-TNFα therapy (p = 0.033 and p = 0.014 Fig C and Fig D respectively). Production of IL-10 was increased following therapy (p = 0.051). There were no changes in IL-12, IL-23 and IFN-α production. Significant improvements in clinical markers were observed following treatment.

**Conclusion** The reversal of inflammatory DC phenotype and function by anti-TNFα further highlights the potential role this antigen presenting cell may play in the pathogenesis of Crohn's disease. DC are a promising therapeutic target in Crohn's because they can be modulated to express a non-gut homing phenotype and direct T cells away from the gut and promote tolerogenic effects. The increase in skin homing DC following anti-TNFα treatment may explain the high rate of skin complications. The reduction in gut homing DC may offer an explanation for reduced treatment success with vedolizumab (α4β7 blocker) after previous anti-TNFα therapy (reduction of vedolizumab treatment target).

**Disclosure of Interest** None Declared




**Abstract OC-006 Figure 1** A–D: mDC expression of CLA-/ $\beta7^{*}$ (A), CLA*/ $\beta7^{-}$ (B) homing markers. Production of TNF-α (c) and IL (D) by mDC and pDC respectively.

## OC-007 A MULTICENTER, DOUBLE-BLIND, PLACEBO (PBO)-CONTROLLED PH3 STUDY OF USTEKINUMAB (UST), A HUMAN MAB TO IL-12/23P40, IN PTS WITH MODERATELY-SEVERELY ACTIVE CROHN'S DISEASE (CD) WHO ARE NAÏVE OR NOT REFRACTORY TO ANTI-TNFA: UNITI-2

[1]B Feagan, [2]C Gasink*, [2]Y Lang, [2]JR Friedman, [2]J Johanns, [2]L-L Gao, [3]B Sands, [4]S Hanauer, [5]P Rutgeerts, [6]S Targan, [7]S Ghosh, [8]W de Villiers, [3]J-F Colombel, [9]Z Tulassay, [10]U Seidler, [11]WJ Sandborn. [1]*Robarts Res Inst, London, Canada*; [2]*Janssen R&D, Spring House*; [3]*Mt Sinai Med Ctr, New York*; [4]*Northwestern U, Chicago, United States*; [5]*U Hosp Gasthuisberg, Leuven, Belgium*; [6]*Cedars-Sinai Med Ctr, Los Angeles, United States*; [7]*U Calgary, Calgary, Canada*; [8]*U Cape Town, Cape Town, South Africa*; [9]*Semmelweis U, Budapest, Hungary*; [10]*Hannover Med School, Hannover, Germany*; [11]*UCSD, La Jolla, United States*

10.1136/gutjnl-2016-312388.7

**Introduction** In the Ph2b CERTIFI study, a single intravenous (IV) UST induction dose was effective & safe in CD pts previously failing anti-TNFs,[1] but efficacy in pts only failing conventional therapy is unknown. We evaluated 2 IV UST induction dose regimens in a CD population not refractory to anti-TNFs.

**Methods** Pts with moderate-severely active CD (CDAI 220–450) who failed conventional therapy but were not refractory to anti-TNFs were randomised to a single dose of IV PBO, UST 130 mg, or weight-based tiered UST dosing ~6 mg/kg. Primary endpoint was clinical response at Wk6 (reduction in CDAI score of ≥100 pts). At Wk8, pts transitioned to IM-UNITI maintenance study or had safety follow-up through Wk20.

**Results** Of 628 pts randomised, median disease duration was 6.4 yrs; baseline (BL) mean CDAI was 303; 39% & 35% were receiving steroids & immunomodulators, respectively at BL; 69% were naïve to anti-TNFs. At Wk6, 55.5% & 51.7% in ~6 mg/kg & 130 mg UST grps were in clinical response vs 28.7% PBO ($p < 0.001$). At Wk8, 40.2% & 30.6% of pts in ~6 mg/kg & 130 mg UST grps were in clinical remission vs 19.6% PBO ($p \leq 0.009$). Both UST doses showed significant improvements vs PBO in CDAI, IBDQ, CRP, & faecal lactoferrin & calprotectin. Proportions of AEs, SAEs, & infections were similar in UST & PBO grps. No malignancies, deaths, opportunistic infections or TB occurred in UST-treated pts.

**Abstract OC-007 Table 1**

| | PBO (n = 209) | UST 130 mg (n = 209) | UST ~6 mg/kg[c] (n = 209) |
|---|---|---|---|
| Clinical Response[a] | | | |
| Wk 3 | 45 (21.5) | 68 (32.5) | 81 (38.8) |
| | | p = 0.010 | p < 0.001 |
| ***Wk 6** | **60 (28.7)** | **108 (51.7)** | **116 (55.5)** |
| | | **Delta =23%** | **Delta =26.8%** |
| | | **p < 0.001** | **p < 0.001** |
| Wk 8 | 67 (32.1) | 99 (47.4) | 121 (57.9) |
| | | p < 0.001 | p < 0.001 |
| Clinical Remission[b] | | | |
| Wk 3 | 24 (11.5) | 33 (15.8) | 48 (23.0) |
| | | p = 0.199 | p = 0.002 |
| Wk 6 | 37 (17.7) | 60 (28.7) | 73 (34.9) |
| | | p = 0.007 | p < 0.001 |
| Wk 8 | 41 (19.6) | 64 (30.6) | 84 (40.2) |
| | | Delta =11.0% | Delta =20.6% |
| | | p = 0.009 | p < 0.001 |

N (%); [a] ≥ 100 pt reduction in CDAI; [b]CDAI <150; [c]weight-range based UST doses ~6 mg/kg: 260 mg (weight ≤55 kg), 390 mg (weight >55 kg and ≤85 kg), 520 mg (weight >85 kg); ***primary endpoint**

**Conclusion** IV UST induced clinical response & remission in pts with moderate-severe CD not previously failing anti-TNFs & was well-tolerated through induction.

### REFERENCE

1 Sandborn WJ, *et al*. *N Engl J Med* 2012;**367**:1519–1528.

**Disclosure of Interest** B. Feagan Grant/research support from: Abbott/AbbVie, Amgen, Astra Zeneca, Bristol-Myers Squibb (BMS), Janssen Biotech (Centocor), JnJ/Janssen, Roche/Genentech, Millennium, Pfizer, Receptos, Santarus, Sanofi, Tillotts, UCB Pharma, Consultant for: Abbott/AbbVie, Actogenix, Akros, Albireo Pharma, Amgen, Astra Zeneca, Avaxia Biologics Inc., Avir Pharma, Axcan, Baxter Healthcare Corp., Biogen Idec, Boehringer-Ingelheim, Bristol-Myers Squibb, Calypso Biotech, Celgene, Elan/Biogen, EnGene, Ferring Pharma, Roche/Genentech, GiCare Pharma, Gilead, Given Imaging Inc., GSK, Ironwood Pharma, Janssen Biotech (Centocor), JnJ/Janssen, Kyowa Kakko Kirin Co Ltd., Lexicon, Lilly, Lycera BioTech, Merck, Mesoblast Pharma, Millennium, Nektar, Nestles, Novonordisk, Pfizer, Prometheus Therapeutics and Diagnostics, Protagonist, Receptos, Salix Pharma, Serono, Shire, Sigmoid Pharma, Synergy Pharma Inc., Takeda, Teva Pharma, TiGenix, Tillotts, UCB Pharma, Vertex Pharma, VHsquared Ltd., Warner-Chilcott, Wyeth, Zealand, Zyngenia, Speaker bureau with: Abbott/AbbVie, JnJ/Janssen, Takeda, Warner-Chilcott, UCB Pharma, Conflict with: Patent holder; Member Scientific Advisory board, Abbott/AbbVie, Amgen, Astra Zeneca, Avaxia Biologics Inc., Bristol-Myers Squibb, Celgene, Centocor Inc., Elan/Biogen, Ferring, JnJ/Janssen, Merck, Nestles, Novartis, Novonordisk, Pfizer, Prometheus Laboratories, Protagonist, Salix Pharma, Takeda, Teva, TiGenix, Tillotts Pharma AG, UCB Pharma; Member, Board of Directors Officer – Robarts Clinical Trials Inc, C. Gasink Shareholder of: Janssen, Employee of: Janssen, Y. Lang Shareholder of: Janssen, Employee of: Janssen, J. Friedman Shareholder of: Janssen, Employee of: Janssen, J. Johanns Shareholder of: Janssen, Employee of: Janssen, L.-L. Gao Shareholder of: Janssen, Employee of: Janssen, B. Sands Grant/research support from: Janssen, Consultant for: Janssen, S. Hanauer Grant/research support from: Janssen, Consultant for: Janssen, Conflict with: Lecturer for Janssen, P. Rutgeerts Grant/research support from: J&J, Merck, UCB, AbbVie, Consultant for: J&J, Merck, UCB, AbbVie, Millenium/Takeda, Genentech/Hoffman LaRoche, Medimmune/AstraZeneca/Amgen, Merck/Serono, Bristol Myers Squibb, Robarts, Tillotts Pharma, Conflict with: Lectures for J&J, Merck, AbbVie, S. Targan Grant/research support from: Cedars-Sinai Medical Centre, Consultant for: Janssen, NuMedii, Inc., Conflict with: Advisory board for the Seaver Foundation; Scientific Advisory Board Member Symbiotix, S. Ghosh Grant/research support from: Abbvie, Conflict with: International Steering Committees: Janssen, Abbvie, Pfizer, Receptos, BMS, Aerpio; Advisory Committees: Takeda, Abbvie, Janssen, Pfizer, Allergan, W. de Villiers Conflict with: member of steering committee, active participant as investigator, J.-F. Colombel Consultant for: Pfizer, Takeda, Protagonist Therapies, Celgene, Genentech, Second Genome, Vertex, Amgen, Merck Sharp Dohme, Janssen, Nestle, AbbVie, Tigenix, Receptos, Conflict with: Speaker for AbbVie, Ferring, Shire, Takeda, Z. Tulassay: None Declared, U. Seidler Conflict with: Local continuing medical education seminars for MSD, W. Sandborn Grant/research support from: Receptos, Exact Sciences, Amgen, the American College of Gastroenterology, Broad

Foundation, Prometheus Laboratories, AbbVie, Boehringer Ingelheim, Takeda, Atlantic Pharmaceuticals, Janssen, Bristol-Myers Squibb, Genentech, Pfizer, and Nutrition Science Partners, Conflict with: Personal fees from Receptos, Prometheus Laboratories, AbbVie, Boehringer Ingelheim, Takeda, Atlantic Pharmaceuticals, Janssen, Bristol-Myers Squibb, Genentech, Pfizer, Nutrition Science Partners, Kyowa Hakko Kirin, Millennium Pharmaceuticals, Celgene Cellular Therapeutics, Santarus, Salix Pharmaceuticals, Catabasis Pharmaceuticals, Vertex Pharmaceuticals, Warner Chilcott, Gilead Sciences, Cosmo Pharmaceuticals, Ferring Pharmaceuticals, Sigmoid Biotechnologies, Tillotts Pharma, Am Pharma BV, Dr. August Wolff, Avaxia Biologics, Zyngenia, Ironwood Pharmaceuticals, Index Pharmaceuticals, Nestle, Lexicon Pharmaceuticals, UCB Pharma, Orexigen, Luitpold Pharmaceuticals, Baxter Healthcare, Ferring Research Institute, Amgen, Novo Nordisk, Mesoblast Inc., Shire, Ardelyx Inc., Actavis, Seattle Genetics, MedImmune (AstraZeneca), Actogenix NV, Lipid Therapeutics Gmbh, Eisai, Qu Biologics, Toray Industries Inc., Teva Pharmaceuticals, Eli Lilly, Chiasma, TiGenix, Adherion Therapeutics, Immune Pharmaceuticals, Celgene, Arena Pharmaceuticals, Ambrx Inc., Akros Pharma, Vascular Biogenics, Theradiag, Forward Pharma, Regeneron, Galapagos, Seres Health, Ritter Pharmaceuticals, Theravance, Palatin, Biogen, and the University of Western Ontario (owner of Robarts Clinical Trials); non-financial support from Receptos

## OC-008 RESULTS OF A FEASIBILITY STUDY COMPARING APC WITH RFA AFTER ENDOSCOPIC RESECTION OF EARLY NEOPLASIA IN BARRETT'S OESOPHAGUS: THE BRIDE STUDY (NCT01733719)

[1]MF Peerally, [2]H Barr, [3]LB Lovat, [4]P Bhandari, [5]K Ragunath, [6]H Smart, [1]R Harrison, [2]C Stokes, [1]J Decaestecker*. *[1]Univ Hosp Leicester, Leicester; [2]Gloucs Royal Hosp, Gloucester; [3]Univ College London, London; [4]QA Hosp, Portsmouth; [5]Nottingham Univ Hosp, Nottingham; [6]The Royal Liverpool Hosp, Liverpool, UK*

10.1136/gutjnl-2016-312388.8

**Introduction** Endoscopic therapy is safe and effective for Barrett's Oesophagus (BE) patients with high grade dysplasia (HGD) or early (T1A) adenocarcinoma (EAC). Endoscopic resection (ER) removes visible neoplasia but metachronous lesions occur in up to 30%.[1] RCTs of RFA[2] & APC[3] show reduced recurrence but the 2 techniques have not been compared. We aim to test the feasibility of recruiting & retaining up to 100 BE patients with HGD or T1A EAC to RFA or APC after ER.

**Methods** Patients with BE & HGD or T1A EAC confirmed by ER (single tongues ≤2 cm excluded) were recruited over 1 year in 6 centres, stratified into 3 groups as per BE length (<5cm, 5–10 cm, >10 cm) & randomised to 4 interventions with RFA or APC every 2 months. All received high dose twice-daily PPIs. ER was allowed for further visible lesions. Exit endoscopy with biopsies was at 12 months. Persistence of BE, recruitment, retention & adverse events(AEs) were recorded. Quality of life (QL) was assessed with EQ-5D, EORTC QLQ-C30 & OES18 at 0, 6 & 12 months.

**Results** 171 patients were screened. 41.5% were excluded & 14% declined participation. 76 patients (84.2% males, mean age 69.7) were randomised to receive RFA (36) or APC (40) and stratified according to BE length (<5 cm (27); 5–10 cm (44); >10 cm(4)). 13 withdrew, 4 for more advanced cancer and 9 for other reasons. Persistence of HGD/T1 EAC at 12 months (including 3/4 withdrawn patients) was RFA: 15.6% & APC: 12.9% (OR 1.25; 95%CI 0.3–5.17). Endoscopy duration was longer for RFA especially at 2 months (Median, mean (SD) mins= RFA: 30.0, 38.0 (25.7) and APC 23.0, 27.2 (15.8)). Residual BE at 12 months occurred in 38.7% (RFA) & 31% (APC). Median, mean (SD) residual BE were: RFA 0, 1.3 (2.6) cm & APC 1.0, 1.7 (2.6) cm, slightly favouring RFA for BE >5 cm. AEs for APC: 2 dysphagia/strictures, 5 bleeds & for RFA: 1 perforation due to ER, 2 dysphagia/strictures, 1 syncope, 4 bleeds. There were no difference in QL scores. Exit histology showed EAC (1 RFA; 0 APC), buried glands (1 RFA;3 APC), HGD (3 RFA, 2 APC). Sample size for a non-inferiority trial comparing APC to RFA (with a non-inferiority margin of 6%) would be 461 subjects/arm.

**Conclusion** Patients with BE are willing to enrol & remain in studies comparing RFA & APC over 12 months. This feasibility study suggests no difference in outcome between APC & RFA. A fully powered RCT requires a large sample size to show non-inferiority of APC compared to RFA. (NIHR RfPB Grant No PB-PG-0711-25066)

### REFERENCES

1 Pech *et al*. *Gut* 2008;**57**:1200–6.
2 Shaheen *et al*. *NEJM* 2009;**360**:2277–88.
3 Manner *et al*. *Endoscopy* 2014;**46**:6–12.

**Disclosure of Interest** M. F. Peerally: None Declared, H. Barr: None Declared, L. Lovat: None Declared, P. Bhandari: None Declared, K. Ragunath Conflict with: Speaker Honoraria, Educational grants, Consultancy, Research grants and support: Olympus, Pentax, Cook, Boston Scientific, ERBE, Medtronics/Covidien, Astra Zeneca, Ferring, H. Smart: None Declared, R. Harrison: None Declared, C. Stokes: None Declared, J. Decaestecker: None Declared

## OC-009 SPYGLASS DS™ CHOLANGIOSCOPY FOR DIFFICULT STONES: EARLY EXPERIENCE OF TWO UK CENTRES

[1]NL Bekkali*, [2]R Sturgess, [2]L Dwyer, [1]S Direkze, [1]GJ Webster. *[1]HPB, UCLH, London; [2]HPB, Aintree, Liverpool, UK*

10.1136/gutjnl-2016-312388.9

**Introduction** Endoscopic clearance of bile duct stones is achievable in >90% with conventional ERCP (ASGE 2015). Additional techniques may be necessary for those patients with difficult stones, which may be due to stone location, size, or number. Cholangioscopy and intraductal lithotripsy may have a specific role in treating difficult stones. The Spyglass DS™ peroral cholangioscopy system was introduced in mid-2015, and here we report our early experience with this technique.

**Methods** Spyglass DS cholangioscopy was available in the UK from May 2015. Cases referred to our 2 centres were assessed within a specialist HPB multidisciplinary meeting, and all cases deemed appropriate for Spyglass DS were prospectively followed. Patient demographics, indication for cholangioscopy, technical outcome and complications were recorded.

**Results** Eight-four patients (54% female, median age 61 years (range 25–90)) underwent ERCP with plan for cholangioscopy. Indications were stones (83%), strictures (14%) and other (3%). The stones were extrahepatic (62%), intrahepatic (15%), cystic duct (15%), and intra + extrahepatic (8%). The total number of stones was <5 in 58%, 5–10 in 18%, 11–15 in 9%, 16–20 in 9% and >20 stones in 6%. The 70 patients

with stones had undergone a median 2 ERCPs (range 1–7) prior to referral. At our centres duct clearance was achieved in 30% (n = 21/70) without need for cholangioscopy, using combinations of extraction balloon (100%), sphincteroplasty (69%) and mechanical lithotripsy (ML) (54%). Cholangioscopy was needed for 49 cases, in 46 patients. Cholangioscopy with electrohydraulic lithotripsy (EHL) led to complete stone clearance in 72% of patients (33/46), of whom 3 on second EHL. The remaining patients await a second EHL procedure. In the 18 patients with unsuccessful stone clearance to date, reasons included: stone size + density (n = 8 with stones >15 mm); intrahepatic stones (n = 9); inability to apply EHL (n = 1). Overall, stone clearance was achieved in 54/67 (81%) of patients undergoing ERCP +/- cholangioscopy with EHL.

The mean (SD) duration of ERCP + cholangioscopy + EHL was 93 (±28) minutes; 90% had propofol sedation, and 10% conscious sedation. No complications were observed.

**Conclusion** In patients who have failed multiple attempts at endoscopic stone clearance, referral to a centre with availability of Spyglass DS cholangioscopy and EHL results in definitive stone clearance in 81% of patients. This success includes further conventional ERCP. Stone clearance with cholangioscopy may be achieved irrespective of site or size of stones, but failure of complete fragmentation with EHL may contribute to need for repeat procedures, and occasional failure.

**Disclosure of Interest** None Declared

## OC-010 IMPLEMENTATION OF A NOVEL COLONOSCOPY PERFORMANCE INDEX, THE COMPOSITE CAECAL INTUBATION RATE (CIRC), IN A UK TERTIARY CENTRE

[1]I Beintaris*, [2]H Spranger, [3]P Bassett, [4]S Thomas-Gibson. *[1]University Hospital of North Tees, Stockton On Tees; [2]The Hillingdon Hospitals NHS Foundation Trust, London; [3]Stats Consultancy, Amersham; [4]Wolfson Unit for Endoscopy, St. Mark's Hospital and Imperial College London, London, UK*

10.1136/gutjnl-2016-312388.10

**Introduction** The Composite Caecal Intubation Rate (CIR$^c$) has been proposed as a more pragmatic colonoscopy performance index, encompassing three key components; caecal intubation rate (CIR), patient comfort and sedation dose.[1] We calculated CIR$^c$s within a Tertiary Unit (St Mark's Hospital,UK), aiming to assess performance and look for possible correlation between CIR$^c$ and adenoma detection rate (ADR).[2]

**Methods** We analysed all colonoscopies performed by 32 Endoscopists in 12 months. CIR$^c$ was the proportion of procedures fulfilling the following criteria; procedure completion, comfort score ≤3 (Gloucester scale)[3] and midazolam dose 0–2 mg. We examined the association between CIR$^c$ and annual colonoscopy volume, completion rate, midazolam dose and polyp detection rate (PDR). Finally, we sought for a correlation between CIR$^c$ and ADR for 7 Bowel Cancer Screening Programme (BCSP) Endoscopists.

**Results** Analysis included 5416 colonoscopies. Overall CIR$^c$ was 85.6%. There was significant correlation between CIR$^c$ and annual colonoscopy volume; all colonoscopists with >250 procedures had CIR$^c$s >85%. The majority of operators with <200 procedures had the lower scores, but still more than 70%. There were Endoscopists with low annual volumes and high CIR$^c$ meaning that expert endoscopists with high lifetime (but low annual) volumes can nonetheless deliver high quality colonoscopy. There was also evidence of a negative correlation between midazolam and CIR$^c$, but of no statistical significance. No significant association was observed with CIR or PDR. There was a reasonable positive correlation, albeit non significant, between ADR and CIR$^c$ in the BCSP Endoscopists' subgroup.

**Conclusion** CIR$^c$ is a more informative performance index, reflecting key aspects of colonoscopy. Reassuringly, overall CIR$^c$ achievement in the Unit was above National Audit data (54.1%).[1] Endoscopists with larger procedure volumes performed better. No significant correlation with ADR was seen, although a positive trend was noted. The small amount of patients included in the ADR analysis group is insufficient to draw definite conclusions. Applying CIR$^c$ at a local level may aid in identification of under-performers, although case-mix factors may affect results.

### REFERENCES

1 Valori R, Damery S, Swarbrick E, *et al*. PWE-057 A composite measure of colonic intubation is better able to distinguish performance of colonoscopy and is associated with higher polyp detection rates. *Gut* 2014;**63**:A148.
2 Corley DA, Jensen CD, Marks AR, et al. Adenoma detection rate and risk of colorectal cancer and death. *N Engl J Med* 2014;**370**:1298–306.
3 Ekkelenkamp VE, Dowler K, Valori RM, Dunckley P. Patient comfort and quality in colonoscopy. *World J Gastroenterol* 2013;**19**:2355–61.

**Disclosure of Interest** None Declared

## OC-011 EMR VS ESD FOR BARRETT'S NEOPLASIA: TIME TO SHIFT THE PARADIGM?

F Chedgy*, S Subramaniam, K Kandiah, S Thayalasekaran, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.11

**Introduction** The risks of ESD in the oesophagus are perceived to be high and consequences potentially disastrous. For this reason, EMR is the most common technique to resect early Barrett's cancer. However, the drawback of EMR is piecemeal resection with difficulties interpreting resection margins of cancers. The aim of this study was to evaluate feasibility, safety, and outcomes of ESD in the endoscopic treatment of Barrett's neoplasia and to compare these with EMR.

**Methods** All data was collected prospectively on a predesigned electronic database between 2006 and 2015. The database was interrogated by independent researchers blinded to the endoscopic procedures. Bleeding was defined as significant if patients required transfusion, endoscopic therapy or hospitalisation. Strictures were defined as significant if they were symptomatic or requiring dilatation. SPSS was used for statistical analysis of data

**Results** 81 oesophageal ESDs were performed in 70 patients and 180 EMRs were performed in 112 patients during the study period. Table 1 demonstrates patient and lesion characteristics and outcomes following resection including deep R0 resection margin for cancer and histological outcomes. Lesion morphology and histology was significantly more advanced in the ESD group as compared to EMR.

The endoscopic cure rate in the EMR group was 81% with 19% of patients upstaged requiring radical treatment. In the ESD group the endoscopic cure rate was 87% with 13% of patients upstaged requiring radical treatment.

**Conclusion** This is the biggest reported comparison of EMR vs ESD for Barrett's neoplasia. Proportionately more Is and IIC lesions were resected by ESD than by EMR which is reflected by significantly more cancers identified in the ESD

**Abstract OC-011 Table 1** Barrett's patient and lesion characteristics

| | Mean age | Mean Follow up | Mean Length (cm) | IIa | IIb | IIc | Is | Mean Size (mm) |
|---|---|---|---|---|---|---|---|---|
| **EMR n = 180** | 69.2 | 6.5 | 5.7 | 44% | 37% | 6% | 12% | 24 |
| **ESD n = 81** | 72.4 | 1.6 | 6.1 | 37% | 2% | 23% | 35% | 33 |
| **p-value** | NS | NS | NS | NS | <0.01 | <0.01 | <0.01 | NS |
| | | | | **Resection Outcomes** | | | | |
| | **R0 Cancer** | **En bloc** | **HGD** | **Cancer** | **Recurrence** | **Bleeding** | **Stricture** | |
| **EMR n = 180** | 73% | 30% | 42% | 57% | 12% | 4% | 4% | |
| **ESD n = 81** | 82% | 89% | 8% | 88% | 4% | 2% | 2% | |
| **p-value** | NS | <0.01 | <0.01 | <0.01 | 0.03 | NS | NS | |

group. Our data shows the safety and efficacy for ESD resection of Barrett's cancers but EMR still remains a standard therapeutic option for non-cancerous Barrett's neoplasia. This calls for a prospective RCT comparing ESD vs EMR for Barrett's cancer.

**Disclosure of Interest** None Declared

## OC-012 THE EFFECT OF MENTAL WORKLOAD EXPERIENCED DURING COLONOSCOPY ON ENDOSCOPISTS PERFORMANCE

I Rahman*, P Boger, P Patel. *University Hospital Southampton, Southampton, UK*

10.1136/gutjnl-2016-312388.12

**Introduction** Studies have shown that there are a multitude of factors that affect the quality of colonoscopy. However, the effect of the endoscopist mental workload on their performance has been neglected. It is shown that health professionals exposed to excessive workloads and fatigue show degraded performance. The aim of this study was to measure the effect of mental workload as represented by the National Aeronautics and Space Administration-Task Load Index (NASA-TLX), on colonoscopic performance relative to the experience of the endoscopist and colonoscopy scheduling.

**Methods** Procedures were observed prospectively in one institution for 3 groups; trainees, consultants and bowel cancer specialist programme (BCSP) endoscopists. On reaching the caecum the endoscopist marked on a validated pro-forma their corresponding workload on six subscales; mental demand, physical demand, temporal demand, effort, frustration and own performance, to generate a NASA-TLX score. Data on performance which included caecal intubation times (CIT), patient comfort and polyp detection rate (PDR) were noted. In addition, withdrawal times, time of day (am or pm) and queue order for procedures were recorded.

**Results** A total of 202 procedures were undertaken between 6 endoscopists with a mean CIT of 9.2 minutes and PDR of 42%. Increasing mental workload was associated with increasing CIT ($r = 0.61$, $p = 0.07$) and inversely associated with withdrawal time ($r = 0.72$, $p = 0.03$). The mean mental workload during colonoscopy was lower in BCSP endoscopist v consultants v trainees (188 v 254 v 352 $p < 0.01$). On multivariate analysis, absence of polyp detection was associated with a procedure that was undertaken in pm with an above mean mental workload (OR 1.62, 95% CI 1.38–2.07) and withdrawal time of <5 minutes (OR 1.53, 95% CI 1.32–1.91). Increased patient discomfort was associated with increased frustration on the subscale of the NASA-TLX score (OR 1.59, 95% 1.37–1.93) and being a trainee (OR 1.11, 95% 1.03–1.22). The use of ScopeGuide reduced the mental workload of consultants (227 v 282 $p<0.01$), but not trainees or experts. Queue position had no impact on any of the markers of performance.

**Conclusion** This study shows that high mental workload experienced during colonoscopy has a significant detrimental effect on the performance of endoscopists. Drop in PDR in pm procedures when only associated with high mental workload may explain some of the conflicting results of daily variations of PDR in other studies. Further studies are now required to look into measures that may reduce excessive mental workload.

**Disclosure of Interest** None Declared

## OC-013 ENDOSCOPIC FULL-THICKNESS RESECTION (EFTR) IN THE COLON WITH THE FTRD SYSTEM:THE FIRST UK EXPERIENCE

[1]I Rahman*, [1]P Boger, [2]S Ishaq, [3]N Suzuki, [3]S Green, [4]A Kawesha, [1]P Patel. *[1]University Hospital Southampton, Southampton; [2]Russells Hall Hospital, Dudley; [3]Brighton & Sussex University Hospitals, Brighton; [4]Dudley Group of Hospitals, Dudley, UK*

10.1136/gutjnl-2016-312388.13

**Introduction** Standard endoscopic resection of non-lifting adenomas and subepithelial tumours are challenging and pose significant risks of adverse events. Various methods for full thickness resection of these lesions have been trialled, but have been fraught with difficulties. Here we report a simple technique for colonic resections using a novel endoscopic full thickness resection (eFTR) device.

**Methods** Data on consecutive patients who underwent eFTR at 3 UK institutions from April 2014 – January 2015 were prospectively analysed. The procedure was undertaken using the, over-the-scope, full thickness resection device (FTRD). Main outcome measures were technical success, total procedure times, histological confirmation of full thickness, R0 resection and adverse events.

**Results** A total of 11 patients underwent eFTR, of which 5 were non-lifting adenomas, 4 T1 polyps and 2 subepithelial tumours. Procedure was technically successful in 82% (9/11) cases. The median age was 76 years (range 64–93 yrs), median procedure time was 40 minutes (range 22–60 mins)

with a median specimen size of 22 mm (range 15–25 mm). Histology confirmed full thickness resection in all cases, with a R0 resection in 89% (8/9) cases. At 3 month endoscopic follow the anastomotic clip was still in situ in 3 cases. In 1 case (known R1 resection) a small 5 mm area of residual adenoma was noted which was successfully treated by conventional endoscopic means. There were no cases of immediate or delayed bleeding or perforation.

**Conclusion** eFTR using the FTRD system is a promising, simple technique to facilitate full thickness resections in the colon that may avoid the need for surgery in some selected cases. Further studies are now required to fully evaluate its efficacy.

**Disclosure of Interest** None Declared

## OC-014 EXTRA WIDE ANGLE VIEW COLONOSCOPE (EWAVE) HAS SUPERIOR POLYP DETECTION RATE WHEN COMPARED TO A STANDARD COLONOSCOPE (SD): A RANDOMISED TANDEM PRE-CLINICAL STUDY

[1,2]R Rameshshanker*, [1]A Wilson, [3]P Tekkis, [1]BP Saunders. *[1]Wolfson Endoscopy Unit, St Mark's Hospital, Harrow; [2]Imperial College, London; [3]Imperial College, London, UK*

10.1136/gutjnl-2016-312388.14

**Introduction** Colonoscopy screening with the removal of adenomas has been the preferred and most effective strategy to prevent colorectal cancer (CRC). However adenomas are often missed during colonoscopic examination, particularly on the proximal sides of folds and at the flexures. The prototype (EWAVE) Extra Wide Angle View colonoscope (Olympus, Tokyo, Japan) has a 147°–235° angle lateral/backward view lens and a standard 140° angle forward view lens. Views from both lenses are constructed and displayed as a single image. By improving visualisation behind the folds and flexures this new scope could increase the polyp detection rate (PDR).

Objective is to compare the polyp detection rate between EWAVE and a standard colonoscope in a colonic model with simulated polyps.

**Methods** Two colorectal (Koken, Japan) rubber colon models were prepared with 18 and 20 polyps of different size (5–20 mm) at various locations. Seventeen endoscopists, 14 gastroenterology trainees and 3 nurse endoscopists with varying levels of experience performed back to back examinations with the standard colonoscope and EWAVE scope. The order which they performed the procedure (i.e. EWAVE or SD first) was randomised using concealed envelopes. In order to minimise type 2 error, on the 2nd model the endoscopists performed the procedure in reverse order.

**Results** There was no significant difference in mean insertion time ($p = 0.8$) or withdrawal time ($p = 0.29$) between EWAVE and standard colonoscope (Figure 1). Mean simulated PDR was significantly higher with EWAVE examination when compared to standard colonoscopic examination in both models ($p = 0.026$ and $<0.0001$). Mean simulated PDR was significantly higher with EWAVE in comparison to the standard colonoscope for polyps in the mid transverse colon (79.4% vs 32.3%, $p = 0.0002$) and mid sigmoid colon (82.3% vs 52.9%, $p = 0.0186$). When the examination was carried out with the standard colonoscope followed by EWAVE, PDR was significantly higher in both models ($p = 0.045$ for model 1 and $p < 0.0001$ for model 2). More significantly no difference was observed when the procedure was performed in the reverse order ($p = 0.28$ for model 1 and $p = 0.08$ for model 2).

**Abstract OC-014 Table 1**

| | Model I Standard | Model I EWAVE | P value | Model II Standard | Model II EWAVE | P value |
|---|---|---|---|---|---|---|
| Insertion time (mean+/- SD) | 3.7+/-1.8 | 3.74+/- 1.4 | 0.89 | 3.05+/- 1.7 | 2.89+/- 1.7 | 0.80 |
| Withdrawal time (mean +/- SD) | 4.88+/- 1.8 | 4.96+/- 2.1 | 0.91 | 4.81+/- 3.0 | 3.85+/- 1.6 | 0.29 |
| PDR (mean+/-SD) | 14.5+/- 1.8 | 15.93+/- 1.3 | 0.026 | 15.8+/- 1.2 | 18.13+/- 1.5 | <0.0001 |

**Conclusion** Our non-clinical study showed significantly higher polyp detection rates with the novel extra wide angle colonoscope when colonoscopy was performed by moderately experienced colonoscopists. Further clinical trials appear warranted.

**Disclosure of Interest** None Declared

## OC-015 NICORANDIL DOES NOT WORSEN NON-VARICEAL UPPER GASTROINTESTINAL BLEEDING (NVUGIB) IN PATIENTS TAKING ASPIRIN OR ANTITHROMBOTIC DRUGS (ATDS)

[1,2]AS Taha, [1]C McCloskey*, [1]T Craigen, [1]A Simpson, [2]WJ Angerson. *[1]Gastroenterology, University Hospital Crosshouse, Kilmarnock; [2]Medical School, University of Glasgow, Glasgow, UK*

10.1136/gutjnl-2016-312388.15

**Introduction** Nicorandil is a vasodilatory drug that has the dual properties of a nitrate and K+ATP channel agonist. It is often added to ATDs in the management of angina. In light of some case reports, its manufacturer and the medicines regulatory agencies have issued cautions that it can cause mucosal ulcers, perforation and bleeding, and that these might be worse in users of aspirin. We therefore aimed to investigate the possibility that NVUGIB is more severe in patients using ATDs plus Nicorandil than ATDs alone.

**Methods** Patients presenting with NVUGIB and using ATDs plus Nicorandil ($n = 59$) were compared to those using ATDs alone (Controls; $n = 1056$) with respect to haemoglobin level, Blatchford UGIB risk score, composite endoscopy score (covering lesions in the oesophagus, stomach and duodenum), need for blood transfusion, length of hospital admission, and 30 day mortality. ATDs included low dose aspirin, clopidogrel, dipyridamole, warfarin and heparin.

**Results** Table 1, below, summarises the outcomes of NVUGIB and the characteristics of patients using ATDs alone vs. those using ATDs plus Nicorandil. Age and haemoglobin are shown as mean (SD), the other interval variables as median (interquartile range) and binary variables as percentage (number). The final column shows differences between groups (Nicorandil minus control) with 95% confidence intervals. All

differences were statistically insignificant (P > 0.05, Student's t, Mann-Whitney and Fisher's exact tests as appropriate).

**Abstract OC-015 Table 1** Outcomes of NVUGIB and characteristics of patients taking ATDs plus Nicorandil vs. those taking ATDs alone

| | ATDs alone (Controls) N = 1056 | ATDs + Nicorandil N = 59 | Difference (95%CI) |
|---|---|---|---|
| Age, years | 73.3 (SD 12.3) | 73.3 (SD 10.3) | 0.0 (–2.8 – +2.8) |
| Males | 59% (627) | 64% (38) | 5% (–8% – +18%) |
| Haemoglobin, g/dL | 10.6 (SD 2.8) | 10.6 (SD 2.3) | 0.0 (–0.8 – +0.7) |
| Blatchford score | 7 (4–11) | 8 (6–11) | 1.0 (–0.5 – +2.5) |
| Endoscopic score | 1 (0–2) | 1 (0–2) | 0 (–0.5 – +0.5) |
| Transfused | 44% (463) | 39% (23) | –5% (–18% – +7%) |
| Length of admission, days | 6 (3–14) | 8 (3–17) | 2 (–2 – +6) |
| Dead (30 days) | 5% (52) | 3% (2) | -2%(-6% – +3%) |

**Conclusion** Patients taking ATDs plus Nicorandil were well matched demographically with controls taking ATDs alone. The confidence intervals place a modest upper limit on any exacerbation of NVUGIB by Nicorandil as manifested by reduced haemoglobin and increased need for transfusion. The intake of Nicorandil does not seem to worsen the severity or the outcomes of NVUGIB. These findings, therefore, do not justify discontinuing Nicorandil in patients with angina and presenting with NVUGIB while taking ATDs.

**Disclosure of Interest** None Declared

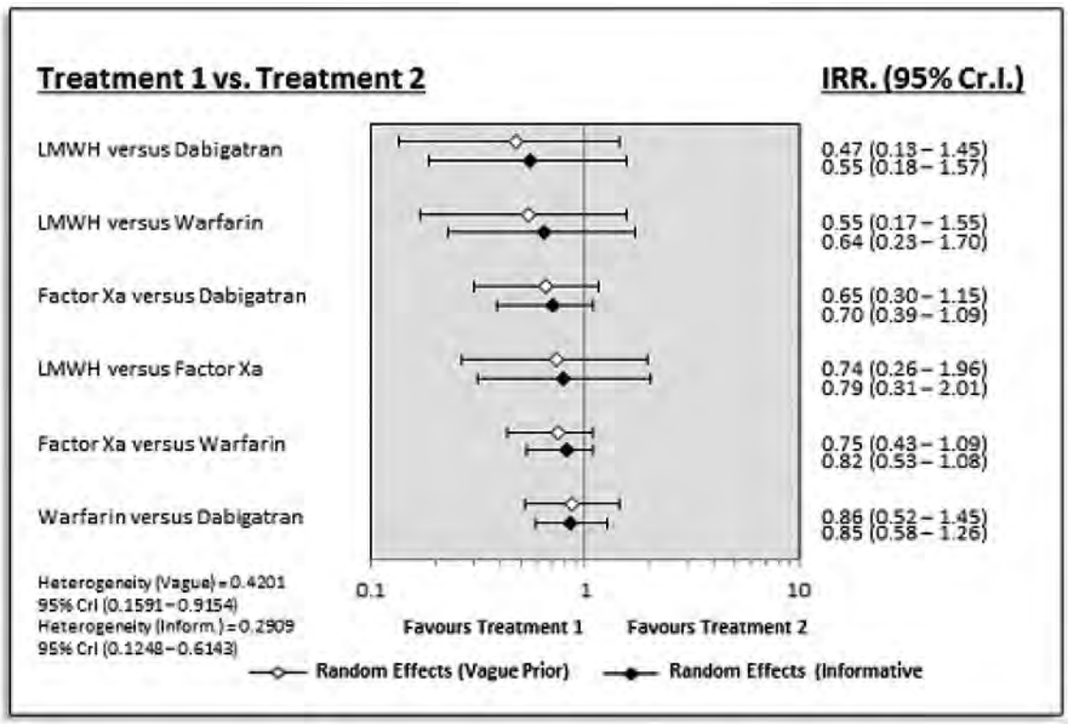
## OC-016 THE RISK OF GASTROINTESTINAL BLEEDING WITH NON-VITAMIN K ANTAGONIST, ORAL ANTICOAGULANT MEDICATIONS. A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS

N Burr, K Lummis, R Sood, A Corp, V Subramanian*. *Gastroenterology, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.16

**Introduction** The non-vitamin k antagonist (VKA) oral anticoagulants (NOAC) comprise inhibitors of thrombin and factor Xa. They are being increasingly used in patients requiring long-term anticoagulation due to non-inferiority and relative ease of use when compared to VKA and low molecular weight heparin (LMWH). Prospective randomised studies testing the efficacy of NOACs have shown a possible increased risk of gastrointestinal (GI) bleeding. To clarify the risk of GI bleeding we performed a systematic review and Bayesian network meta-analysis.

**Methods** We followed a pre-specified and peer reviewed PRISMA extension guidelines and checklist for reporting systematic reviews and network meta-analyses. A comprehensive search of the literature was performed to identify any study, prospective or retrospective, which compared NOAC with VKA or LMWH and reported on GI bleeding. Studies on all indications for these medications were included. We did not include studies which compared against placebo or antiplatelet medication. We performed a Bayesian random effects regression model. To estimate the effect of NOAC on GI bleeding we calculated incidence rate ratios (IRR) based on the number of patient years exposed to the medication. We grouped medications together by mechanism of action; VKA, LMWH, thrombin inhibitor or factor Xa inhibitor. Pre-planned sub-




**Abstract OC-016 Figure 1**

group analyses were performed on; indication, population, study design, GI bleed definition and NOAC dose.

**Results** We identified 35 studies reporting on 481, 534 patients exposed to 405, 026 patient years of anticoagulant medication. The overall GI bleeding incidence was 1.3 events per 100 patient years. We found no difference in the incidence rate of major GI bleeding when comparing NOAC medications with VKA and LMWH. This results was sustained on sensitivity analyses comparing observational and prospective trial data, the indication for anticoagulation and prophylactic versus therapeutic doses. When analysing all severities of GI bleeding, we found a statistically significant reduction when comparing Xa inhibitors with VKA (IRR 0.20, 95% CrI 0.05–0.65), and thrombin inhibitors (IRR 0.20, 95% CrI 0.05–0.67) respectively.

**Conclusion** We have shown that there is no difference in the risk of major GI bleeding when comparing NOAC, VKA and LMWH anticoagulation medications. There is a significant reduction in all GI bleeding events with the use of factor Xa inhibitors when compared to VKA and direct thrombin inhibitors.

**Disclosure of Interest** None Declared

## OC-017 INTERNATIONAL MULTICENTRE STUDY ASSESSING THE EFFECTS OF ANTI-THROMBOTIC USE IN PATIENTS WITH UPPER GI BLEEDING

[1]P Dunne*, [2]SB Laursen, [3]L Laine, [4]H Dalton, [5]JH Ngu, [6]M Schultz, [4]I Murray, [7]A Rahman, [8]A Anderloni, [1]A Stanley. *[1]Glasgow Royal Infirmary, Glasgow, UK; [2]Odense University Hospital, Odense, Denmark; [3]Yale School of Medicine, Newhaven, Connecticut, United States; [4]Royal Cornwall Hospital, Cornwall, UK; [5]Singapore General Hospital, Singapore, Singapore; [6]University of Otago, Dunedin, New Zealand; [7]St. Josephs Health Care, London, Ontario, Canada; [8]Humanitas Hospital, Milan, Italy*

10.1136/gutjnl-2016-312388.17

**Introduction** Anti-thrombotics (antiplatelets and anticoagulants; ATs) have been identified as risk factors for upper gastrointestinal bleeding (UGIB). However few international studies have evaluated their effect on patient outcome. We aimed to assess the effects of AT use on outcome in patients with high-risk UGIB requiring endoscopic therapy.

**Methods** Patients presenting with UGIB who required endoscopic therapy at eight centres (Scotland, England, USA, Canada, Denmark, Italy, Singapore & New Zealand) were prospectively included over 12 months. Data recorded included the full Rockall score (FRS); AT use (Aspirin, Adenosine Diphosphate Receptor Inhibitors (ADP-RI), Vitamin-K Antagonists (VKA), Low Molecular Weight Heparin (LMWH), Thrombin inhibitors and Factor Xa inhibitors); endoscopic findings; blood transfusion; interventional radiology; surgery; rebleeding; 30 day mortality and length of hospital stay.

**Results** Out of 3154 patients, 619 required endotherapy (44% for ulcer bleeding and 21% for varices). 187 (30%) patients were on aspirin, 61 (11%) ADP-RI, 57 (9%) VKA, 8 (1%) LMWH, 7 (1%) factor Xa-inhibitor and 1 patient a thrombin-inhibitor. 63 (11%) patients were treated with >1 type of AT. Patients treated with ATs were older ($p < 0.0001$), had higher ASA-score ($p = 0.001$), lower haemoglobin ($P = 0.04$), higher FRS ($p < 0.0001$), more frequently had ischaemic heart disease (IHD; $p < 0.001$), less frequently had cirrhosis ($P < 0.001$), more frequently bled from ulcers ($p < 0.001$) but less frequently from varices ($p < 0.001$) compared with those not taking ATs. There were no differences in sex, systolic blood pressure, frequency of malignancies, need for surgery/embolisation or rebleeding rate. Patients taking ATs had lower mortality than those not taking these drugs: all cause (11/253 [4%] vs 37/315 [12%]; $p = 0.006$) and bleeding-related (3/253 [1%] vs 19/315 [6%]; $p = 0.01$). However, when excluding patients with liver cirrhosis ($n = 151$) there were no differences in mortality between groups.

**Conclusion** Patients with UGIB who require endoscopic therapy whilst on ATs do not experience a higher rate of rebleeding or mortality compared with UGIB patients who do not use ATs. We observed excess mortality in patients not taking ATs, which is likely due to the high rates of cirrhosis (40%) and variceal bleeding (33%) in these patients. Further studies are needed to clarify the risk of adverse outcome following UGIB in patients taking novel ATs.

**Disclosure of Interest** None Declared

## OC-018 AUDIT OF HELICOBACTER PYLORI TESTING IN MICROBIOLOGY LABORATORIES IN ENGLAND: IN LINE WITH NICE GUIDANCE? IS THERE SCOPE FOR ROUTINE SURVEILLANCE OF ANTIBIOTIC RESISTANCE?

[1]R Allison*, [1]DM Lecky, [1]M Bull, [1]K Turner, [2]G Godbole, [1]CA McNulty. *[1]Public Health England, Gloucester; [2]Public Health England, London, UK*

10.1136/gutjnl-2016-312388.18

**Introduction** Current guidance from the National Institute for Health and Clinical Excellence (NICE) recommends that clinicians test for *Helicobacter pylori* using a carbon-13 urea breath test or a stool antigen test, or laboratory-based serology where its performance has been locally validated. Recommended first-line treatment suggests a proton pump inhibitor (PPI) with dual antibiotic therapy.

**Aims** To assess: microbiology laboratory compliance with NICE guidance; and to determine the number of laboratories performing culture and antibiotic susceptibility testing which will inform decisions on future national *H. pylori* antibiotic resistance surveillance strategies.

**Methods** In 2015, questionnaires were sent by e-mail to 170 Clinical Pathology Accreditation (CPA) labs in England. All non-responding labs were contacted and requested to complete the questionnaire by e-mail or telephone.

**Results** Of the 121/170 (71%) labs that responded, 96% provide a *H. pylori* testing service: 78% perform on site and 13% refer elsewhere.

**In line with NICE guidance** 95% of labs comply by testing with stool antigen or urea breath test for *H. pylori*. Five labs do not comply as they perform serology or biopsy urease tests first line (4/5 encourage urea breath tests in their acute trusts).

**Cultures and antibiotic susceptibility performed** 23% of labs perform *H. pylori* cultures on site; 46% refer biopsy specimens to another lab (39/43 (91%) refer to the Helicobacter Reference Unit (HRU)).

Of the 22 labs undertaking *H. pylori* cultures; two processed ten specimens/week; others ≤1 specimen/week. Nine labs undertake antibiotic susceptibility on site; nine refer elsewhere (8/9 to the HRU).

Eight of nine labs that reported testing for antibiotic susceptibility in-house commented on the antibiotics tested: metronidazole-7/8 labs (88%); clarithromycin-6/8 labs (75%);

amoxicillin-7/8 labs (88%); tetracycline-5/8 labs (63%); levofloxacin-2/8 labs (25%).

**Conclusion** The majority of labs are complying with NICE guidance. However, the four labs still performing serology and one performing biopsy urease tests as their first line diagnostic test for *H. pylori* should be followed up and have the current guidance reinforced.

As very few laboratories are routinely performing culture of biopsy specimens to investigate antibiotic susceptibility, an English culture based surveillance system would probably need centralised culture. However, a PCR based stool specimen surveillance system would be very possible, but thus far, does not give metronidazole susceptibility.

**Disclosure of Interest** R. Allison: None Declared, D. Lecky: None Declared, M. Bull: None Declared, K. Turner: None Declared, G. Godbole: None Declared, C. McNulty Consultant for: PHE diagnostic guidance for H. pylori and PHE antibiotic guidance

## OC-019 IRON DEFICIENCY ANAEMIA AND HEPCIDIN LEVELS IN H.PYLORI INFECTED PATIENTS

[1]JR White*, [2]HO Al-Hassi, [1]D Reddiar, [2]M Mangalika, [2]D Cvijan, [1]Y Falcone, [2]N Worton, [1]M Lingaya, [1]A Figgins, [1]P Kaye, [1]K Ragunath, [1]JC Atherton, [1]K Robinson, [2]MJ Brookes. *[1]NIHR NDDBRU, QMC, University of Nottingham; [2]Royal Wolverhampton NHS Trust, University of Wolverhampton, UK*

10.1136/gutjnl-2016-312388.19

**Introduction** IDA affects up to 5% of the adult population in the developing world. There is an association between *H. pylori* (Hp) infection and incidence of unexplained IDA, but the mechanisms remain unclear. In children it has been suggested that Hp disturbs the iron regulatory mechanism via hepicidin. This peptide hormone induces internalisation and degradation of the iron transporter protein ferroportin thus limiting iron absorption and release. Hepcidin expression is induced by inflammation, but how this relates to Hp and IDA has not been fully elucidated, particularly in adults. This pilot study aimed to characterise local and systemic iron transporter expression in IDA patients with and without Hp infection, in comparison to Hp negative dyspepsia controls.

**Methods** Patients undergoing routine endoscopy for IDA (HpIDA and IDA groups, n = 18 and 40 respectively) or without IDA (control group, n = 18) donated blood and biopsy samples with informed consent and ethical approval. Hp status was assessed by three biopsy based tests and by serology. Duodenal and gastric biopsies were evaluated by immunohistochemistry for ferroportin and hepcidin, in addition to H&E staining for inflammation and atrophy grading. All scoring was carried out by experienced blinded histopathologists. A commercial ELISA assay was used to quantify serum Hepcidin-25.

**Results** As expected, anaemia parameters were significantly lower in the HpIDA and IDA groups compared to the controls ($P < 0.0001$). Surprisingly, serum hepcidin concentrations were significantly reduced in the HpIDA and IDA groups compared to the controls (9 fold, $P = 0.009$ and 5 fold, $P < 0.0001$ respectively). Hp infection was associated with gastric expression of hepcidin, particularly in the corpus when compared to controls. This corresponded with the cytoplasmic relocalisation of ferroportin (n = 12; 67%) in the duodenal enterocytes of patients with HpIDA compared to controls, where the ferroportin was actively expressed. Hepcidin was also found to be expressed in the duodenum of both controls and HpIDA. Significant atrophy was observed in both IDA groups.

**Conclusion** IDA was associated with significantly lower levels of serum hepcidin in contrast to previous studies. Local or systemic factors such as inflammatory mediators could be driving this response as more severe atrophy was observed in both IDA groups. We now aim to perform quantitative analysis of hepcidin in the gastric specimens using RT-qPCR to further evaluate whether local Hp transcriptionally upregulated hepcidin expression might cause these effects on iron transport.

**Disclosure of Interest** None Declared

## OC-020 IS TAKING HISTOLOGICAL BIOPSIES IN PATIENTS WITH GASTRITIS A WASTE OF TIME AND MONEY?

L Dawson, J Baker, K Ala*, J Shutt, J Jupp, S Bridger. *Gastroenterology, Dorset County Hospital, Dorchester, UK*

10.1136/gutjnl-2016-312388.20

**Introduction** The clinical usefulness of taking gastric biopsies in patients with endoscopic gastritis is unclear. There are international recommendations in support of this but the cost effectiveness is questionable and there is little evidence that biopsies influence patient management.[1]

**Methods** In 2014, 1109 patients were identified as having endoscopic gastritis based on a retrospective review of the hospital's Endoscopy database. Of these patients, 610 had a urease test, 90 had both urease testing and gastric histology, 378 just had histology and 31 had neither test. A more detailed review of the patient's clinical notes and histology was undertaken for 114 consecutive gastritis patients who had gastric biopsies sent for histological analysis over a 3 month period (Aug-Oct).

**Results** 56% of the patients were female (64/114) with an average age of 65 years (range 17–91). 76% of these patients were taking a PPI at the time of endoscopy. Dyspepsia/reflux (43%) was the commonest primary indication, followed by anaemia/GI bleeding (24.5%), dysphagia (10.5%), nausea/vomiting (6%) and miscellaneous others. 88.5% of patients had at least 2 antral biopsies taken. 17.5% of patients had both antral and corpus biopsies. 6% of patients had both urease testing and histology. No serious pathology was found on any of the histological samples. The commonest histological diagnosis was chemical, reactive or inflammatory gastritis (70%), followed by normal (17%), *Helicobacter pylori* (Hp) gastritis (10.5%), intestinal metaplasia (1%) and fundic gland polyp (1%).

**Conclusion** Despite recommendations to the contrary,[1] we found 42% of patients with uncomplicated gastritis still have gastric biopsies sent for histopathological analysis. The reasons why an Endoscopist chooses to request histology rather than a urease test are not clear. We suspect decision-making is influenced by whether the patient is taking a PPI with a perception that this may reduce the sensitivity of urease testing. However the manufacturer of Endosc-Hp™ reports a sensitivity of 94.4% in detecting Hp even if the patient is taking a PPI (email comm). Consequently there would seem to be no additional value in sending histology in this group of patients. The cost savings are considerable. Even in a DGH serving a population of 220,000, the annual cost savings of carrying out urease testing rather than histology in patients with uncomplicated gastritis would amount to at least £37000. This study supports the Royal College of Pathologists contention

that "biopsy for histological classification of gastritis is unlikely to change management" and taking biopsies for patients with uncomplicated gastritis "is not recommended."[1]

**REFERENCE**
1 Loughrey MB, Johnston BT. *Frontline Gastroenterology* 2014;**5**:88–95.

**Disclosure of Interest** None Declared

## OC-021 SHOULD THE RENAL TRACT BE ROUTINELY INVESTIGATED IN IRON DEFICIENCY ANAEMIA?

[1]MS Lau*, [2]J Schembri, [1]DS Sanders, [2]JM Hebden. *[1]Academic Department of Gastroenterology, Royal Hallamshire Hospital; [2]Gastroenterology, Northern General Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.21

**Introduction** Iron deficiency anaemia (IDA) accounts for 4–13% of referrals to gastroenterology. The British Society of Gastronterology IDA guidelines recommend the investigation of the gastrointestinal (GI) tract, but not the renal tract. A single consultant led one stop IDA clinic was set up. As part of the evaluation of IDA, urine microscopy and an ultrasound or CT abdomen/pelvis (if used in lower GI tract examination) were performed to investigate for renal tract malignancies, alongside GI tract investigations. We aimed to demonstrate the yield of renal and GI tract malignancies in patients with IDA.
**Methods** Patients with IDA or isolated hypoferritinaemia attending the clinic from 2013–2015 who underwent urine microscopy and an ultrasound or CT abdomen/pelvis alongside bidirectional GI investigations (Upper GI: gastroscopy/barium swallow/CT; lower GI: colonoscopy/barium enema/CT) were analysed. We described the yield of haematuria from urine microscopy and the yield of malignancy from renal and GI tract investigations.
**Results** A total of 196 patients had renal tract investigations alongside bidirectional GI investigations (152 urinalysis/ultrasound, 44 urinalysis/CT). 6.1% (12/196) patients had microscopic haematuria. Four renal tract cancers were found: 2 from the haematuria group and 2 from the normal urine microscopy group. In the haematuria group, 2 bladder cancers were identified by CT and cystoscopy respectively. The latter patient was asymptomatic apart from gastroesophageal reflux and had no weight loss. He had a normal gastroscopy, colonoscopy and ultrasound abdomen. A cystoscopy was performed due to the persistent haematuria, which revealed a bladder cancer. In the normal urinalysis group, CT identified 1 prostate cancer and 1 renal cell carcinoma (RCC) where both patients presented with weight loss. The yield of renal tract malignancies in this cohort was 2.0% (4/196). The yield of GI malignancy was 3.1% (6/196) from bidirectional GI investigations in the same cohort of patients. All GI malignancies identified were colorectal cancers.
**Conclusion** The ratio of renal: GI tract malignancies was 2:3 in this cohort. Urine microscopy identified 50% of renal tract cancers. Following the standard practice of bidirectional GI investigations for IDA, the 1 case of asymptomatic bladder cancer would have been missed had urine microscopy not been performed. Routine urine microscopy is easy and cheap to perform, and should be tested in all patients with IDA, and those with haematuria should have their renal tracts investigated. Routine renal tract ultrasound in the asymptomatic IDA patient is not indicated.
**Disclosure of Interest** None Declared

## OC-022 FACTORS AFFECTING RESPONSE TO LOW FODMAPS THERAPY IN THE MANAGEMENT OF IRRITABLE BOWEL SYNDROME; FRUCTOSE AND LACTOSE BREATH TESTING, IBS SUBTYPE AND SYMPTOM SEVERITY

A Cox*, J Eady, K Keetarut, N Zarate-Lopez, E Feurtado, R Rutherford, A Emmanuel. *University College Hospital (UCLH), London, UK*

10.1136/gutjnl-2016-312388.22

**Introduction** A low FODMAPs diet is an effective dietary intervention for the management of irritable bowel syndrome (IBS). We hypothesised that hydrogen breath testing (HBT) for lactose and fructose intolerance would identify potential responders. Secondly we hypothesised that greater improvement would be seen in diarrhoea predominant (IBS-D) than other subtypes.
**Methods** 167 consecutive patients with a Rome III IBS diagnosis who completed low FODMAPs dietary education therapy were analysed. Symptoms were assessed at baseline and follow up (median 63 days post-treatment) via self-administered questionnaire. The primary endpoint was a symptom severity score (scale 0–5) based on pain, bloating, constipation and diarrhoea. According to clinician choice, some patients underwent HBT with fructose 30 gm (n = 74) and lactose 30 gm (n = 103).
**Results** Subtypes were IBS-D (n = 91, 67 f, mean age 42), IBS-C (n = 41, 35 f, mean age 45) and IBS-M (n = 34, 29 f, mean age 36). Across all patients, an improvement in symptom severity (2.4 to 1.6, $p < 0.001$) was observed following low FODMAPs diet. Patients with a positive fructose BT (26/74, 35%) experienced statistically greater improvement in symptom severity (2.7 to 1.5, $p < 0.01$), but not those with positive lactose BT (36/102, 35%). Compared to IBS-D (2.4 to 1.5) and IBS-C (2.4 to 1.6), a greater response was seen in IBS-M (3.1 to 1.9, $p < 0.01$). Response was correlated to baseline symptom severity ($r = 0.45$, $p < 0.001$).
**Conclusion** A low FODMAP diet may particularly beneficial in patients with fructose malabsorption. Severity of symptoms at baseline may predict degree of improvement which may explain the greater response seen in IBS-M patients in this study.

A low FODMAP diet may particularly beneficial in patients with fructose malabsorption. Severity of symptoms at baseline may predict degree of improvement which may explain the greater response seen in IBS-M patients in this study.
**Disclosure of Interest** None Declared

## OC-023 RANDOMISED TRIAL: THE NUTRICEUTICAL ZINC CARNOSINE WORKS WITH BOVINE COLOSTRUM IN TRUNCATING HEAVY EXERCISE INDUCED INCREASE IN GUT PERMEABILITY THROUGH ACTIONS ON TIGHT JUNCTIONS, APOPTOSIS AND HEAT SHOCK PROTEIN 70 PRODUCTION

[1]R Playford*, [2]G Davison, [1,3]T Marchbank, [4]D March, [5]R Thatcher. *[1]Peninsula Medical School, Plymouth University, Plymouth; [2]Endurance Research Group, School of Sport & Exercise Sciences, University of Kent, Chatham; [3]Blizard Institute of Cell and Molecular Science, Barts and The London School of Medicine, Queen Mary, University of London, London; [4]Department of Infection, Immunity & Inflammation, University of Leicester, Leicester; [5]Institute of Biological Environmental and Rural Sciences, Aberystwyth University, Aberystwyth, UK*

10.1136/gutjnl-2016-312388.23

**Introduction** Heavy exercise causes gut symptoms and, in extreme cases, "heat stroke" due to increased intestinal permeability of luminal toxins. We examined whether zinc carnosine (ZnC) a health food product taken alone or in combination with bovine colostrum, a natural source of growth factors, moderated such effects.
**Methods** 8 volunteers completed a four-arm double-blind, placebo-controlled, crossover protocol (14 days placebo, ZnC, colostrum, ZnC + colostrum) prior to standardised exercise undertaken 2 and 14 days after starting treatment. Changes in epithelial resistance, apoptosis signalling molecules and tight junction protein phosphorylation in response to $2^0$ C rise were determined using Caco-2 & HT29 intestinal cells.
**Results** Body temperature increased $2^0$ C and gut permeability (5 h urinary lactulose:rhamnose ratios) increased 3 fold following exercise (0.32 ± 0.016 baseline to 1.0 ± 0.017 at +14 days, $p < 0.01$). ZnC or colostrum truncated rise by 70% after 14 days treatment. Combination treatment gave additional benefit and truncated exercise induced increase at +2 day (30% reduction, $p < 0.01$)

2°C temperature rise in *in vitro* studies caused doubling of apoptosis and reduced epithelial resistance 3–4 fold. ZnC or colostrum truncated these effects (35–50%) with greatest response seen with combination treatment (all $p < 0.01$). Mechanisms of action included increasing HSP70 and truncating temperature-induced changes in Baxα and Bcl-2. ZnC also increased total occludin and reduced pTyr-claudin, pTyr-occludin and pSer-occludin, enhancing tight junction formation and stabilisation.
**Conclusion** ZnC taken alone or with colostrum increased epithelial resistance and tight junction structure and may have value for athletes and preventing heat stroke in military personnel.
**Disclosure of Interest** None Declared

## OC-024 DOES THE POINT OF CARE TEST, SIMTOMAX, DISTINGUISH BETWEEN COELIAC DISEASE AND NON-COELIAC GLUTEN SENSITIVITY?

MS Lau*, PD Mooney, WL White, M Burden, SH Wong, M Kurien, DS Sanders. *Academic Department of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.24

**Introduction** Non coeliac gluten sensitivity (NCGS) is an emerging clinical entity with a prevalence of 0.5–13%. It is characterised by gluten related symptoms with a negative coeliac serology and no villous atrophy (VA). It is currently a diagnosis based on exclusion of coeliac disease (CD). We aimed to assess the role of Simtomax, an IgA/G deamidated gliadin peptide (DGP) based point of care test (POCT), in differentiating between NCGS and CD.
**Methods** Group 1: we compared the sensitivities of 3 POCTs: Simtomax, Biocard [IgA-tissue transglutaminase (TTG)] and Celiac Quick Test (IgA/G/M-TTG). We prospectively recruited 100 patients referred with a positive endomysial antibody (EMA) attending for a gastroscopy. All patients undertook the 3 POCTs, EMA, TTG, and all underwent a gastroscopy with 5 duodenal biopsies. Sensitivities were measured based on their histology.

Group 2: the sensitivity of Simtomax in the general population was evaluated by prospectively recruiting 667 patients with gastrointestinal symptoms or ataxia attending for a gastroscopy. To reduce positive ascertainment bias, we excluded patients referred with a positive EMA, previous VA, known CD, self-reported gluten sensitivity, and those on a gluten free diet. All patients undertook Simtomax, EMA, TTG and a gastroscopy with 5 duodenal biopsies. Sensitivities were measured based on their histology.

Group 3: we demonstrated the sensitivities of Simtomax in a gluten sensitive population. 35 patients with self-reported gluten sensitivity attending for a gastroscopy were prospectively recruited. All patients undertook Simtomax, EMA, TTG and a gastroscopy with 5 duodenal biopsies. Sensitivities were measured based on their histology.
**Results** Group 1 showed that Simtomax was the best POCT in detecting CD. The CD prevalence was 85%. In group 2, the sensitivity and negative predictive value (NPV) of Simtomax were comparable to that of EMA and TTG. The prevalence of CD was 4.95%. In group 3, Simtomax had 100% sensitivity and NPV in differentiating between CD and NCGS. 4 patients (11.4%) were diagnosed with CD, 4 (11.4%) with potential CD (positive serology but no VA) and 27 (77.1%) with NCGS (negative serology and no VA).

**Abstract OC-024 Table 1**

| Gp 1 | Sensitivity, % | Specificity, % | PPV, % | NPV, % |
|---|---|---|---|---|
| Simtomax | 96.5 | 6.67 | 85.4 | 25 |
| Biocard | 71.8 | 53.3 | 89.7 | 25.0 |
| Celiac Quick Test | 67.1 | 33.3 | 85.1 | 15.2 |
| Gp 2 | 78.8 | 85.0 | 21.5 | 98.7 |
| Simtomax | | | | |
| EMA | 72.7 | 99.5 | 88.9 | 98.6 |
| TTG | 75.8 | 93.1 | 36.2 | 98.7 |
| Gp 3 | 100 | 80.6 | 40.0 | 100 |
| Simtomax | | | | |
| EMA | 75.0 | 96.8 | 75.0 | 96.8 |
| TTG | 75.0 | 87.1 | 42.9 | 96.4 |

**Conclusion** Simtomax was the most accurate POCT for detecting CD. In a lower CD prevalence group 2 cohort, its sensitivity remained comparable to TTG and EMA. Simtomax had 100% sensitivity in detecting CD in patients with self-reported gluten sensitivity, and 100% NPV in identifying patients with NCGS.
**Disclosure of Interest** M. Lau: None Declared, P. Mooney: None Declared, W. White: None Declared, M. Burden: None Declared, S. Wong: None Declared, M. Kurien: None Declared, D. Sanders Grant/research support from: Tillotts Pharma for investigator led studies in coeliac disease. None of the funding sources had any input in the study design, access to study data, interpretation of the findings or drafting of the abstract.

## OC-025 APPLICATION OF A SURVIVAL NOMOGRAM FOR PALLIATIVE CANCER PATIENTS ON HOME PARENTERAL NUTRITION: IS IT VALID?

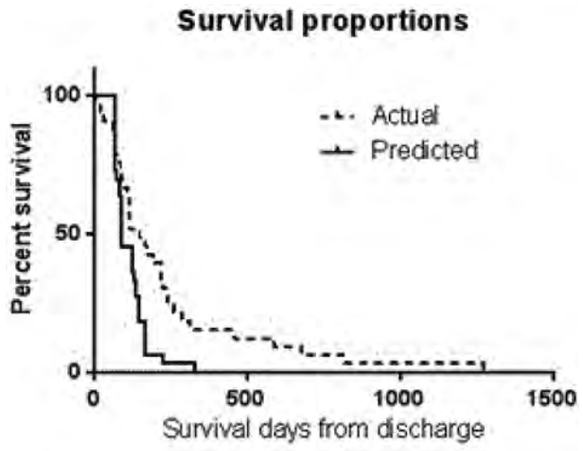
[1]S Oke*, [1]D Ismail, [2]M Stroud, [2]T Smith, [1]SM Gabe, [1]M Naghibi. *[1]Lennard Jones Intestinal failure unit, St Mark's Hospital, Harrow; [2]Gastroenterology, University Hospital Southampton, Southampton, UK*

10.1136/gutjnl-2016-312388.25

**Introduction** Home parenteral nutrition (HPN) for palliative malignancy is increasing and optimal selection of patients remains challenging. A nomogram predicting survival length[1] based on Glasgow prognostic score (CRP and albumin), primary cancer, metastases & Karnofski performance status has recently been developed. In the nomogram survival was calculated from discharge date, rather than the date of PN commenced. We aimed to test the validity of the nomogram by retrospectively applying it to a cohort of HPN palliative cancer patients at St Mark's Hospital & University Hospital Southampton.

**Methods** Adult patients with palliative cancer started on HPN were identified between 1/1/05 and 1/12/15. Patients were excluded with a diagnosis of psuedomyxoma or if a cancer developed while on HPN. Karnofski performance status was assigned though MDT discussion.

**Results** 47 patients met the inclusion criteria, 44 patients had sufficient data to complete the nomogram. There were 9 ovarian, 26 GI and 9 'other' cancers (metastasis in 77%). Median survival for ovarian cancers was 100 days, GI cancers 55 days & other primaries 15 days. The nomogram over or underestimated survival length by ≤25%, 25–50%, ≥50% in 40%, 20% and 40% of patients, respectively. 12 patients were predicted to live <2 months, which was correct for 8 (67%). The mean overall difference in survival compared the nomogram prediction was 66 +/-59 days (95% CI). Figure 1, shows Kaplan-Meier curves for actual vs. predicted survival (log rank (Mantel-Cox) test p = 0.006) confirming significant difference.




**Abstract OC-025 Figure 1**

**Conclusion** This data does not validate the use of this nomogram to predict survival length in HPN palliative malignancy patients. In our cohort the data shows that this nomogram most often under estimates survival. The retrospective nature of this study and relatively small number of patients is a limiting factor. Further prospective studies are needed and it is recommended defining survival as measured from date PN commenced. At present the best judge for considering palliative HPN is clinical acumen & patient performance status.

## REFERENCE

1 Bozzetti F, Cotogni P, Lo Vullo S, Pironi L, Giardiello D, Mariani L. Development and validation of a nomogram to predict survival in incurable cachectic cancer patients on home parenteral nutrition. *Ann Oncol* 2015;**26**(11):2335–2340.

**Disclosure of Interest** None Declared

## OC-026 THE CLINICAL AND PHENOTYPIC ASSESSMENT OF SERONEGATIVE VILLOUS ATROPHY; A PROSPECTIVE UK CENTRE EXPERIENCE EVALUATING 200 CASES OVER A 15 YEAR PERIOD (2000–2015)

I Aziz*, MF Peerally, JH Barnes, V Kandasamy, P Vergani, SS Cross, DS Sanders. *Academic Department of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.26

**Introduction** Complex cases of seronegative villous atrophy (SNVA) have been attributed to celiac disease or angiotensin-2-receptor-blockers. However, this may not reflect SNVA in general. We aimed to provide diagnostic outcomes in all newcomers with SNVA and identify predictive factors.

**Methods** Over a 15 year period (2000–2015) we prospectively evaluated 200 adult patients with SNVA at a UK secondary/tertiary-care centre. A diagnosis of either seronegative celiac disease (SNCD) or SN-non-CD was reached. Baseline comparisons were made between the groups, with 343 seropositive CD subjects serving as controls

**Results** Of the 200 SNVA cases, SNCD represented 31% (n = 62) and SN-non-CD 69% (n = 138). The HLA-DQ2/8 genotype was present in 61%, with a 51% positive predictive value for SNCD. The breakdown of identifiable causes in the SN-non-CD group include infections (27%, n = 54), inflammatory/immune-mediated disorders (17.5%, n = 35) and drugs (6.5%, n = 13; two cases related to angiotensin-2-receptor-blockers). However, no cause was found in 18% (n = 36) and of these 72% (n = 26/36) spontaneously normalised duodenal histology whilst consuming a gluten-enriched diet.

Following multivariable logistic regression analysis a novel independent factor associated with SN-non-CD was non-Caucasian ethnicity (odds ratio 17.2, p = 0.002); in fact, 66% of non-Caucasians had Helicobacter pylori and/or alternate gastrointestinal infections. On immunohistochemistry all villous atrophy groups stained positive for CD8-T-cytotoxic intraepithelial lymphocytes. However, additional CD4-T-helper intraepithelial lymphocytes were occasionally seen in SN-non-CD mimicking the changes associated with refractory CD.

**Conclusion** Most patients with SNVA do not have celiac disease or angiotensin-2-receptor-blocker enteropathy. Further, a subgroup shows spontaneous histological resolution whilst consuming gluten. The presence of non-Caucasian ethnicity should prompt search for an infective aetiology. The role of phenotyping intraepithelial lymphocytes for diagnostic purposes can potentially be misleading.

**Disclosure of Interest** None Declared

## OC-027 USE OF BUCCAL VITAMIN D SUPPLEMENTATION IN PATIENTS WITH SHORT BOWEL SYNDROME

GJH Thomson*, C Mountford, N Thompson. *Newcastle Upon Tyne Hospitals, Newcastle Upon Tyne, UK*

10.1136/gutjnl-2016-312388.27

**Introduction** Vitamin D (vit D) deficiency is a common consequence of short bowel syndrome and can detrimentally affect bone and muscle health. Oral vit D supplements can be absorbed variably and parenteral supplementation does not always result in improved serum levels.[1] We wished to see if buccal vit D supplementation represents a useful alternative?

**Methods** Patients with short bowel syndrome who had not responded to high dose oral vit D supplementation and were prescribed buccal vit D spray ("Dlux3000" BetterYou(TM)) were identified through the regional nutrition service (n = 13). This cohort was 46.2% female and 53.8% male with a mean age of 52.7 years. Accurate measurements of all participants small bowel functionality were not available, however, 7 were recorded as having less than 100 cm of small bowel remaining. Not all participants were reliant on parenteral nutrition (n = 7), those who were(n = 6) received between 10 and 15 L parenteral nutrition per week. Participants were prescribed between 3000 and 9000 iu/day. 25(OH) vit D was used to measure vit D status. Baseline levels were obtained prior to when buccal vit D was prescribed. This was compared with the level obtained at their next clinic appointment, at least one month later. For analysis a paired t test was undertaken in two groups; A, including (n = 13), and B excluding (n = 8), patients using other vitamin D supplements concurrently. Of those in group B 75% had previously been prescribed oral vit D supplements without achieving vit D sufficiency.

**Results** Group A: Mean baseline 25(OH)D was 22.3 ng/ml, 95%CI (18.1,26.5) (. Buccal vit D supplementation increased this to an average of 61.4 ng/ml, 95%CI (44.7, 78.1). This increase proved to be statistically significant (p =< 0.05) and suggests that buccal vit D either alone or as an adjunct to oral supplements produces a significant rise in vit D level from that of deficiency to sufficiency.

Group B: Mean baseline 25(OH)D was 21.9 ng/ml, 95%CI (18.3, 25.4). Using buccal vit D spray alone mean 25(OH)D was increased to 53 ng/ml, 95%CI (43.2, 62.8) (p =< 0.05). This suggests that buccal vit D monotherapy may be sufficient to achieve adequate vit D levels in those patients who have not responded to oral supplements.

**Conclusion** This study provides preliminary evidence from a small number of patients that buccal vit D spray may be an effective adjunct to oral vit D supplementation or be an effective monotherapy in short bowel patients who do not respond adequately to oral supplements. Further investigation into buccal vit D spray is warranted.

## REFERENCE

1 Thacher TD, Clarke BL. Vitamin D insufficiency. *Mayo Clin Proc* 2011;**86** (1):50–60. http://doi.org/10.4065/mcp.2010.0567

**Disclosure of Interest** G. Thomson: None Declared, C. Mountford: None Declared, N. Thompson Conflict with: BSG secretary

## OC-028 DOES DUODENAL HISTOLOGY YIELD ANY OTHER DIAGNOSES FOR IRON DEFICIENCY ANAEMIA APART FROM COELIAC DISEASE?

[1]MS Lau*, [1]PD Mooney, [1]WL White, [1]M Burden, [1]SH Wong, [1]M Kurien, [2]SS Cross, [3]JM Hebden, [1]DS Sanders. *[1]Academic Department of Gastroenterology; [2]Academic Unit of Pathology, Royal Hallamshire Hospital; [3]Gastroenterology, Northern General Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.28

**Introduction** The prevalence of iron deficiency anaemia (IDA) is 2–5% in the developed world. The BSG IDA guidelines recommend screening for coeliac disease (CD) with serology, and those tested positive should undergo duodenal biopsy to assess for villous atrophy (VA). The availability of pre-endoscopy serology in IDA has been shown to be 30%, thus often committing clinicians to routinely biopsy the duodenum. We aimed to explore whether any causes other than CD would be found on duodenal biopsy in IDA. We also aimed to evaluate the role of Simtomax, an IgA/G-deamidated gliadin peptide based point of care test (POCT), in detecting CD in IDA in the endoscopy setting.

**Methods** Group 1: we retrospectively reviewed the duodenal histology of 153 patients with IDA attending a non coeliac specialised IDA clinic in 2013–14. Group 2: we prospectively recruited 133 patients with iron deficiency attending for a gastroscopy to our research gastroscopy list. All patients undertook Simtomax, endomysial antibodies (EMA), tissue transglutaminase (TTG), total IgA, and 5 duodenal biopsies. The results were compared against histology.

**Results** The duodenal histology in group 1 yielded no cause for the IDA apart from CD. Two patients had VA- 1 with positive serology and hence was diagnosed with CD; the other patient never had a serology to confirm the diagnosis as he subsequently died from colon cancer. Assuming the latter case to be CD, the prevalence of CD in this cohort would be 1.3%. 5/7 patients with lymphocytic duodenosis (LD) had a cause for or association with LD: vitiligo, autoimmune hypothyroidism, aspirin use, proton pump inhibitor use, and Helicobacter pylori infection respectively. No attributable causes for LD were found in the remaining 2 patients. In group 2, the prevalence of CD was 19.5%. The sensitivity and NPV of Simtomax were 100%.

**Abstract OC-028 Table 1**

| **Gp1 Histology** | **153** | | | |
|---|---|---|---|---|
| Normal (Marsh 0) | 141 (92.2%) | | | |
| LD (Marsh 1) | 7 (4.6%) | | | |
| VA (Marsh 3 c) | 2 (1.3%) | | | |
| Reactive changes, submucosal haemangioma, chronic duodenitis | 1, 1, 1 | | | |
| Gp2 | Sensitivity, % | Specificity, % | PPV, % | NPV, % |
| Simtomax | 100 | 82.2 | 57.8 | 100 |
| TTG | 96.2 | 91.5 | 73.5 | 99.0 |
| EMA | 84.6 | 99.1 | 95.7 | 96.4 |

**Conclusion** Our duodenal histology review revealed no alternative causes for the IDA other than villous atrophy secondary to CD. Simtomax had 100% sensitivity and NPV for detecting CD in IDA. This suggests that performing a duodenal biopsy in patients with a negative Simtomax test is highly unlikely to yield a diagnosis for IDA, thus could be safely avoided if the sole purpose of the biopsy is to investigate IDA. Simtomax could provide significant cost savings by targeting patients with IDA who require a duodenal biopsy.

**Disclosure of Interest** M. Lau: None Declared, P. Mooney: None Declared, W. White: None Declared, M. Burden: None Declared, S. Wong: None Declared, M. Kurien: None Declared, S. Cross: None Declared, J. Hebden: None Declared, D. Sanders Grant/research support from: Tillotts

Pharma for investigator led studies in coeliac disease. None of the funding sources had any input in the study design, access to study data, interpretation of the findings or drafting of the abstract.

## OC-029 PHENOTYPE OF HUMAN INTRAHEPATIC INNATE LYMPHOID CELL SUBSETS IN HEATLH AND DISEASE

P McDowell*, S Roberts, HC Jeffery, S Hunter, YH Oo. *Centre for Liver Research and NIHR Liver Bru, University of Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.29

**Introduction** Innate lymphoid cells (ILCs) involve in the initiation, regulation and resolution of inflammation. Although the role of ILCs in murine liver fibrosis and biliary proliferation has been reported, the phenotypic characteristics and functional role of these cells in human liver disease remains undefined. We explored the detailed phenotype of human intrahepatic ILCs to gain insight on their function.

**Methods** Liver infiltrating lymphocytes from normal liver tissue, autoimmune liver diseases (AILD), alcoholic liver disease (ALD) and non-alcoholic steatohepatitis (NASH) explants were phenotyped with flow cytometry.

**Results** Total intrahepatic ILC ($CD3^-$ $lineage^-$ $CD45^-$ $CD127^+$ ) comprised 1% (IQR 0.4–1.7%) of the $CD3^-$ $CD45^+$ population in normal liver and 0.4% for ALD/NASH and autoimmune livers. The ILC1 subset constituted the majority of intrahepatic ILC and its frequency is higher in normal liver compared to diseased livers (85% vs. 67%) ($p < 0.05$). In contrast, $CD161^+CRTH2^+$ ILC2 subset and ILC3 subset frequency are higher in diseased livers compared to normal livers. Interestingly, frequency of ILC3 is significantly higher in ALD compared to normal liver ($p < 0.01$). Intrahepatic ILC subsets are in activated and tissue resident state (CD69 75–90%). All subsets expressed the liver tissue homing chemokine receptor, CXCR3. Expression frequency is highest on diseased ILC1 (AILD 50%, ALD/NASH 56%,) compared to ILC2 (AILD 24%; ALD/NASH 15%) and ILC3 (AILD 38%, ALD/NASH 28%). Biliary tropic receptor CCR6 was expressed more highly by ILC subsets in diseased compared to normal livers. The fibronectin receptor, VLA5 and laminin receptor VLA6 were both highly expressed on all intrahepatic ILC subsets (60–90% and 55–80% respectively). In terms of the cytokine receptors expressed, on all ILC subsets, IL-6R was near undetectable (2%) and low expressions of ST2 (3–6%), IL-25R (2–5%) and IL-23R (2–7%) were detected. In contrast there was almost ubiquitous expression of IL18Ralpha. CD25 was also very highly expressed. Of note, CD25 was significantly higher in ILC1 and ILC3 subsets from normal compared to AILD ($p < 0.01$) livers (40% vs. 80%; 66% vs. 93%) while intrahepatic ILC2 and ILC3 subsets in diseased states highly expressed CD25 (>90%). Of likely functional importance, intrahepatic ILC1 expressed IFN-γ (40%) while ILC2 expressed IL-13 (20–50%) in diseased states.

**Conclusion** We report for the first time the presence of all three ILC subsets within the human liver immune cell infiltrates. $CXCR3^+$ IFN-γ expressing ILC1 subset is enriched in both normal and inflamed diseased livers. Higher frequencies of $CCR6^+$ $VLA5^+$ $VLA6^+$ IL-13 expressing ILC2 are observed in diseased livers suggesting that this subset may play a role in biliary pathology and peri-biliary fibrosis.

**Disclosure of Interest** None Declared

## OC-030 DEFINING THE UNMET NEED IN PRIMARY SCLEROSING CHOLANGITIS: THE INTERNATIONAL PSC GROUP RISK STRATIFICATION STUDY

[1]PJ Trivedi*, [2]TJ Weismuller, [3]A Bergquist, [1]GM Hirschfield, [4]BE Hansen, [5]KM Boberg, on behalf of the International Primary Sclerosing Cholangitis Study Group (IPSCSG). *[1]National Institute of Health Research (Birmingham) Liver Biomedical Research Unit (BRU), Institute of Immunology and Immunotherapy, University of Birmingham, Birmingham, UK; [2]Department of Internal Medicine I, University of Bonn, Bonn, Germany; [3]Centre for Digestive Diseases, Division of Hepatology, Stockholm, Sweden; [4]Department of Gastroenterology and Hepatology, Erasmus University Medical Centre, Rotterdam, Netherlands; [5]Institute of Clinical Medicine, University of Oslo, Oslo, Norway*

10.1136/gutjnl-2016-312388.30

**Introduction** Primary sclerosing cholangitis (PSC) is a relatively uncommon hepatobiliary disorder associated with inflammatory bowel disease (IBD), wherein therapy other than transplantation remains ineffective. To understand disease course, within a goal of appropriately stratified care, the International PSC Study Group describes the natural history and clinical phenotypes across the largest cohort ever assembled.

**Methods** We collected individual-patient data from 1980 to 2010 (37 centres, 17 countries) and conducted risk-assessment for commonly recognised phenotypic associations.

**Results** Of 7,119 patients, 2,622 progressed to liver transplantation/death (LTD) (median 14·2 years) and 722 developed hepatobiliary malignancy (incidence rates: 47·5 and 13·7 per-1,000-patient-years, respectively). Cholangiocarcinoma was the most frequent malignancy (n = 596), with 38·1% of cases identified within 1 year of PSC diagnosis. Observing the patient cohort in entirety, the majority were men (65·5%), had classical/large-duct disease (89·5%), and developed IBD at some point (70·0%).

IBD consistent with Crohn's disease (vs. ulcerative colitis) or an absence of IBD over time conferred a lower risk of LTD (time-dependent, unadjusted hazard ratio (HR): 0·61, $p < 0.001$; and HR:0·90, $p = 0·03$; respectively) and malignancy (unadj. HR:0·68, $p = 0·007$ and HR:0·77, $p = 0·003$; respectively), as did small-duct PSC (sdPSC) (unadj. HR:0·50, $p < 0·001$ and HR:0·40, $p < 0·001$; for LTD and malignancy, respectively) and female sex (unadj. HR:0·89, $p = 0·018$ and HR:0·70, $p < 0·001$; for LTD and malignancy, respectively).

On multivariable analyses assessing LTD, the impact of sdPSC over classical PSC persisted, with greater protection apparent for men (adjusted HR:0·31, $p < 0·001$) than women (adj. HR:0·56, $p = 0·009$). However, women with classical PSC expressed a lower independent risk of disease progression than men of matched PSC subtype (adj. HR:0·9, $p = 0.022$). IBD-phenotype retained independent stratification properties of LTD, with Crohn's disease and IBD-absence characterising lower-risk subgroups (time-dependent adj. HR:0·69 and HR:0·89, $p < 0·001$ and $p = 0.012$; respectively). sdPSC (adj. HR:0·45, p = 0·02), Crohn's disease (time-dependent adj. HR:0·72, p = 0·045), and IBD-absence (time-dependent adj. HR:0·72, p = 0·02) were also independently predictive of a lower HPB malignancy risk.

**Conclusion** Using a robust, internationally representative cohort of unique size we demonstrate how distinct, clinically meaningful phenotypes stratify outcomes in PSC. We highlight the great-unmet need for patients, and provide risk markers clinically relevant to patient care and future trial design.

**Disclosure of Interest** None Declared

## OC-031 A GENOME-WIDE ASSOCIATION STUDY IDENTIFIES PNPLA3 AND SLC38A4 AS RISK LOCI FOR ALCOHOLIC HEPATITIS

[1]S Atkinson*, [2]M Way, [2]A McQuillin, [3]MY Morgan, [1]M Thursz, on behalf of Stopah Investigators. [1]*Hepatology, Imperial College London*; [2]*Molecular Psychiatry, Division of Psychiatry*; [3]*UCL Instititute for Liver & Digestive Health, Division of Medicine, University College London, London, UK*

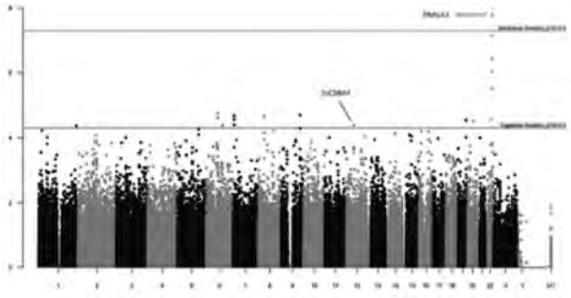
10.1136/gutjnl-2016-312388.31

**Introduction** The clinical spectrum of alcohol-related liver disease varies widely but the majority of patients with evolving disease are asymptomatic. However, a small minority of patients develop severe alcoholic hepatitis (SAH), a clinical syndrome manifest as profound hepatocellular failure, often superimposed on cirrhosis. As only a relative minority of patients develop SAH genetic determination of susceptibility has been proposed. A genome-wide association study (GWAS) approach was used to identify potential risk loci for SAH.

**Methods** Cases with SAH, of self-reported white British ancestry, were recruited prospectively through the Steroids or Pentoxifylline for Alcoholic Hepatitis trial (n = 860). Ancestry-matched controls with alcohol dependence but without alcohol-related liver injury were recruited from the Centre for Hepatology, Royal Free Hospital, London (n = 1191).

A two-stage GWAS was performed. DNA samples from an exploratory cohort (332 cases, 318 controls) were genotyped on Illumina CoreExome BeadChips (Illumina, San Diego, USA) at the Wellcome Trust Sanger Institute, Cambridge, UK. The most significantly associated SNPs were genotyped in DNA samples from an independent replication cohort (528 cases, 873 controls) using KASPar chemistry (LGC Genomics, Hoddesdon, UK). Data were analysed in PLINK1.9.

**Results** The variant rs738409 in patatin-like phospholipase domain-containing protein 3 (*PNPLA3)* was associated at genome-wide significance level ($P_{THRESHOLD} < 5x10^{-8}$; $P_{EXPLORATORY} = 1.619x10^{-8}$, OR 2.21 [95% CI 1.68–2.91]). Ten additional, independent loci demonstrated suggestive association ($P_{THRESHOLD} < 1.1x10^{-5}$). Replication genotyping for the lead markers at each locus demonstrated disease association for rs738409 in *PNPLA3* ($P_{REPLICATION} = 3.47x10^{-8}$; $P_{META} = 8.62x10^{-15}$; OR 1.87) and Solute Carrier Family 38, Member 4 (*SLC38A4)* ($P_{REPLICATION} = 0.029$; $P_{META} = 4.13x10^{-5}$; OR 1.32).



**Abstract OC031 Figure 1**

**Conclusion** This first analysis of data from a GWAS of severe alcoholic hepatitis confirms significant risk association with *PNPLA3,* consistent with the phenotypic overlap with alcohol-related cirrhosis. It also identified *SLC38A4* as a potential, novel risk locus for development of alcoholic hepatitis *per se*; this gene is predominantly expressed in the liver and is involved in amino acid transport.

**Disclosure of Interest** None Declared

## OC-032 TYPE 2 DIABETES AND OBESITY WILL DRIVE THE BURDEN OF LIVER CIRRHOSIS IN THE NEXT TWO DECADES

[1]R Harris*, [2]T Delahooke, [1]TR Card, [1]IN Guha, [1]GP Aithal. [1]*Gastroenterology, NIHR Nottingham Digestive Diseases Biomedical Research Unit Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham*; [2]*Gastroenterology, Leicester Royal Infirmary, University Hospitals of Leicester NHS Trust, Leicester, UK*

10.1136/gutjnl-2016-312388.32

**Introduction** Over the past 30 years excessive alcohol consumption has been identified as the predominant risk factor underlying the striking rise in standardised mortality rates from liver disease in the UK. However, with the increasing incidence of type 2 diabetes and obesity within the general population, the risk factor profile associated with cirrhosis may change.

**Aim** To estimate the prevalence of clinically significant chronic liver disease amongst adults in a primary care population and identify the impact of different risk factors.

**Methods** Asymptomatic adult patients from a primary care practice covering a population of 4600 in inner city Leicester were screened for risk factors including (1) a diagnosis of type 2 diabetes (2) a raised body mass index (BMI) of $\geq 27.3$ kg/m$^2$ and (3) hazardous alcohol use. All of those with one or more of risk factors were invited to undergo a liver stiffness measurement using transient elastography (TE). A TE threshold of $\geq 8$ kPa was used to make a diagnosis of clinically significant liver disease.[1]

**Results** Of the 1320 patients identified with risk factors, 705 underwent TE and 82 had an increased liver stiffness measurement of $\geq 8$ kPa (Table 1). Of those patients with hazardous alcohol use as the only risk factor, 3.5 [95% CI 0.73–9.8]% had raised liver stiffness when compared to 7.9 [95% CI 2.9–16.4]% of patients with type 2 diabetes or 8.6% [95% CI 6–11.9]% with a raised BMI. Overall 16/82 (19.5%) patients had hazardous alcohol use (with or without type 2 diabetes and a raised BMI) as a risk factor for an elevated liver stiffness measurment compared to 66/82 (80.5%) with type 2 diabetes and/or a raised BMI (without hazardous alcohol use).

**Abstract OC-032 Table 1**

| Risk factor | Total number of patients undergoing TE | Number of patients with clinically significant liver disease (%) |
|---|---|---|
| BMI ≥ 27.3 | 394 | 34 (8.6) |
| Type 2 diabetes | 76 | 6 (7.9) |
| Hazardous alcohol use | 86 | 3 (3.5) |
| Type 2 Diabetes + BMI ≥ 27.3 | 77 | 26 (22.8) |
| Type 2 Diabetes + Hazardous alcohol use | 9 | 1 (11.1) |
| Hazardous alcohol use + BMI ≥ 27.3 | 54 | 8 (14.8) |
| All 3 risk factors | 9 | 4 (44.4) |
| Total | 705 | 82 (11.6) |

**Conclusion** In the primary care population that was screened for major risk factors of chronic liver disease, a raised BMI and type 2 diabetes accounted for over 80% of those with clinically significant chronic liver disease. Population based interventions are urgently required to address obesity and type 2 diabetes which are likely to contribute to the burden of cirrhosis in the next decade.

**REFERENCE**

1 Roulot D, *et al*. Transient elastography as a screening tool for liver fibrosis and cirrhosis in a community-based population aged over 45 years. *Gut* 2011;**60** (7):977–84.

**Disclosure of Interest** None Declared

## OC-033 NINE-GENE SIGNATURE IMPLICATED IN THE EARLY DEVELOPMENT OF HEPATITIS C VIRUS (HCV) RELATED HEPATOCELLULAR CARCINOMA (HCC)

[1,2,3]W Fateen*, [2]H Wood, [2,4]S Berri, [2,5]H Thygesen, [6]J Wyatt, [3]M El- Meteini, [7,8]C Millson, [2]P Quirke. *[1]NIHR NDDC Biomedical Research Unit, University of Nottingham, Nottingham; [2]Leeds Institute of Cancer and Pathology, University of Leeds, Leeds, UK; [3]Ain Shams Centre for Organ Transplant, Ain Shams University, Cairo, Egypt; [4]Illumina, Cambridge, UK; [5]Netherlands Cancer Institute, Amsterdam, Netherlands; [6]Histopathology department, Leeds Teaching Hospitals NHS Trust, Leeds; [7]Hepatology Department, York Teaching Hospitals NHS Foundation Trust, York; [8]Hepatology Department, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.33

**Introduction** HCV remains the commonest cause of HCC related deaths in the west. Dysplastic nodules (DN) harbour highly relevant genomic information based on its strong potential to progress to HCC. Copy number alterations (CNA) have not been previously studied in a large cohort of HCV related DN. In this study we used next generation sequencing (NGS) to identify potential drivers of oncogenesis in a cohort of HCV related DNs and HCCs.

**Methods** We performed low coverage next generation DNA sequencing of 116 HCCs and 49 DNs from 63 HCV infected patients to investigate their CNA profiles. Patients with a mixed aetiology of liver disease were excluded. Significant copy number gain and loss peaks were identified using GISTIC 2.0.

To identify driver from passenger alterations, we stratified the peaks according to their amplitude and frequency within included samples. We also identified peaks that were inclusive of genes causally implicated in cancer, highly associated with cancer or involved in major cell signalling pathways.

We further analysed the HCC-related peaks and correlated each of them to patient and tumour clinical features. This correlation was corrected for false discovery rate (FDR) using the Benjamini-Hochberg procedure.

**Results** We identified 86 and 79 significant CNA peaks in HCC and DN respectively. The peaks were further stratified as described above which lead to recognition of a 9 gene signature highly implicated in early HCV related HCC. This included losses of ROCK1, CARS, SBDS, DUX4 and gains of NCOA2, MYC, TPO, YWHAZ and MCM4.

Our data confirmed the alteration of 51 other genes in HCC but not DN. This included gains of CCND1, NFKB1/2, MUC1, FGF2/4/19 and CKS1B and losses of CDKN2A/B, KRAS, PTEN, RB1, NOTCH1, CCNA2, BMPR1B which have previously been implicated in hepatocarcinogenesis.

Out of 86 HCC-related peaks, 16/86 had significant associations with clinical features after correction for FDR. Six of the above 16 peaks overlapped with 6 out of the 9 gene signature we previously identified. Genomic features strongly correlated with tumour differentiation, number of tumours per liver and overall survival. No association was found between HCV genotype or PCR quantity.

**Conclusion** Analysis of DNA copy number profiles of a large number of HCV related DN and HCC using NGS revealed a signature of 9 genes likely to be implicated as drivers in the early development of this cancer. Our study generates a valid hypothesis and further studies are needed to confirm causality.

**Disclosure of Interest** W. Fateen: None Declared, H. Wood: None Declared, S. Berri Employee of: Illumina, H. Thygesen: None Declared, J. Wyatt: None Declared, M. El- Meteini: None Declared, C. Millson: None Declared, P. Quirke: None Declared

## OC-034 IDENTIFYING PATIENTS WITH ELEVATED CIRCULATING BACTERIAL DNA MAY REDUCE INFECTION AND DEATH IN ALCOHOLIC HEPATITIS

[1]N Vergis*, [1]SR Atkinson, [1]JB Maurice, [2]E Forrest, [1]MR Thursz, on behalf of STOPAH trial group. *[1]Hepatology, St Mary's Hospital, Imperial College, London; [2]Hepatology, University of Glasgow, Glasgow, UK*

10.1136/gutjnl-2016-312388.34

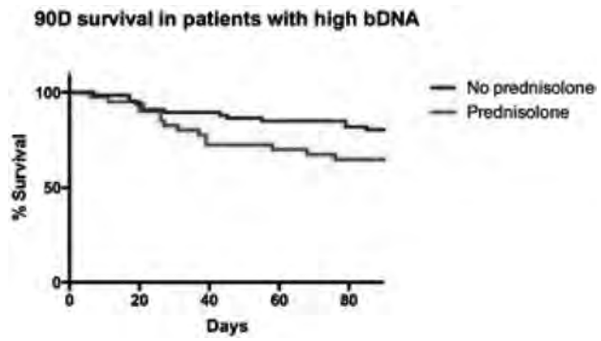
**Introduction** Prednisolone has been shown to improve 28 day survival in alcoholic hepatitis (AH). However, use of this therapy is associated with increased infection that could explain the loss of survival benefit by 90 days. A large body of data has also emerged implicating bacterial translocation in the pathogenesis of AH. We therefore sought to elucidate the impact of prednisolone in patients with elevated pre-treatment circulating bacterial DNA (bDNA).

**Methods** DNA was extracted from the whole blood of patients recruited to the STOPAH study before therapy. In these patients, clinicians confirmed that any prior infection, if present, was controlled. bDNA levels were quantified by quantitative PCR using a Taqman probe that targeted a region within a 380 bp fragment of bacterial 16 S ribosomal DNA. As part of the STOPAH study, patients would then receive therapy with or without prednisolone by random allocation. After unmasking, levels of bacterial DNA were then compared to clinical outcomes such as the development of infection within 7 days, static and dynamic markers of liver function and mortality at 28 and 90 days.

**Results** bDNA was quantified in 714 whole blood samples. There was no correlation between bDNA levels and baseline characteristics such as age and gender, nor with static markers of liver function such as MELD. Elevated bDNA levels were associated with development of infection within the first 7 days in patients treated with prednisolone ($p = 0.001$), and remained independently associated with the subsequent development of infection after multivariate analysis ($p = 0.02$). Importantly, bDNA levels were not associated with the development of infection in patients treated without prednisolone ($p = 0.43$).

Elevated bDNA levels were associated with death at 90 days ($p = 0.05$). Mortality in prednisolone treated patients was increased for patients with high bDNA compared to patients with low bDNA (hazard ratio 2; $p = 0.02$). Accordingly, patients with elevated bDNA were more likely to die if they were randomly allocated prednisolone therapy (OR 2.9, 95% CI 1.2–6.9, $p = 0.02$). We estimate that if patients with

elevated bDNA were instead treated without prednisolone, 90 day mortality in AH could be reduced (odds ratio 0.5, $p = 0.03$ [one-tailed]).




**Abstract OC-034 Figure 1**

**Conclusion** Infection is more likely to develop within 7 days if patients with elevated bDNA are treated with prednisolone. Measuring pre-treatment bDNA could therefore inform decisions to initiate corticosteroid therapy and has the potential to increase survival at 90 days in AH.
**Disclosure of Interest** None Declared

## OC-035 THE UK MULTICENTRE AUDIT OF MANAGEMENT AND OUTCOME OF AUTOIMMUNE HEPATITIS (AIH). OVERALL OUTCOME AND ITS ASSOCIATIONS

VM Gordon* on behalf of UK Autoimmune Hepatitis Audit Group. *Hepatology, UHCW NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.35

**Introduction** There are limited data on outcome of AIH outside large centres. We have conducted an outcome audit of AIH in 28 UK centres of varying size. We report overall outcome results in this cohort.
**Methods** We attempted to collect all prevalent cases since 2000 and all incident cases since 2007 by searching electronic patient letters, histology databases and hospital coding. Validation was by 1999 IAIHG diagnostic criteria. Information, on diagnosis, initial severity, treatment and outcome was entered into a web-based data collection system.
**Results** There were 1267 patients (80% female, age at diagnosis (median (range) 55 years (8–86)). IAIHG criteria were not met in 79 (6%) but they were still treated as AIH. At diagnosis, cirrhosis (biopsy, varices, ascites or Fibroscan) was present in 317 (25%) patients and decompensation (ascites, oedema, encephalopathy, variceal bleed or MELD score >15) at diagnosis was present in 282 (22%). Follow-up (time from diagnosis to last seen) was 4 (0–14) years. AIH relapse occurred in 371 patients (141 had $\geq$2 and 57 $\geq$ 3 relapses). De-novo cirrhosis developed in 78 (6%) patients, decompensation in 42, and hepatocellular cancer in 7. Fifteen patients died of liver disease, 28 had a liver transplant and 31 died of liver-unrelated causes.

Five- and 10 year death/transplant rates were, respectively 6.4±0.1% and 10.0±0.1% (all-cause) and 3.6±0.1% and 5.8 ±0.1% (liver related). Factors associated with death/transplant rate by Cox regression analysis were (a) cirrhosis, and decompensation at diagnosis ($p < 0.001$ both all-cause and liver related) (b) age and cardiovascular/respiratory comorbidity (all-cause only, $p = 0.004$ and 0.014) (c) failure to normalise serum transaminases ($p < 0.001$); however because of "early" deaths/transplants, direction of cause and effect is unclear. In contrast, death/transplant rate showed no association with failure to achieve ALT normalisation at specific time points (over 1–12 months). Nor was it associated with gender, peak initial serum ALT, number of relapses or concurrent presence of PBC "overlap", diabetes or cancer.

Both all-cause (p-0.05) and liver-related ($p = 0.021$) death/transplant were lower in patients attending District General Hospitals (DGHs), compared to University Hospitals; these differences persisted in multivariate analysis ($p = 0.017$ and 0.036), adjusting for the above baseline predictive factors.
**Conclusion** In this multicentre UK AIH Audit, disease outcome is similar to that in patients reported from large single centres. Main determinants are disease severity, age and comorbidity at presentation. Normalisation of serum ALT at specific time points may not be an accurate longer term outcome marker and better ones are needed. Outcome of AIH in UK patients attending DGHs seems at least as good as those attending University hospitals.
**Disclosure of Interest** None Declared

## OC-036 INTERNATIONAL ASSESSMENT OF OUTCOME OF UPPER GI HAEMORRHAGE AT WEEKENDS

[1]IA Murray*, [1]HR Dalton, [2]A Stanley, [3]JH Ngu, [2]B Maybin, [2]M Eid, [4]KG Madsen, [4]R Abazi, [1]H Ashraf, [1]M Abdelrahim, [1]R Lissmann, [1]J Herrod, [3]CJL Khor, [3]HS Ong, [3]DSC Koay, [3]YK Chin, [4]SB Laursen. *[1]Gastroenterology, Royal Cornwall Hospital, Truro; [2]Gastroenterology, Glasgow Royal Infirmary, Glasgow, UK; [3]Gastroenterology & Hepatology, Singapore General Hospital, Singapore, Singapore; [4]Gastroenterology, Odense Universitets Hospital, Odense, Denmark*

10.1136/gutjnl-2016-312388.36

**Introduction** Weekend admissions have been associated with higher mortality. For upper gastrointestinal haemorrhage (UGIH) some studies show significantly increased mortality and less early endoscopy while the UK UGIH audit reported no difference. We studied whether out of hours (OOH) admissions were sicker and/or had higher mortality.
**Methods** Prospective study over 12 months (from March 2014) from 2 UK and 2 international centres. Admission time, demographics, pulse, BP, lab results, endoscopy findings, further procedures and 30 d mortality were recorded. 3 pre-endoscopy scores (Glasgow Blatchford (GBS), AIMS65 and admission Rockall scores) and 2 post-endoscopy scores (PNED and full Rockall scores) were determined. Chi-squared, Fisher's exact and Kruskal-Wallis tests were used as appropriate. A two-tailed significance level of 5% was used.
**Results** 2118 pconsecutive atients, 60% male, median age 66 years were seen. There were no significant differences in mortality, need for endoscopic therapy, surgery/embolisation or rebleeding in both UK and non-UK centres. There were no differences in comorbidity, mean ASA 2.3, pulse or BP although weekday admissions had a lower Hb (110 g/l vs 118 g/l (weeknight) vs 117 g/l (weekend) $p < 0.001$ and higher GBS ($p < 0.05$). No difference in peptic ulcer disease or varices incidence between periods although more weekday admissions had normal endoscopy ($p = 0.002$). OOH admissions were less likely to have an endoscopy (30% not endoscoped vs 23% for weekday admission $p < 0.005$). Time to

endoscopy was less for weeknight admissions (13 h vs 17 h for weekend and 20 h for weekday admissions p = 0.0001). 67% weekday, 75% weeknight and 60% weekend admissions had their endoscopy within 24 hours.

**Abstract OC-036 Table 1** Outcome of patients with UGIH and time of presentation

| | Weekdays: working time | Weekdays: overnight | Weekends | Total |
|---|---|---|---|---|
| Number | 858 | 603 | 642 | 2118 |
| Treatment | | | | |
| • Number units transfused | 1.4 [0–6] | 1.3 [0–6] | 1.4 [0–6] | 1.4 [0–6] |
| • Endoscopic treatment | 185 (22) | 116 (19) | 126 (20) | 430 (20) |
| • Surgery/ embolization | 4 (0.5) | 6 (1.0) | 6 (0.9) | 16 (0.8) |
| Outcome | | | | |
| • Rebleeding | 49 (5.8) | 33 (5.7) | 43 (6.9) | 126 (6.1) |
| • 30 d mortality | 61 (7.1) | 43 (7.1) | 48 (7.5) | 153 (7.2) |

2118 consecutive patients admitted March 2014-March 2015 from Glasgow (600), Truro (544), Odense (541) and Singapore (433). Data shown are mean [95% CI] or number (%).

**Conclusion** There is no difference in mortality in patients admitted with UGIH OOH compared to weekday admissions. The severity of UGIH was not related to time of admission. Similar findings were noted in the 2 UK centres and internationally.

**Disclosure of Interest** None Declared

## OC-037 A PERIANAL SWAB-BASED PCR ASSAY FOR DIAGNOSING COLONISATION BY PATHOGENIC C. DIFFICILE

NM Joshi*, E Taylor, RM, A Whiley, M Wilks, D Rampton. *Centre for Immunobiology, Blizard Instuite, Barts and The London School of Medicine and Dentistry, London, UK*

10.1136/gutjnl-2016-312388.37

**Introduction** C.difficile is a Gram-positive anaerobe that can cause life-threatening diarrhoea. There is no current method with which to identify pathogenic C.difficile colonisation (PCDC) quickly. In order to be pathogenic, C.difficile must have the ability to make toxin B. We have designed and validated an rtPCR assay targeting the toxin B with which to diagnose PCDC quickly using a perianal swab.

**Methods** Perianal swabs were taken prospectively from 99 patients with proven stool culture-positive C.difficile infection (CDI) within 24 hours of diagnosis. DNA from swab tips was extracted using the automated QIAsymphony platform. Half of the DNA extracts from patients with CDI along with control C.difficile DNA were used to optimise an rtPCR assay using primers targeting the C.difficile toxin B gene. PCRs were run as 10μL reactions on 96 well plates in duplicate and the volume of extract per reaction was varied (1–3μL). PCR positive was defined as: amplification curve crossing the threshold at <40 cycles, <0.5 CT difference between duplicates, melting points to be ± 1.25 OC of that of C.difficile DNA and no amplification in negative controls. PCR positivity was compared to culture result as the gold standard. Once optimised, the assay was validated using the remaining 48 DNA extracts from CDI patients and extracts from swabs taken from 11 control patients with C.difficile-negative diarrhoea.

**Results** In optimisation, assay sensitivity increased as more DNA extract was added (40%, 62% and 78% for 1μL, 2μL and 3μL respectively, p = 0.0042). The 3μL assay showed 92% efficiency and linearity of 0.997 was selected for the validation study. For validation using perianal swabs from 48 patients with proven CDI and 11 C.difficile stool culture-negative patients, assay sensitivity was 69%, specificity 93%, positive predictive value (PPV) 97% and negative predictive value (NPV) 48%.

**Conclusion** We designed an rtPCR assay to identify C.difficile toxin B in DNA extracted from perianal swabs taken from patients with diarrhoea. Although the sensitivity in the validation experiments was low (69%), the high specificity and PPV mean that the assay may have clinical applicability. As almost all patients testing positive with the PCR swab test will be colonised with pathogenic C.difficile, they could be isolated on hospital admission to reduce the chance of nosocomial spread. Patients testing positive could also be prospectively followed to see if colonisation with pathogenic C.difficile on admission is a risk factor for subsequent C.difficile-induced diarrhoea (CDI), poorer outcome if diagnosed with CDI, or relapsing disease.

**Disclosure of Interest** None Declared

## OC-038 MAKING THE CHANGE: SWITCHING TO INFLIXIMAB BIOSIMILARS FOR IBD AT NORTH BRISTOL NHS TRUST

[1]L Chung*, [2]B Arnold, [1]R Johnson, [2]MJ Lockett. *[1]Pharmacy; [2]Gastroenterology, North Bristol NHS Trust, Bristol, UK*

10.1136/gutjnl-2016-312388.38

**Introduction** Infliximab biosimilars have been available since February 2015, however at the time there was limited guidance on how to introduce the products. The PLANETRA and PLANETAS studies demonstrate that biosimilars are equivalent in clinical efficacy when compared to Remicade®.

From the 1st July 2015, the gastroenterology department at NBT introduced biosimilar infliximab making cost savings of £200,000. A 50:50 gain share agreement was negotiated with the local Clinical Commissioning Groups and these savings will be re-invested into Gastroenterology services.

Here we describe how a multidisciplinary approach led to a safe transition to biosimilar infliximab.

**Methods** An additional pharmacist was funded to implement the switch using projected savings from the gain share.

Patients who were established on Remicade® were sent a letter with details of the proposed switch and given the opportunity to raise any concerns in a consultation with the specialist pharmacists in Gastroenterology. Verbal consent was obtained prior to switching to Inflectra®.

Practical guidance for the prescribing and dispensing of biosimilar infliximab was circulated to clinicians and pharmacy staff.

Educational sessions were provided to the Medical Day Case Unit nurses. Adverse events were reported via the Yellow card® Scheme and the Biologics Therapy Audit.

From December 2015, patients were asked to complete a survey to explore their experiences leading up to and during the switch. We decided not to study clinical outcomes as the sample size is misrepresentative and the follow-up period too short to draw meaningful conclusions.

**Results** In total, 64/65 patients consented to the switch. Following the switch, 7 patients discontinued treatment (2 post-surgery; 5 switched to alternative biologic).

We received a 46% response rate to the survey. Patient feedback was largely positive. 83% of patients received the written correspondence; 93% reported that they understood the information leaflet in part (23%) or in full (70%). 96% had the opportunity to speak to pharmacist before their first infusion. Overall, 97% of patients were satisfied with the changeover process.

**Conclusion** We have demonstrated how a multidisciplinary approach allowed the successful switch to a biosimilar within 3 months and the potential benefits to be had. The additional pharmacist post, funded by the projected gain share, will be made a substantive this year allowing for closer monitoring and optimisation of biologic treatment. This will lead to further cost savings through discontinuation of these drugs where appropriate.

Since the completion of this project, the BSG has revised their statement to acknowledge that there is sufficient evidence to recommend use of biosimilar infliximab in IBD.

**Disclosure of Interest** L. Chung: None Declared, B. Arnold: None Declared, R. Johnson: None Declared, M. Lockett Conflict with: sponsored by MSD to attend conference in 2016

## OC-039 IMPROVING THE QUALITY OF CARE AND REDUCING COSTS OF IBD PATIENTS ON BIOLOGIC THERAPY THROUGH A MULTI-DISCIPLINARY BIOLOGICS CLINIC

[1]E Eliadou*, [2]V Reid, [1]M Kirkbride, [1]J Brooks, [1]F Birchall, [1]K Kemp, [1]S Levison. [1]*Gastroenterology*; [2]*Pharmacy, Manchester Royal Infirmary hospital, Manchester, UK*

10.1136/gutjnl-2016-312388.39

**Introduction** NICE IBD quality standard (QS81) and the IBD Standards aim to deliver high quality and safe clinical care to IBD patients throughout the UK that is patient-centred and evidence based. These aims are supported by the national biologic therapy audit. To improve and standardise the care of our IBD patients on biologic therapy we began a weekly multi-disciplinary (physicians, IBD nurses, and pharmacist) virtual biologics clinic (VBC). Here, the response to therapy is monitored (clinical scoring, well-being, laboratory results), the scheduling of investigations are coordinated, and the review and writing of prescriptions undertaken.

**Methods** We prospectively collected data from our VBC for 8 consecutive weeks. Changes to therapy on clinical grounds were noted, and the financial implications of these changes calculated. Calculations for IFX savings were based on an average dose of 300 mg per patient plus infusion costs. The ordering of required investigations and the occurrence of adverse clinical events were recorded.

**Results** In 8 weeks, 360 patient reviews were performed relating to 327 patients (IFX = 207, ADA = 79, VEDO = 41). Therapy was adjusted in 41/327 patients (12.5%). 5 stopped biologic therapy, 19 switched drug, 10 reduced and 7 increased therapy frequency. Net saving in prescribing was £10,928 at 8 weeks (>£65 K/annum). The coordinated prescribing of medication and pharmacy sign off improved the delivery of therapy and patient satisfaction. 23 colonoscopies, 9 MR scans, and 45 outpatient appointments to assess response to therapy at 3 or 12 months, were scheduled from the VBC. 5 complications were highlighted (recurrent infection; 2 required surgery; cancer; severe IBD flare requiring hospitalisation). In total 118/357 (36%) patients had their care altered by VBC intervention (41 adjusted therapies, 77 scheduled monitoring and further clinical input.

**Conclusion** The VBC provides a safe platform to initiate and monitor biologic therapies and to audit practices. The introduction of a multi-disciplinary VBC has altered the management of 118/327 patients (36%) based on clinical findings, results, and NICE guidance. Significant financial savings (£65 K per annum), the streamlining of prescribing, and superior patient monitoring have helped to improve the quality and safety of care provided. The transition to biosimilar anti-TNF therapies can also be facilitated using a VBC forum.

**Disclosure of Interest** None Declared

## OC-040 NATIONAL SURVEY OF PRACTICE OF FAECAL MICROBIOTA TRANSPLANTATION FOR CLOSTRIDIUM DIFFICILE INFECTION IN THE UNITED KINGDOM

[1]MN Quraishi*, [2]J Segal, [3]B Mullish, [4]V McCune, [4]P Hawkey, [5]A Colville, [3]H Williams, [2]A Hart, [1]TH Iqbal. [1]*University Hospital Birmingham, Birmingham*; [2]*St Marks Hospital London*; [3]*Imperial College London, London*; [4]*Public Health England, Birmingham*; [5]*Royal Devon and Exeter NHS Foundation Trust, Exeter, UK*

10.1136/gutjnl-2016-312388.40

**Introduction** The National Institute of Health and Care Excellence recommend the use of faecal microbiota transplantation (FMT) for recurrent or refractory *Clostridium difficile* infection (CDI), as studies have shown it to be a highly effective therapy with a primary cure rate of over 90%.[1] We aimed to conduct a National survey to explore current practice of FMT and the challenges faced by hospitals in setting up this novel treatment strategy.

**Methods** UK gastroenterologists, microbiologists and infectious disease physicians were invited to take part in a National survey by completing an online questionnaire over a five month period from October 2015.

**Results** A total of 255 responses were obtained, of which 219 were evaluable. These came from 124 microbiologists/infectious disease clinicians and 95 gastroenterologists. The survey covered 130 independent sites: 112 acute NHS Trusts in England, 9 hospitals in Scotland and 9 hospitals in Wales. Only 28% (36/130) had performed FMT for refractory or recurrent CDI, of which 58% (21/36) of sites had experience of performing FMT for over 1 year, but only 19% (7/36) had treated at least 10 patients. 67% (24/36) made FMT on site while 33% (12/36) obtained FMT from elsewhere to administer at their hospital. Apart from one site that used FMT for refractory ulcerative colitis there were no other indications for its use. Of the 94 independent sites that did not perform FMT for refractory or recurrent CDI, 45% (42/94) believed that they were unable to do it due to lack of facilities, 38% (36/94) did not know where to start, however only 5% (5/94) felt reluctant to do it because of its perceived unpleasantness. Of those sites not performing the procedure, 70% (66/94)

suggested that they would be keen to have support in setting up an FMT service for CDI locally. Only 29% (27/94) of the sites that did not perform FMT had referred their patients elsewhere; primarily to Glasgow, Birmingham and Exeter.

**Conclusion** In the largest National survey done to date exploring the practice of FMT in UK, we have shown that only a quarter of responding sites performed FMT for recurrent or refractory CDI. There are significant challenges faced by hospitals in setting up this service. However, most welcomed support due to unfamiliarity with the perceived logistical hurdles. A central quality controlled and regulated FMT preparation, delivery and support service for the UK may be an efficient model to ensure continued and safe access to this novel treatment strategy for patients in the NHS.

## REFERENCE

1 https://www.nice.org.uk/guidance/ipg485

**Disclosure of Interest** None Declared

## OC-041 A NOVEL, INTEGRATED CARE PATHWAY FOR IRRITABLE BOWEL SYNDROME (IBS) USING FAECAL CALPROTECTIN (FC) TO FACILITATE DIRECT ACCESS TO A SPECIALIST DIETETIC-LED REFRACTORY IBS SERVICE

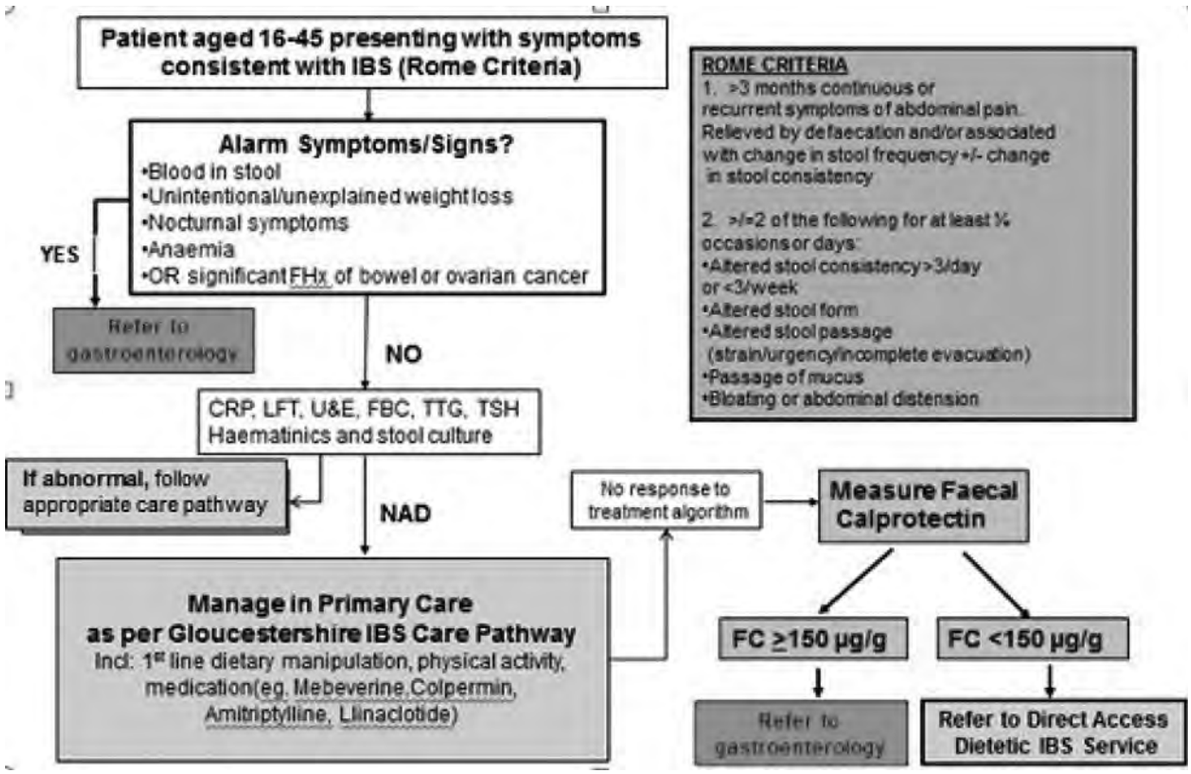
[1]C Oldale*, [2]A Di Mambro, [2]L Materacki, [3]S Waterman. *[1]Nutrition and Dietetics; [2]Gastroenterology; [3]Clinical Biochemistry, Gloucestershire Hospitals NHS Foundation Trust, Cheltenham, UK*

10.1136/gutjnl-2016-312388.41

**Introduction** IBS is a common, chronic condition, incurring significant financial and time costs in both primary care and gastroenterology services. Symptoms may persist despite initial dietary, lifestyle and pharmacological interventions prompting referral for specialist gastroenterology input and investigation. Use of FC can exclude differential diagnoses such as inflammatory bowel disease without luminal investigation. Up to 75% of patients with IBS report symptomatic benefits with strict adherence to a low FODMAP diet,[1] but this requires expert dietetic support. A pathway was indicated to facilitate direct access from primary care to specialist dietetic services for patients who do not require gastroenterologist review.

**Methods** Patients aged 16–45 with IBS symptoms according to Rome Criteria are eligible for this care pathway (Figure 1). In patients with persisting symptoms despite interventions as per NICE-guidance,[2] FC informs further management. Patients with FC < 150 µg/g faeces can be referred to the dietetic-led refractory IBS service. This includes comprehensive symptom assessment, supported implementation of dietary exclusions with a low FODMAP diet followed by dietary re-challenge to identify triggers and optimise long-term IBS management. Patients with no symptomatic improvement following dietary manipulation are directly referred for gastroenterology review. Patients with an intermediate FC (51–149 µg/g faeces) undergo repeat FC after 3 months. Escalation of FC level prompts further investigation and consultant review. A consultant and specialist dietitian led education program was provided to regional GPs on practical implementation of the pathway.

**Results** The pathway and IBS service will be audited prospectively based on clinical outcomes, FC use in primary care and impact on referral to gastroenterology and endoscopy services.




**Abstract OC-041 Figure 1**

**Conclusion** A comprehensive IBS care pathway and direct access service is now in place in Gloucestershire. Improvements to quality of care for IBS patients through provision of timely, appropriate and successful treatment options and prevention of unnecessary referral to gastroenterology and endoscopy services will be monitored.

## REFERENCES


1 Halmos, *et al*. A diet low in FODMAPs reduces symptoms of irritable bowel syndrome. *Gastroenterology* 2014;**146**:67–75
2 NICE. *Irritable bowel syndrome in adults: Diagnosis and management of irritable bowel syndrome in primary care*. *NICE Guidance CG61* February 2008. Guideline addendum 2015.


**Disclosure of Interest** None Declared

## OC-042 BENEFITS OF SERVICE REDESIGN WITH A TERTIARY SYMPTOMATIC COLORECTAL EMR SERVICE MANAGED WITHIN BOWEL CANCER SCREENING SERVICE MODEL


[1]G Keeley*, [1]HL Gibson, [1]P O'Toole, [2]M Mbuyongha, [2]G Fitzgerald, [1]D Gould, [1]S Sarkar. *[1]Complex Polyp Service; [2]Bowel Cancer Screening, Royal Liverpool and Broadgreen Hospital Trust, Liverpool, UK*


10.1136/gutjnl-2016-312388.42

**Introduction** One of the high quality service developments in endoscopy in the UK has been the introduction of the Bowel Cancer Screening Programme due to the rigorous quality assurance not just of the colonoscopy but of all aspects of the patient journey. Whilst the Royal Liverpool is a tertiary referral site for colorectal complex polyp/Endoscopic Mucosal Resection for BCSP and the symptomatic service for the North-West, the patient journey and quality of service varied significantly depending whether they were referred through via the BCSP or the symptomatic route.

**Methods** We modelled the patient pathway within the symptomatic service to the BCSP standard of care. We seconded two SSPs and BCSP admin to work 50% with the EMR service and 50% within BCSP. All referrals were initially reviewed by EMR specialist endoscopists and then handed to the SSPs to be entered onto a bespoke database. Telephone assessment of patients was performed by an SSP who actively managed the patients co-morbidities and charted them on the database. Patients were listed onto dedicated EMR lists with adequate slot allocations as determined by the EMR endoscopist. Post procedure, patients had a follow-up phone call and their histology and post discharge follow up was monitored and managed by the team including MDT handover in the referral centres.

**Results** Since the start of the service (24th August 2015) 138 patients have been managed through the service. The mean age was 77 years. Referral pathways have included:51% external tertiary referrals, 6% from MDT and 43% internal tertiary referrals. 31 telephone assessments have been performed. In 25% patients a successful intervention by the team resulted in a positive outcome. These included interventions in; Pre-procedure work up & management of co-morbidities (n = 14), administration (n = 12), post-procedure complications (n = 5) and change in management following histology results (n = 3). See Table for full details

**Abstract OC-042 Table 1**

| Administration | Pre-procedure work & manage co-morbidities | Post-procedure complications | Post-Histology Mx |
|---|---|---|---|
| Follow up booking (n = 4) | Anticoagulation & Antiplatelet therapy Mx (n = 5) | Bleeding (n = 2) | Follow endoscopy cancelled (n = 2) |
| DNA averted (n = 7) | Diabetes Management (n = 2) | Pain (n = 3) | External MDT referral |
| Patient referred direct to surgery (n = 1) | Bowel prep management (n = 2) | | |
| | Anaesthetic management (n = 1) | | |
| | Liver & PHT Mx (n = 2) | | |
| | Renal Mx (n = 1) | | |
| | Pre-procedure Ix (n = 2) | | |

**Conclusion** Re-design of the symptomatic EMR service using the expertise within our BCSP with similar principles in pathway management has had a significant impact on patient safety and outcomes within this service.

**Disclosure of Interest** None Declared

## OC-043 MUTATION OF THE FERRIC UPTAKE REGULATOR (FUR) SEVERELY IMPAIRS TOXIN PRODUCTION IN A HUMAN IN VITRO GUT MODEL OF CLOSTRIDIUM DIFFICILE INFECTION


[1]TM Monaghan*, [2]CH Chilton, [3]M Fit, [2]AM Buckley, [3]SA Kuehne, [2]MH Wilcox, [3]A Cockayne. *[1]NIHR Biomedical Research Unit in Gastrointestinal and Liver Diseases, University of Nottingham, Nottingham; [2]Leeds Institute for Molecular Medicine, University of Leeds, Leeds; [3]Clostridia Research Group, Centre for Biomolecular Sciences, University of Nottingham, Nottingham, UK*


10.1136/gutjnl-2016-312388.43

**Introduction** Regulation of iron uptake and utilisation is critical for bacterial growth and for prevention of iron toxicity. To date, little research has been carried out on iron uptake mechanisms and their regulation in *Clostridium difficile*. However, analysis of available *C. difficile* genome sequences reveals the presence of multiple iron-uptake systems and regulators underlining the importance of iron acquisition for clostridial growth. In this study, we investigated the phenotypic effects of the ferrous iron uptake system FeoB1 and the ferric uptake regulator and iron-dependent global gene regulator Fur in *C. difficile*.

**Methods** ClosTron mutagenesis was used to generate knockout mutants in a single *feoB1* and *fur* homologue in *C. difficile* 630Δ*erm*, which were then inoculated into an *in vitro* human gut model to investigate relative propensity to induce *C. difficile* infection (CDI). Three parallel triple-stage chemostat gut models were primed with human faecal emulsions and spiked with *C. difficile* spores ($\sim 10^7$ spores) from each mutant in addition to the 630Δ*erm* wild-type parental strain. Bacterial populations were allowed to equilibrate before simulated CDI was induced by instillation of clindamycin (33.9 mg/L, four times daily for 7 days). Serial samples were collected for

enumeration of microflora populations, *C. difficile* vegetative cells, spores and measurement of cytotoxin titres.

**Results** Cytotoxicity assays revealed that the *fur* mutant strain produced considerably lower toxin levels (~1000 fold lower) than the *feoB1* and wild type strain. Following clindamycin exposure, all three *C. difficile* strains germinated and exhibited sustained vegetative proliferation (~5.5/6 $\log_{10}$ cfu/mL). The *feoB1* mutant strain germinated slightly earlier than the other strains, which may have been influenced by the slightly lower clindamycin levels in the *feoB1* model. Indeed, compared to wild type, higher minimum inhibitory concentrations were observed for both mutant strains, indicating reduced susceptibility to clindamycin. In all three models, the introduction of clindamycin caused a decline in Bifidobacteria (3.5 $\log_{10}$ cfu/mL), Clostridia (~3 $\log_{10}$ cfu/mL) and Lactobacilli (~2 $\log_{10}$ cfu/mL) with increases in Enterococci and Enterobacteriaceae (2–4 $\log_{10}$ cfu/mL). However, no specific microflora changes correlated with the strain of *C. difficile* used in each of the models.

**Conclusion** These findings reveal the important role of the Fur system in regulating the expression of *C. difficile* toxins. Modulation of iron homeostasis may represent a potential novel therapeutic or preventative strategy against CDI.

**Disclosure of Interest** None Declared

## OC-044 MUCOSA-ASSOCIATED E.COLI ISOLATES FROM INFLAMMATORY BOWEL DISEASE AND COLORECTAL CANCER PATIENTS ACTIVATE WNT/BETA-CATENIN SIGNALLING IN VITRO AND IN VIVO

B Meehan*, BJ Campbell, JM Rhodes. *Molecular and Cellular Physiology, Institute of Translational Medicine, Liverpool, UK*

10.1136/gutjnl-2016-312388.44

**Introduction** Increased numbers of adherent, invasive *E.coli* (AIEC) have been reported within intestinal epithelium of patients with Crohn's disease (CD) and colorectal cancer (CRC).[1] Genotoxicity and angiogenic activity of AIEC have been described by our group and others.[2–4] We hypothesised that a key contribution of cancer-promoting activity of AIEC may also be through their ability to activate Wnt/b-catenin signalling, and reported that Wnt target-genes were up-regulated in colonocytes at mRNA and protein level, including cyclooxygenase-2 (COX-2).[5] Here, we further investigated the ability of AIEC to activate Wnt transcription and nuclear translocation of b-catenin. We sought also to confirm our findings in vivo using an AIEC mono-association mouse model.

**Methods** Activation of Wnt transcription activity in response to *E.coli* isolates[1] (MOI: 10; for 4 h) was assessed using a TCF/LEF HeLa cell luciferase reporter assay. Infected cells were also pre-treated with and without COX inhibitors. Nuclear translocation of b-catenin was assessed by immunofluorescence in CRC cell-lines SW480 and DLD1. Following 6 week mono-association of *Il10*$^{-/-}$129 SvEv mice with CRC AIEC isolate HM44, intestinal tissue was fixed, Cox-2 and β-catenin expression assessed by immunohistochemistry and compared to germ-free controls.

**Results** Mucosa-associated *E.coli* isolated from CRC (HM44, HM358, HM545), Crohn's disease (HM95, HM605), and ulcerative colitis (HM250, HM374) patients significantly increased Wnt TCF/LEF signalling in HeLa cells, ranging from 1.56±0.11 to 2.60±0.06 fold above uninfected controls (1.0 ±0.03); all $p < 0.001$, Kruskal-Wallis. Infection of SW480 and DLD1 showed significant increases in *b*-catenin nuclear translocation as per prostaglandin E2 treatment (1–10 μM). These responses were blocked using COX inhibitors (diclofenac>indomethecin>aspirin; 1–100 μM). Increased intestinal Cox-2 expression and Wnt signalling was observed *in vivo* in *Il10*$^{-/-}$ mice infected with *E. coli* HM44 (n = 15) compared to germ-free mice (n = 5), with Cox-2 elevated 2.04±0.10 fold, and nuclear localisation of β-catenin elevated 1.98±0.13 fold; both $p < 0.001$; Mann-Whitney U.

**Conclusion** IBD and CRC mucosa-associated E.coli activate intestinal Wnt-signalling in vitro and in vivo. The specific bacterial factors triggering early cancer-promoting signals such as elevated COX-2 and Wnt pathway activation are currently being investigated using a validated CRC E.coli fosmid-library screening approach,[3] with 12 confirmed positive clones currently undergoing sequence analysis.

### REFERENCES

1 Martin HM, *et al*. *Gastroenterology* 2004;**127**:80–93
2 Arthur JC, *et al*. *Science* 2012;**338**:120–23
3 Prorok-Hamon M, *et al*. *Gut* 2014;**63**:761–70
4 Buc E, *et al*. *PLoS One* 2013;**8**(2):e56964
5 Meehan B, *et al. Gut* 2015;**64**(Supp 1):A362–A363 (abstract)

**Disclosure of Interest** B. Meehan: None Declared, B. Campbell Conflict with: Has received honoraria from Amgen, Falk and Enterome, J. Rhodes Conflict with: Is/has been a member of advisory boards for Atlantic, Procter & Gamble and Falk, has received honoraria from Abbott, Falk, Ferring, Glaxo Smith Kline, Procter & Gamble and Schering Plough.

## OC-045 TREATMENT OUTCOMES OF LARGE RECTAL POLYPS AT A SINGLE TERTIARY HEALTH CENTRE IN THE UK

[1]S Al-Rubaye*, [2]M Kelly, [2]N Ladep, [2]S Slawik, [2]S Ahmed. [1]*Gastroenterology and Endoscopy*; [2]*Aintree University Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.45

**Introduction** Large (>2 cm) rectal adenomas are currently treated by trans-anal endoscopic microsurgery (TEMS) or endoscopic mucosal resection (EMR). The aim of this study is to report on the effectiveness, safety and final outcome of both procedures in patients at a single tertiary health centre in the UK.

**Methods** A cross-sectional study comparing patients and polyps specific variables in patients that underwent transanal endoscopic resection (TEMS) or endoscopic mucosal resection (EMR) for large rectal polyps, during 2011 to 2015. The data was obtained from colorectal multidisciplinary team (MDT) records, supplemented by information from the endoscopy reporting tool of the Hospital (Unisoft®). Variables analysed included polyp size, patient's age and gender, procedure complication rate, success and failure rate. We also looked for the number for emergency admission needed. Chi-squared test was used to compare rates of examined variables between both techniques.

**Results** Fifty four patients (mean age 74 ± 10.8) underwent EMR whilst fifty three patients (mean age 68 ± 11) had TEMS. Male: female ratio was 1:2 respectively (p value =0.16). Mean polyp sizes were 3 cm (range 2–10 cm) and

3.5 cm (range 2–10 cm) for EMR and TEMS, respectively (p value 0.4). The success rates of both procedures were comparable (92.6% and 88.7% for EMR and TEMS respectively). On the contrary, complication rate was slightly higher in those that had TEMS: 5.7% (1.9% post EMR, p value 0.29). We observed in our study that 9.4% of those who had TEMS required second, high risk surgery (3.7% had Anterior resection, 3.7% required Extralevator abdominoperineal excision ELAPE and 1.8% had Hartman's surgery). 37% of patients underwent EMR polypectomy required second procedure (further EMR or TEMS) for complete excision. There was a significantly higher recurrence rate post EMR than post TEMS (34% and 7.4% respectively, p0.001)

**Conclusion** In this single tertiary centre, both EMR and TEMS offered similar effectiveness in the treatment of large rectal polyps. The higher recurrence rate of polyps post EMR relative to TEMS engenders further investigation.

**Disclosure of Interest** None Declared

## OC-046 THE ACPGBI/BSG COMPLEX COLORECTAL POLYP MINIMUM DATASET: AN UPDATE

[1]A Chattree*, [2]J Barbour, [1]MD Rutter, on behalf of ACPGBI/BSG Large Polyp Working Group. [1]*Endoscopy, North Tees and Hartlepool NHS Foundation Trust, Stockton on Tees*; [2]*Queen Elizabeth II Hospital, Gateshead, UK*

10.1136/gutjnl-2016-312388.46

**Introduction** Variation in the assessment of large non-pedunculated colorectal polyps (LNPCPs) appears to lead to variable and suboptimal management outcomes.[1] Multidisciplinary discussion has been advocated to optimise management. Our ACPGBI/BSG evidence-based, expert consensus minimum dataset developed in 2014–15 has been felt to enhance LNPCP assessment and decision making.[2] We propose that further refinement will ensure increased robustness.

**Methods** A 14 person ACPGBI/BSG approved multidisciplinary panel reassessed the original minimum dataset using Delphi consensus methodology. A subcommittee tested the proforma dataset's applicability and usability for multidisciplinary discussion over 20 LNPCP cases. This process was intended to find any previously unidentified patient and polyp factors that may influence management. Proposed additional parameters were then subject to voting with >80% agreement required for consensus. The updated dataset was then assessed with a further 20 LNPCP cases.

**Results** 8 new parameters considered helpful for LNPCP assessment were identified. Whilst patient parameters such as symptoms, treatment preferences and comorbidity had previously been identified, it was agreed that establishing patient amenability to undergo treatment at another hospital was important and may potentially increase available therapeutic options. With regards to lesion characteristics, it was felt that specification of the 'SMSA scoring system' encouraged more comprehensive and standardised lesion assessment of the complexity of lesion endoscopic resectability.[2] Comprehensive photodocumentation was also considered necessary with parameters agreed relating to the capture of morphology and surface features and specific rectal imaging. Further piloting of the revised dataset identified no further required parameters (see figure).

**Conclusion** The development of an ACPGBI/BSG minimum dataset allows for comprehensive and standardised multidisciplinary LNPCP assessment. It forms part of a structured ACPGBI/BSG management framework for LNPCPs, also comprising guidelines and key performance indicators. In addition to facilitating multidisciplinary discussion, the dataset can also serve as an aide memoire to guide detailed endoscopic assessment. The updated consensus process ensures that all factors pertinent to decision making are included whilst applicability and usability are confirmed following further piloting.

### REFERENCES

1 Chattree A, Painter J, Silcock J, *et al*. Marked Variation in Endoscopic Mucosal Resection Outcomes within the UK Bowel Cancer Screening Programme. *United European Gastroenterology Journal* 2015;**2**(Supp 1)

2 Rutter MD, Chattree A, Barbour J, *et al*. BSG/ACPGBI Guidelines for the management of large non pedunculated colorectal polyps. *Gut* 2015;**0**:1–27

**Disclosure of Interest** None Declared

## OC-047 NEW PLATFORM FOR TRANS-ANAL SUBMUCOSAL ENDOSCOPIC RESECTION- (TASER): UPDATED CLINICAL RESULTS FROM TERTIARY CENTRE

[1]ZPP Tsiamoulos*, [1]R Rameshshanker, [1]A Wawszczak, [2]J Warusavitarne, [1]BP Saunders. [1]*Wolfson Unit for Endoscopy*; [2]*Department of Colorectal Surgery, St Mark's Hospital, London, UK*

10.1136/gutjnl-2016-312388.47

**Introduction** Current trans-anal surgical and advanced endoscopic resection procedures have the potential to resect complex rectal polyps (CRPs). However both approaches have limitations in terms of practicality and safety.

**Methods** Consecutive patients (Jan13/April15), referred for the excision of CRPs, were being considered for proctectomy and/or had failed conventional endoscopic/trans-anal therapy. The GelPoint Path trans-anal access port allowed dynamic tissue manipulation to facilitate endoscopic-submucosal-dissection/ESD. Supplementary techniques were also used: piecemeal-endoscopic-mucosal-resection or ablation/P-EMR or EMA and trans-anal excision/TAE. The aim of this study was to evaluate the feasibility, technical success and safety profile of this new hybrid, endo-surgical Trans-Anal Submucosal Endoscopic Resection- (TASER) approach for CRPs.

**Results** Thirty-two TASER procedures were employed in 31 patients (mean age 65 years/17 males-14 females) with 31 CRPs (mean size 8 cm/range 5 cm–18 cm). Complete endoscopic excision in a single session was achieved in 28/31 patients (93%); in one patient a second TASER session for completion of polypectomy, in another an elective laparoscopic-anterior-resection due to T1,sm3,N0,M0 and in a third patient a defunctioning-ileostomy due to intraperitoneal perforation before completion of polypectomy. Mean procedure time was 185 min, range 65–480 min. Thirty two TASER sessions were employed using ESD in 12/32, ESD+P-EMR in 6/32, ESD+P-EMR+EMA in 4/32, ESD+TAE in 3/32, ESD/P-EMR/TAE in 3/32 and ESD+P-EMR+EMA+TAE in 4/32. Intra-procedural bleeding was controlled with haemostatic endoscopic devices/surgical clipping. In 6/10 TASER-TAE cases there was a need for a full-thickness rectal dissection due to severe submucosal fibrosis: 4/6 cases were closed with surgical sutures/endoscopic clips and in 2/6 cases only endoscopic clips

were deployed. Two episodes of delayed bleeding were reported with no transfusion/re-intervention requirement. All patients were discharged the day after the TASER apart from one patient who developed bacteremia requiring intravenous antibiotics/a 4 night hospital stay and the patient who required a defunctioning ileostomy, discharged on day 4 post-operation. First follow-up performed at 4–6 months interval in 25/31 patients showed: 21/25 with no recurrence/(84%) and 4/25/ (16%) with a minimal (<15mm) polyp recurrence, amenable to endoscopic therapy. No rectal stricturing was identified and only one episode of transient faecal incontinence were reported.

**Conclusion** TASER appears to be a safe and efficient endo-surgical approach providing an optimal platform for the minimally-invasive management of high- risk, complex rectal polyps.

**Disclosure of Interest** None Declared

## OC-048 THE USE OF VOLATILE ORGANIC COMPOUNDS EMITTED FROM STOOL AS A BIOMARKER FOR COLONIC NEOPLASIA

[1]A Bond*, [2]R Greenwood, [3]S Lewis, [4]B Corfe, [5]S Sarkar, [6]P Rooney, [1]C Probert. *[1]Gastroenterology, Translational Medicine, University of Liverpool, Liverpool; [2]Research Design Service, School of Social and Community Medicine, University of Bristol, Bristol; [3]Gastroenterology, Derriford Hospital, Plymouth; [4]Molecular Gastroenterology Research Group, Department of Oncology, University of Sheffield, Sheffield; [5]Gastroenterology; [6]Colorectal Surgery, Royal Liverpool and Broadgreen University Hospital Trust, Liverpool, UK*

10.1136/gutjnl-2016-312388.48

**Introduction** Colorectal cancer (CRC) remains a leading cause of mortality worldwide. The incidence has increased by 6% in the last decade and it is the third most common malignancy in the UK, accounting for approximately 15,000 deaths annually. The UK Bowel Cancer Screening Programme has demonstrated that detection of CRC at an earlier stage and identification of advanced pre-malignant adenomas can reduce cancer-associated mortality. We analysed the volatile organic compounds (VOCs) emitted from stool to assess their utility as a biomarker for colonic neoplasia.

**Methods** Stool was collected from symptomatic patients referred for colonoscopy and those within the BCSP. SPME headspace extraction followed by GC-MS was performed, in order to identify VOCs. The outcome of colonoscopy was classified as no-neoplasia, adenomatous polyp(s) and cancer. Data analysis was performed in R, Stata and Metaboanalyst, utilising Student's t test, Fisher's exact test, ANOVA, false discovery rate correction, PLS-DA, factor analysis and ROC analysis. Logistic regression modelling with 10 fold cross validation was used to test potential biomarkers.

**Results** 137 patients were included, with a mean age of 64 yrs (range 22–85), 54% were males. 60 patients had no neoplasia, 56 adenomatous polyp/s and 21 had CRC. 162 VOCs were identified across all samples, mean number in no-neoplasia 58.1 and 55.2 in neoplastic group, p = 0.51. VOC analysis was able to differentiate those with higher risk neoplastic disease with the greatest confidence. When comparing those with cancer to no neoplasia PLS-DA demonstrated separation, compound A was significantly more abundant in the CRC samples (p =< 0.0001, q = 0.004), AUROC curve 0.76. When combined with compound B the AUROC curve was 0.82. Biomarker modelling, combining compounds A and B, used logistic regression and 10 fold cross validation: the AUROC for the initial cross validation set was 0.85, when applied to the hold-out set the AUROC was 0.82, sensitivity 87.9% (95% CI 0.87–0.99) and specificity 84.6% (95% CI 0.65–1.0). Further logisitic regression analysis of VOC presence identified a three VOC panel (compounds A, X and Y) AUROC =0.86: a person 6 times more likely to have cancer for each of the VOCs present in their stool (p =< 0.0001). Factor analysis supported these findings.

*VOCs referred to as Compound A, B, X and Y due to potential future IP.

**Conclusion** VOC analysis has a superior diagnostic ability for the identification of colorectal adenocarcinoma, when compared to other faecal based biomarker, including those currently employed in UK population based screening.

**Disclosure of Interest** None Declared

## OC-049 SESSILE SERRATED LESIONS: EASILY MISSED IN A HETEROGENOUS COHORT?

[1]S Subramaniam*, [2]M Mitchison, [2]M Rodriguez-justo, [2]R Vega. *[1]Department of Gastroenterology, Portsmouth Hospitals NHS Trust, Portsmouth; [2]Department of Gastroenterology, University College Hospitals London, London, UK*

10.1136/gutjnl-2016-312388.49

**Introduction** Colorectal cancer is now thought to arise from more than one molecular pathway. Lately, the serrated pathway has been placed in the limelight as it may account for 20–30% of colorectal cancers. However, sessile serrated lesions are easily missed on colonoscopy and in histopathological analysis despite their neoplastic potential. We conducted an observational study to understand the presentation, characteristics and significance of sessile serrated lesions detected in colonoscopies done for a variety of indications.

**Methods** A retrospective analysis of all sessile serrated lesions identified through the colorectal histopathological database from January 2012 – March 2015 was performed in our tertiary centre. Histology was reported by specialist gastrointestinal pathologists as per national standards.

**Results** 138 colonoscopies were performed in 118 patients who were found to have sessile serrated lesions. The table below shows the breadth of indications for colonoscopy in these cases. A total of 351 serrated lesions were noted, with just over half in the right colon (180/351, 51.3%). 67/351 polyps were >1 cm in size. 42/118 patients did have polyps noted on previous colonoscopies (19 had serrated lesions). The prevalence of co-existing adenomas in this cohort was 50% (59/118).

A subgroup analysis identified 13 patients in the entire cohort who met the WHO criteria for serrated polyposis syndrome. 4 of these patients (4/13; 30.8%) had been diagnosed with colorectal cancer in the past compared with 16/105 (15.2%) in the non serrated polyposis syndrome group. Only 8/13 patients underwent genetic screening and of this, 2 had hyperplastic polyposis syndrome and 2 had MYH polyposis.

**Abstract OC-049 Table 1** Colonoscopy indications in patients with sessile serrated lesions

| Indications | Number of colonoscopies |
|---|---|
| Bowel cancer screening group | 37 |
| Polyp surveillance | 28 |
| Altered bowel habit | 22 |
| PR bleeding | 15 |
| Family history of colorectal cancer | 14 |
| Follow up post colorectal cancer | 9 |
| Inflammatory bowel disease assessment/surveillance | 6 |
| Abnormal finding on CT/PET | 5 |
| Abdominal pain | 2 |

**Conclusion** This large series of sessile serrated lesions has demonstrated the heterogeneity of circumstances in which they are detected during colonoscopy. Only 16% of patients were found to have serrated lesions on a previous colonoscopy. This may indicate that a large proportion of these polyps were missed or not recognised previously.

A small proportion of these patients will have a serrated polyposis syndrome that increases their colorectal cancer risk even further and genetic screening is advocated in all these patients.

**Disclosure of Interest** None Declared

## OC-050 ABSTRACT WITHDRAWN

## OC-051 OUTCOMES OF SM INVASIVE BARRETT'S CANCERS FOLLOWING ENDOSCOPIC RESECTION: RADICAL INTERVENTION IS NOT ALWAYS REQUIRED?

F Chedgy*, S Subramaniam, K Kandiah, S Thayalasekaran, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.50

**Introduction** Endoscopic resection (ER) of Barrett's cancer with curative intent is extremely effective for lesions limited to the mucosal layer of the oesophagus. Lesions extending beyond the muscularis mucosae into the submucosa are considered for radical therapy due to risk of lymph node metastases. Radical treatment is not without risk, reported mortality of oesophagectomy is 2–5%.

**Methods** All patients referred for ER of Barrett's cancer had data collected prospectively between 2006 and 2015. The database was interrogated by independent researchers blinded to the endoscopic procedures for patients with SM invasive cancers.

**Results** 261 endoscopic resections were performed in 182 patients during the study period. 26 (14%) patients had SM invasion following ER. 12 had undergone endoscopic submucosal dissection (ESD) and 14 endoscopic mucosal resection (EMR). 22 (85%) lesions were superficially submucosally invasive (SM1), 4 were >SM1 (15%). Table 1 shows outcomes after ER. Mean disease free survival was 4.31 years (Range 0.7 to 10.8) in this cohort. 3 patients died of recurrent cancer, 3 patients died of co-morbid conditions.

All 9 patients in the endoscopy group were clear of cancer at follow up. There was 1 recurrence treated with further ER. Of the 6 patients undergoing surgery 5 had no residual neoplasia in the oesophagectomy specimen (pTxN0M0). 1 patient had a pT1N0M0 cancer with LVI and signet ring cells and died 2 years after surgery. 1 patient was considered for surgery but was turned down due to comorbidities and subsequently died of cancer 6 years following ER. 3 patients have been discharged to their referring centres for consideration of surgery.

**Abstract OC-051 Table 1**

| | SM1 | >SM1 | Presence of LVI* | Poor Differentiation | Clear of Cancer at follow up |
|---|---|---|---|---|---|
| Endoscopic follow up n = 9 | 9 | 0 | 2 | 1 | 9 |
| Surgery n = 6 | 5 | 1 | 2 | 2 | 5 |
| Chemoradiotherapy n = 7 | 5 | 2 | 2 | 5 | 6 |
| No Intervention n = 4 | 3 | 1 | 0 | 3 | n/a |

*Lymphovascular invasion

7 patients underwent chemoradiotherapy. 6 of 7 patients treated with chemoradiotherapy were clear of recurrence on follow up. 1 patient developed recurrence of cancer and died 2 years after ER.

**Conclusion** This data challenges the current paradigm of radical therapy following ER of SM1 Barrett's cancers. Outcomes for patients managed endoscopically are excellent. 5 patients undergoing surgery in our cohort had no residual disease in the oesophagectomy specimen and potentially could have undergone endoscopic follow up alone. Patients found to have SM1 lesions without poor prognostic features can effectively be managed without radical intervention. SM invasive cancers require an individualised management plan tailored to histology and co-morbidities. There does not appear to be a demonstrable difference between chemoradiotherapy and surgery.

**Disclosure of Interest** None Declared

## OC-052 THE IMPACT A PUBLIC HEALTH ENGLAND (PHE) CAMPAIGN LINKING HEARTBURN WITH CANCER HAD ON A SINGLE ENDOSCOPY UNIT IN A LARGE TEACHING HOSPITAL

[1]J Callaghan*, [2]P Boger, [2]J Thomas, [3]T Underwood. *[1]Department of Gastroenterology; [2]Endoscopy Department, University Hospital Southampton; [3]Cancer Sciences Unit, University of Southampton, Southampton, UK*

10.1136/gutjnl-2016-312388.51

**Introduction** Public Health England (PHE) launched a 'Be Clear on Cancer campaign on 26th January 2015 encouraging patients with heartburn to see their GP. Our aim was to analyse the impact the 'Be Clear on Cancer' campaign had on the number of 2 Week-Wait (2 WW) OGDs performed and the number of cancers detected.

**Methods** A retrospective analysis of the endoscopy reporting system (HICCS) was undertaken for the 3 months after the launch of the campaign and compared to the same time

period across the preceding 3 years. The outcomes considered in this analysis were any cancer of the upper GI tract or Barrett's Oesophagus.

**Results** The total number of OGDs (1409) in 2015 was higher than any preceding year, as was the number of 2 WW OGDs (399). The number of cancers fell in 2015 compared to preceding years with only 7 cancers detected on the 2 WW pathway, of which 2 were deemed curable after MDT discussion.

The chance of detecting cancer via a 2 WW OGD fell from 6.9% in 2012 to 1.8% in 2015, with the number needed to scope (NNS) rising from 15.5 patients in 2012 to 57 patients in 2015. The tariff cost of one OGD at the time of the study was £490 leading to an estimated cost per cancer detected of just over £7500 in 2012 rising to just under £28,000 in 2015.

There was an increase in the number of new cases of Barrett's Oesophagus detected on the 2 WW pathway during the studied period from 9 in 2012 to 19 in 2015.

Barrett's Oesophagus and cancers detected outside of the 2 WW pathway are also presented in Table 1.

**Abstract OC-052 Table 1**

| 26th Jan – 26th April | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|
| Total OGD | 1057 | 1098 | 1279 | 1409 |
| 2 WW OGD | 232 | 208 | 271 | 399 |
| 2 WW Cancer | 15 | 9 | 9 | 7 |
| Potentially curable cancers | 1 | 4 | 2 | 2 |
| NNS – Cancer 2 WW | 15.5 | 23.1 | 30.1 | 57 |
| 2 WW Barrett's | 9 | 17 | 17 | 19 |
| NNS – Barrett's 2 WW | 25.8 | 12.2 | 15.9 | 21 |
| Cancer detected non-2WW | 20 | 14 | 17 | 11 |
| Barrett's detected non-2WW | 26 | 13 | 24 | 20 |

**Conclusion** The PHE 'Be Clear on Cancer' campaign did not detect increased numbers of cancers compared to preceding years despite a large increase in the number of 2 WW OGDs performed in the studied period. Our analysis indicates that purely increasing the number of 2 WW pathway OGDs with the aim of detecting cancer is expensive and resulted in fewer cancers detected.

As the absolute number of cancer cases has decreased despite a 72% increase in number of 2 WW pathway OGDs it is difficult to argue for continuing to increase the number of patients on this pathway without significant modification to the pathway. OGD is not a pleasant test, made worse for the patient by the thought that it may detect a cancer, when in real terms the chance of finding a cancer is relatively small (1.8% in 2015).

**Disclosure of Interest** None Declared

## OC-053 LECTIN-BASED NEAR INFRA-RED MOLECULAR IMAGING FOR DYSPLASIA DETECTION IN BARRETT'S OESOPHAGUS: AN EX-VIVO STUDY ON HUMAN TISSUE

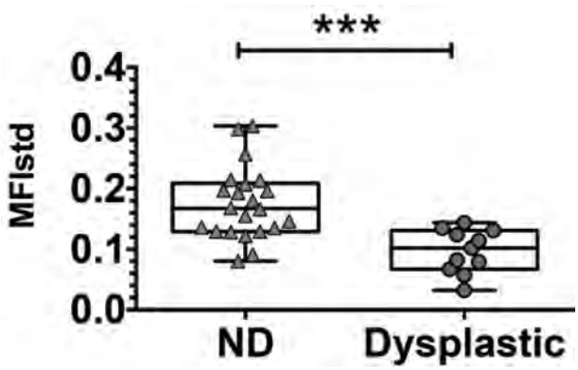
[1]M Di Pietro*, [2]A Neves, [3]M O'Donovan, [4]D Waterhouse, [4]S Bohndiek, [2]K Brindle, [1]RC Fitzgerald. *[1]MRC Cancer Unit; [2]Cancer Research UK Cambridge Institute, University of Cambridge; [3]Histopathology, Cambridge University Hospitals; [4]Department of Physics, University of Cambridge, Cambridge, UK*

10.1136/gutjnl-2016-312388.52

**Introduction** Detection of early neoplasia in Barrett's oesophagus (BO) by white-light endoscopy is challenging due to the inconspicuous nature of dysplasia. Molecular imaging using fluorescently labelled wheat-germ agglutinin (WGA) is a promising tool as this topically applied imaging agent shows lower binding to dysplastic versus non-dysplastic BO.[1] However in an endoscopy setting, the detection of fluorescence in the blue/green range is limited by high-levels of tissue autofluorescence. This limitation can be overcome by using near infrared (NIR) imaging. We aimed to assess in an *ex-vivo* model the feasibility of WGA-based NIR imaging for detection of dysplasia in BO.

**Methods** we recruited patients with early BO-related neoplasia undergoing endoscopic mucosal resection (EMR). Freshly collected EMR specimens were sprayed with WGA-IR800CW and then imaged with a high-sensitivity NIR camera. Fluorescence images were captured and up to two punch biopsies were collected from each EMR under fluorescence guidance. The EMRs were paraffin embedded, cut every 2 mm and processed for histopathological assessment. Each section was scored by an expert GI pathologist every 1 mm to construct a pathology grid, which was manually co-registered with the fluorescence image. The mean fluorescence intensity (MFI) of cells in dysplastic and non-dysplastic areas was compared by the Wilcoxon matched-pairs signed rank test. Only EMR specimens with at least one dysplastic gland were included in the analysis. In addition, the MFI of punch biopsies taken from dysplastic and non-dysplastic areas was also compared by Mann-Whitney test.

**Results** Ten patients were recruited at a single centre. A total of 18 EMR specimens and 33 punch biopsies were collected, of which 10 were dysplastic. In the whole EMR analysis, we found a significantly lower MFI for dysplastic versus non-dysplastic areas ($P = 0.0012$), in accordance with the reported reduced binding of WGA to neoplastic BO epithelium. Similarly, we found a nearly 2 fold reduction in the MFI of punch biopsies taken from dysplastic as compared to non-dysplastic (ND) areas ($P = 0.0002$) (Figure 1).




**Abstract OC-053 Figure 1**

**Conclusion** WGA-based NIR imaging is an effective method for differentiating dysplastic from non-dysplastic BO mucosa *ex vivo*, which reduces the effects of tissue autofluorescence. *In-vivo* studies are now required to test the efficacy of this method for detecting dysplasia during endoscopic surveillance.

**REFERENCE**
1 Bird-Lieberman, *et al*. *Nat Med* 2012.

**Disclosure of Interest** None Declared

## OC-054 DEVELOPMENT AND VALIDATION OF A CLASSIFICATION SYSTEM TO IDENTIFY BARRETT'S NEOPLASIA USING ACETIC ACID CHROMOENDOSCOPY: THE PREDICT CLASSIFICATION

[1]K Kandiah*, [1]FJQ Chedgy, [1]G Longcroft-Wheaton, [2]O Pech, [3]J De Caestecker, [4]S Green, [5]C Gordon, [6]A Li, [7]H Barr, [1]P Bhandari, on behalf of ABBA. [1]*Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*; [2]*Gastroenterology, St. John of God, Regensburg, Germany*; [3]*Leicester General Hospital, Leicester*; [4]*Royal Sussex County Hospital, Brighton*; [5]*Royal Bournemouth Hospital, Bournemouth*; [6]*Gastroenterology, Worthing Hospital, Worthing*; [7]*Gen Surgery, Gloucesteshire Royal Hospital, Gloucester, UK*

10.1136/gutjnl-2016-312388.53

**Introduction** Neoplasia in Barrett's can be discrete and patchy. Acetic acid chromoendoscopy (AAC) has been demonstrated to highlight neoplastic areas allowing for earlier treatment. Previous efforts to create a classification system for AAC have not been systematic and rigorous in their methodology. We aimed to develop and validate a classification system to identify Barrett's neoplasia using AAC.

**Methods** Three expert AAC endoscopists (PB, GLW, OP) formed a working group to identify AAC component criteria of non-dysplastic and dysplastic Barrett's using a modified Delphi Method. Following this, a panel of 7 AAC experienced endoscopists assessed the performance of each individual criterion by reviewing a bespoke online database of 40 images and 40 videos of non-dysplastic and dysplastic Barrett's lesions. Finally, we assessed the diagnostic reproducibility of the validated criteria by asking 13 non-AAC experienced endoscopists to complete an assessment tool of 40 images and 20 videos.

**Results** The component criteria identified by the expert AAC endoscopists were as follows

- Early focal loss of acetowhitening
- **Present**: Indicates the presence of neoplasia
- **Absent:** Indicates the absence of neoplasia
- Surface pattern
- **Normal (Large uniformly distributed pits)**: Indicates non-neoplastic Barrett's
- **Abnormal (Compact, irregular or absent pits)**: Indicates neoplastic Barrett's

A total of 560 observations were undertaken to validate these criteria. The sensitivity, specificity, negative predictive value (NPV) and positive predictive value (PPV) are shown in Table 1:

**Abstract OC-054 Table 1** Validation results of the classification criteria

| Criteria | Sensitivity | Specificity | NPV | PPV |
|---|---|---|---|---|
| Loss of acetowhitening | 96.2% | 93.8% | 90.9% | 97.5% |
| | (93.4–97.9%) | (88.9–96.9%) | (85.5–94.8%) | (95.4–98.8%) |
| Surface pattern | 77.0% | 99.0% | 91.4% | 96.9% |
| • Normal | (69.7–83.3%) | (97.5–99.7%) | (88.4–93.9%) | (92.2–99.1%) |
| • Abnormal | 99% | 77.0% | 96.9% | 91.4% |
| | (97.5–99.7%) | (69.7–83.3%) | (92.2–99.1%) | (88.4–93.9%) |

When the AAC validated criteria are applied by the 13 endoscopists, the sensitivity, specificity, NPV and PPV of detecting neoplastic Barrett's are 98.5%, 64.0%, 97.5% and 72.5% respectively.

**Conclusion** We have developed and established the validity of a simple classification system to identify Barrett's neoplasia using AAC. When non-AAC experienced endoscopists apply these criteria, the sensitivity and NPV meet the recommended PIVI threshold.

**Disclosure of Interest** None Declared

## OC-055 BLOOD-BASED BIOMARKERS IN THE OESOPHAGEAL CANCER MODEL – RESULTS FROM THE PIGA MUTANT PHENOTYPE STUDY

[1,2]HN Haboubi*, [2]L Williams, [2]J Manson, [3]N Al-Mossawi, [1]B Rees, [1]R Lawrence, [1]O Bodger, [2]P Griffiths, [1]C Thornton, [1]GJ Jenkins. [1]*Swansea University*; [2]*ABM University Health Board, Swansea*; [3]*Great Ormond Street Hospital, London, UK*

10.1136/gutjnl-2016-312388.54

**Introduction** Improving our mechanisms of risk stratification of patients with Barrett's oesophagus (BO) requires easily analysable, cheap and reproducable biomarkers.

The PigA mutant phenotype assay is a novel flow cytometric analysis, which can be undertaken using a fingerprick test. The PigA gene codes for GPI-anchors, which tether proteins to the surface of circulating blood cells. Silencing mutations, induced by acid or bile, will therefore result in absence of surface GPI-anchors and negative fluorescence on flow cytometry analysis.

Our laboratory has already demonstrated the effects of bile in inducing such "mutant" events in blood based cell lines.

**Methods** Here, we investigate the baseline background PigA mutant phenotype frequency in patients with GORD, BO, and those with oesophageal adenocarcinoma (OAC). We recruited 120 patients for analysis of baseline mutant frequency in circulating red blood cells. We correlated these findings with symptoms, diet, lifestyle, endoscopic features and radiological stage.

We also undertook Western Blotting analysis of endoscopic biopsies to assess GPI-anchor status in retrieved tissue.

**Results** A clear correlation was seen with increased PigA mutant frequency with histological status from healthy patients with GORD to those with OAC, $p < 0.01$.

Older age, smoking status and unhealthy lifestyle (diet measured using the DQS score) all resulted in higher mutant frequencies. Length of Barrett's and degree of inflammation (LA classification) had no effect, but aspirin use appeared to be protective and resulted in lower mutant frequencies ($p < 0.01$).

Evaluation of patients with cancer ($n = 15$) found that PigA mutant frequency increased with increasing lymph node involvement and metastasic spread (both $p < 0.001$).

Finally western blotting of crude protein extracted from oesophageal biopsies revealed a reduction in GPI-anchor levels from normal squamous tissue, through to cancer, thus corroborating our results above.

**Conclusion** We have developed a blood-based biomarker assay, which can potentially stratify patients' underlying genomic instability by indirectly measuring GPI-anchor status on circulating blood cells. We have also demonstrated the potential onco-protective effects of aspirin in these patients.

The mechanisms behind these observations remain unclear, but western blot analysis suggests mutation may occur in the

distal oesophagus where circulating blood cells are exposured to mutagenic chemicals such as bile and acid.

Further evaluation in other cancer models as well as a wider cohort of non-cancer patients (to evaluate lifetyle) will establish how useful the assay may be outside of the Barrett's model.

**Disclosure of Interest** None Declared

## OC-056 HIGH RATE OF MISSED VISIBLE LESIONS IN PATIENTS REFERRED WITH LOW GRADE DYSPLASIA WITH SUBSEQUENT UPSTAGING OF PATHOLOGY BY EMR IN MAJORITY

I Koumoutsos*, P Wilson, S DeMartino, J Dunn. *Gastroenterology, Guys & St Thomas Hospital, London, UK*

10.1136/gutjnl-2016-312388.55

**Introduction** Endoscopic therapy for Barrett's oesophagus (BE) associated dysplasia or intramucosal cancer (IMC) has become the standard of care, and is recommended to occur in regional centres with high volume. Endoscopic mucosal resection (EMR) is often the first step as the majority of patients with high grade dysplasia (HGD) will have a visible lesion. This has been shown to upgrade HGD to more advanced pathology in over 30%. Little data exists on the use of EMR for low grade dysplasia (LGD). Aim of this study is to assess the rate of visible lesions in patients referred with LGD and outcomes of EMR.

**Methods** Prospective study of patients undergoing BE dysplasia assessment at tertiary referral upper GI centre (GSTT). Surveillance endoscopy was performed with virtual chromoendoscopy (NBI) and conventional chromoendoscopy (acetic acid 2.5%) by two endoscopists, and EMR was undertaken, when feasible, to a visible lesion. Analysis was by independent t-tests for continuous variables and chi-squared tests for categorical variables.

**Results** A total of 69 patients with BE underwent endoscopy, between 2014 and 2016. Results are shown in table 1. Patients were split into community pathology referral grade. There was no significant difference in patient's age, sex or length of BE between the groups.

EMR was undertaken to visible lesions in 84% of patients with HGD vs 54% with LGD. EMR was not performed due to advanced endoscopic lesions in 18% of patients referred with IMC, 13% with HGD and 4% for LGD. Pathology upstaging compared to the stage of the referring hospital was significantly higher in EMR specimens (50%) vs central pathology review of biopsies (19%) (p-value:0.001). There was no statistical difference in the rates of patients upstaged from EMR from patients referred with LGD vs HGD (64% vs 54%, p-value:0.75). In 3/26 (11%) of patients referred with LGD pathology of EMR specimen showed IMC.

**Conclusion** This study demonstrates a high rate of missed visible lesions in patients diagnosed with LGD in a community setting, with half undergoing EMR. That these patients were upstaged to higher grades of dysplasia in 64% of the cases, indicates correct choice of EMR as a diagnostic modality in this group. Endoscopists carrying out surveillance endoscopy for patients with LGD should be aware of a high rate of visible lesions and advanced pathology, and consider referral to centre for further endoscopic evaluation.

**Disclosure of Interest** None Declared

## OC-057 A PH3 RANDOMISED, MULTICENTER, DOUBLE-BLIND, PLACEBO (PBO)-CONTROLLED STUDY OF USTEKINUMAB (UST) MAINTENANCE THERAPY IN MODERATE–SEVERE CROHN'S DISEASE (CD) PTS: RESULTS FROM IM-UNITI

[1]WJ Sandborn, [2]BG Feagan, [3]C Gasink, [3]D Jacobstein, [3]L-L Gao, [3]J Johanns, [4]B Sands, [5]S Hanauer, [6]S Targan, [7]S Ghosh*, [8]W de Villiers, [4]J-F Colombel, [9]SD Lee, [10]L Dieleman, [11]S Katz, [12]P Rutgeerts, on behalf of IM-UNITI Study Groups. *[1]UCSD, La Jolla, United States; [2]Robarts Res Inst, London, Canada; [3]Janssen R&D, Spring House; [4]Mt Sinai Med Ctr, New York; [5]Northwestern U, Chicago; [6]Cedars-Sinai Med Ctr, Los Angeles, United States; [7]U Calgary, Calgary, Canada; [8]U Cape Town, Cape Town, South Africa; [9]U Washington, Seattle, United States; [10]U Alberta, Alberta, Canada; [11]NYU Langone, Nassau Gastroenterology Assoc, New York, United States; [12]U Hosp Gasthuisberg, Leuven, Belgium*

10.1136/gutjnl-2016-312388.56

**Introduction** Single dose intravenous (IV) UST induced response and remission in CD pts refractory to TNF antagonists (UNITI-1) and failing conventional therapies (UNITI-2). The objective

| | IMC(n=11) | HGD(n=32) | LGD/IND(n=26) | Total(n=69) |
|---|---|---|---|---|
| Mean Age | 72±8yrs | 72±10yrs | 67±10yrs | 70±10yrs |
| Sex (Male) | 6M | 26M | 23M | 55M |
| Length (cm) | 2.6cm | 5.6cm | 5.3cm | 5cm |
| EMR rate | 9/11(82%) | 27/32(84%) | 14/26(54%) | 50/69(72%) |
| EMR not feasible | 2/11(18%) | 4/32(13%) | 1/26(4%) | 7/69(10%) |
| EMR vs Local pathology Upstaged | n/a | 16/27(59%) | 9/14(64%) | 25/50(50%) |
| Central pathway vs Local pathology Upstaged | n/a | 4/22(18%) | 4/13(31%) | 8/43(19%) |

**Abstract OC-056 Figure 1**

**Abstract OC-057 Table 1** Maintenance of Clinical Response and Remission in IM-UNIT I at Week 44

| | Placebo* (N=131†) | 90mg ustekinumab every 12 wks (N=129†) | 90mg ustekinumab every 8 wks (N=128†) |
|---|---|---|---|
| Clinical Remission | 35.9% | 48.8%[c] | 53.1%[b] |
| Clinical Response | 44.3% | 58.1%[c] | 59.4%[c] |
| Corticosteroid-Free Clinical Remission | 29.8% | 42.6%[a] | 46.9%[b] |
| Sustained Clinical Remission‡ | 26.0% | 40.3%[a] | 46.1%[a] |
| Clinical Remission in patients: | | | |
| in remission at the start of maintenance therapy | 45.6% (36/79) | 56.4% (44/78)[d] | 66.7% (52/78)[b] |
| who are TNF antagonist refractory/intolerant | 26.2% (16/61) | 38.6% (22/57)[c] | 41.1% (23/56)[c] |
| who failed conventional therapy | 44.2% (31/70) | 56.9% (41/72)[a] | 62.5% (45/72)[a] |
| who are TNF antagonist naive | 49.0% (25/51) | 56.6% (30/53)[c] | 65.4% (34/52)[a] |

Clinical remission is defined as CDAI score < 150; Clinical response is defined as reduction in CDAI of at least 100 points or being in clinical remission. *The PBO group consisted of patients who were in response to a single dose of UST IV induction and were randomized to receive PBO at week 0 of maintenance. †Patients who achieved 100 point clinical response to UST at start of maintenance therapy. ‡Defined as clinical remission at Week 36, 40 and 44. [a]p < 0.001; [b]p < 0.01; [c]p < 0.05; [d]p = NS; [e]nominally significant.

of this study (IM-UNITI) was to evaluate safety and efficacy of 2 subcutaneous (SC) UST regimens as maintenance therapy.

**Methods** Moderate-severe CD pts (n = 388 for primary study population) who achieved clinical response at Wk8 in 1 of 2 UST IV induction studies were randomly assigned to receive SC injections of PBO or UST 90 mg every 8 wks (q8w) or every 12 wks (q12w). The primary endpoint was clinical remission at Wk44.

**Results** A significantly greater proportion of pts in the UST grps were in clinical remission at Wk44 compared with PBO (53.1% & 48.8% in the q8w & q12w grps vs 35.9% PBO; p = 0.005 & p = 0.040, respectively). The treatment effect difference for q8w vs PBO (17.2%, [95%CI: 5.32%, 29.71%]) was numerically higher than the q12w grp (13.0%, [95%CI: 1.05%, 24.87%]. Primary, major, and other secondary endpoints in notable subsets are in Table 1 below. Similar proportions of pts with AEs were seen across treatment grps (81.7% & 80.3% for q8w & q12w vs 83.5% PBO). The proportions of pts with SAEs were 9.9%, 12.2%, and 15.0% among q8w, q12w, and PBO grps. Serious infections occurred in 2.3%, 5.3%, and 2.3% of pts in q8w, q12w, and PBO grps. Among the primary population, no deaths or major adverse cardiovascular events were reported, and 2 pts reported malignancies (1 basal cell carcinoma each in PBO and q8w grps).

**Conclusion** UST 90 mg q8w and q12w maintained clinical response and remission among pts with moderate-severe CD induced into clinical response with IV UST, with a favourable safety profile through Wk44. The q8w regimen more consistently demonstrated efficacy than the q12w regimen across the range of endpoints.

**Disclosure of Interest** W. Sandborn Grant/research support from: Receptos, Exact Sciences, Amgen, the American College of Gastroenterology, Broad Foundation, Prometheus Laboratories, AbbVie, Boehringer Ingelheim, Takeda, Atlantic Pharmaceuticals, Janssen, Bristol-Myers Squibb, Genentech, Pfizer, and Nutrition Science Partners, Conflict with: Personal fees from Receptos, Prometheus Laboratories, AbbVie, Boehringer Ingelheim, Takeda, Atlantic Pharmaceuticals, Janssen, Bristol-Myers Squibb, Genentech, Pfizer, Nutrition Science Partners, Kyowa Hakko Kirin, Millennium Pharmaceuticals, Celgene Cellular Therapeutics, Santarus, Salix Pharmaceuticals, Catabasis Pharmaceuticals, Vertex Pharmaceuticals, Warner Chilcott, Gilead Sciences, Cosmo Pharmaceuticals, Ferring Pharmaceuticals, Sigmoid Biotechnologies, Tillotts Pharma, Am Pharma BV, Dr. August Wolff, Avaxia Biologics, Zyngenia, Ironwood Pharmaceuticals, Index Pharmaceuticals, Nestle, Lexicon Pharmaceuticals, UCB Pharma, Orexigen, Luitpold Pharmaceuticals, Baxter Healthcare, Ferring Research Institute, Amgen, Novo Nordisk, Mesoblast Inc., Shire, Ardelyx Inc., Actavis, Seattle Genetics, MedImmune (AstraZeneca), Actogenix NV, Lipid Therapeutics Gmbh, Eisai, Qu Biologics, Toray Industries Inc., Teva Pharmaceuticals, Eli Lilly, Chiasma, TiGenix, Adherion Therapeutics, Immune Pharmaceuticals, Celgene, Arena Pharmaceuticals, Ambrx Inc., Akros Pharma, Vascular Biogenics, Theradiag, Forward Pharma, Regeneron, Galapagos, Seres Health, Ritter Pharmaceuticals, Theravance, Palatin, Biogen, and the University of Western Ontario (owner of Robarts Clinical Trials); non-financial support from Receptos, B. Feagan Grant/research support from: Abbott/AbbVie, Amgen, Astra Zeneca, Bristol-Myers Squibb (BMS), Janssen Biotech (Centocor), JnJ/Janssen,

Roche/Genentech, Millennium, Pfizer, Receptos, Santarus, Sanofi, Tillotts, UCB Pharma, Consultant for: Abbott/AbbVie, Actogenix, Akros, Albireo Pharma, Amgen, Astra Zeneca, Avaxia Biologics Inc., Avir Pharma, Axcan, Baxter Healthcare Corp., Biogen Idec, Boehringer-Ingelheim, Bristol-Myers Squibb, Calypso Biotech, Celgene, Elan/Biogen, EnGene, Ferring Pharma, Roche/Genentech, GiCare Pharma, Gilead, Given Imaging Inc., GSK, Ironwood Pharma, Janssen Biotech (Centocor), JnJ/Janssen, Kyowa Kakko Kirin Co Ltd., Lexicon, Lilly, Lycera BioTech, Merck, Mesoblast Pharma, Millennium, Nektar, Nestles, Novonordisk, Pfizer, Prometheus Therapeutics and Diagnostics, Protagonist, Receptos, Salix Pharma, Serono, Shire, Sigmoid Pharma, Synergy Pharma Inc., Takeda, Teva Pharma, TiGenix, Tillotts, UCB Pharma, Vertex Pharma, VHsquared Ltd., Warner-Chilcott, Wyeth, Zealand, Zyngenia, Speaker bureau with: Abbott/AbbVie, JnJ/Janssen, Takeda, Warner-Chilcott, UCB Pharma, Conflict with: Patent holder; Member Scientific Advisory board, Abbott/AbbVie, Amgen, Astra Zeneca, Avaxia Biologics Inc., Bristol-Myers Squibb, Celgene, Centocor Inc., Elan/Biogen, Ferring, JnJ/Janssen, Merck, Nestles, Novartis, Novonordisk, Pfizer, Prometheus Laboratories, Protagonist, Salix Pharma, Takeda, Teva, TiGenix, Tillotts Pharma AG, UCB Pharma; Member, Board of Directors Officer – Robarts Clinical Trials Inc, C. Gasink Shareholder of: Janssen, Employee of: Janssen, D. Jacobstein Employee of: Janssen, L.-L. Gao Shareholder of: Janssen, Employee of: Janssen, J. Johanns Shareholder of: Janssen, Employee of: Janssen, B. Sands Grant/research support from: Janssen, Consultant for: Janssen, S. Hanauer Grant/research support from: Janssen, Consultant for: Janssen, Conflict with: Lecturer for Janssen, S. Targan Grant/research support from: Cedars-Sinai Medical Centre, Consultant for: Janssen, NuMedii, Inc., Conflict with: Advisory Board for Seaver Foundation; Scientific Advisory Board Member Symbiotix, S. Ghosh Grant/research support from: Abbvie, Conflict with: International Steering Committees: Janssen, Abbvie, Pfizer, Receptos, BMS, Aerpio; Advisory Committees: Takeda, Abbvie, Janssen, Pfizer, Allergan, W. de Villiers Conflict with: member of steering committee, active participant as investigator, J.-F. Colombel Consultant for: Pfizer, Takeda, Protagonist Therapies, Celgene, Genentech, Second Genome, Vertex, Amgen, Merck Sharp Dohme, Janssen, Nestle, AbbVie, Tigenix, Receptos, Conflict with: Speaker for AbbVie, Ferring, Shire, Takeda, S. Lee Grant/research support from: AbbVie Pharmaceuticals UCB Pharma Janssen Pharmaceuticals, Inc. Salix Pharmaceuticals Takeda Pharmaceuticals, Inc. Celgene Pharmaceuticals, Inc. Amgen Pharmaceuticals, Inc. Pfizer Pharmaceuticals, Inc., Consultant for: UCB Pharma Robarts Mesoblast Cornerstones Janssen Pharmaceuticals, Inc. Takeda Pharmaceuticals, Inc., L. Dieleman Grant/research support from: Canadian Institutes of Health and Research (CIHR) and Alberta Innovates Biosolutions, Consultant for: Janssen, Abbvie and Shire, S. Katz Grant/research support from: Abbott, Amgen, BMS, Centocor, Hutchison, Millennium, Pfizer, Receptos, Salix, Sanofi, Speaker bureau with: Abbvie, UCB, Actavis, P. Rutgeerts Grant/research support from: J&J, Merck, UCB, AbbVie, Consultant for: J&J, Merck, UCB, AbbVie, Millenium/Takeda, Genentech/Hoffman LaRoche, Medimmune/AstraZeneca/Amgen, Merck/Serono, Bristol-Myers Squibb, Robarts, Tillots Pharma, Conflict with: Lectures for J&J, Merck, AbbVie

## OC-058 PERSPECTIVES OF ADOLESCENT IBD PATIENTS UNDERGOING SURGERY

K Ashton*, S Myers, E Whitehead, S Sebastian. *IBD Unit, Department of Gastroenterology, Hull and East Yorkshire NHS Trust, Hull, UK*

10.1136/gutjnl-2016-312388.57

**Introduction** There is limited data on the concerns experiences of adolescent IBD patients in relation to surgery in a period of significant physical and emotional changes in their lives in addition to the added burden of a chronic disease. Understanding this may impact on the provision of care that is provided for these young patients for decision making, coping skills and overall adjustment. We aimed to study the experiences and concerns in adolescent IBD patients undergoing surgery to facilitate development of a programme aimed at improving this area of care.

**Methods** This was a qualitative questionnaire study. IBD patients between the ages of 18–24 with history of surgery for IBD during adolescent years were invited to participate and informed consent was obtained. All had undergone structured transition into adult services from paediatric care.

**Results** 24 patients (12 males, 12 females) were included. 23 patients included had Crohn's disease. 16 (66.6%) had undergone resection and 6 (37.5%) had resulted in a stoma, 3 of which was permanent. 6 (25%) had undergone EUA with drainage and Seton insertion for perianal CD. Two patients underwent gastrojejunostomy and I patient had panproctocolectomy. Four patients (16.6%) had multiple surgeries.

The main concerns pre surgery were: physical changes of having a scar or stoma (17 Patients, 71%), being away from family, friends and partners (17 patients, 71%) and anxiety regarding post-operative complications (13 patient, 54%). All patients discussed their concerns with family and friends but only 15 (62.5%) spoke with their Consultant or IBD/Stoma Nurse regarding their concerns. Of the 17 (70.83%) who had opportunity to speak to other patients, only 8 found this to be beneficial. Majority (20, 83%) accessed literature in preparation for their procedure but 8 (40%) felt this provided little or no help to them.

Post procedure, all patients felt they got support from friends and family. In addition 8 had (45.8%) turned to a partner for support. Use of support from health care professionals was not mentioned.

Coping strategies post-operatively by patients varied greatly and included family support, and spiritual support. However in a proportion of patients there were significant difficulties in coping post-surgery leading to 'giving up', self-blame and substance and/or alcohol use. Despite this Only 1 (4.1%) patient wished they had not gone ahead with it. Concerns regarding residual surgical scars were reported by only 5 (20.8%) patients.

**Conclusion** This study gives valuable insights into young people's concerns and experiences when facing surgery for their IBD and areas of intervention which will benefit. Personalised approach to these patients in their most vulnerable stage of life would be beneficial and an IBD nurse involved in transition may be an integral part in providing this.

**Disclosure of Interest** None Declared

## OC-059 SCREENING FOR PREVENTABLE AND TREATABLE OPPORTUNISTIC INFECTIONS IN A LARGE COHORT OF IBD PATIENTS: TIME TO TAKE NOTE?

S Myers*, K Ashton, E Whitehead, S Sebastian. *IBD Unit, Department of Gastroenterology, Hull and East Yorkshire NHS Trust, Hull, UK*

10.1136/gutjnl-2016-312388.58

**Introduction** Patients with IBD are exposed to a number of preventable and treatable opportunistic infections. Some of these infections can have potential serious and occasionally life threatening consequences and hence screening for these infections to assess and modify this when possible is recommended. ECCO consensus guidelines promote screening soon as possible following diagnosis of IBD and if feasible vaccination or treatments particularly before considering immunomodulatory treatment. However the uptake of these guidelines by clinicians and indeed patients in real world practice is limited.

**Methods** We collected data from a structured screening programme in a large cohort of IBD patients who were to be started on anti TNF therapy. Baseline characterestics were recorded. For this analysis we focussed on Varicella Zoster, Hepatitis B, hepatitis C, HIV, EBV and Tuberculosis. VZV IgG negative or equivocal patients were considered non-immune. We collected data on self reported varciella exposure in VZV IgG negative patients. All patients with indeterminate Quantiferon were subjected to a T-SPOT test.

**Results** 254 adult and paediatric onset IBD patients (138 females, 116 males) who received or considered for biologics were included in this study. Median age at diagnosis was 28 years (range 6–71). Majority of patients (189) had Crohn's disease. 19 patients (7.5%) were Varicella non immune at screening and all had self reported history of Varicella zoster or uncertain history. 3 of these patients who did not receive vaccination (2 patient preference) had disseminated Varicella Zoster infection. Abnormal TB screening was identified in 16 patients (6.2%). Indeterminate Quantiferon with negative T-SPOT test was noted in 12 patients. 3 patients had positive Quantiferon and T-SPOT and received anti tuberculous chemoprophylaxis. I patient with Indeterminate Quantiferon and Indeterminate T-SPOT was considered low risk . EBV negative status was identified in 7 patients (2.8%) and 3 of these were young males and Thiopurines were not used or stopped in these patients. I patient each were Hepatitis C and HIV positive without clear preidentified risk profile and both received anti viral treatment. I patient identified with hepatitis B is awaiting treatment

**Conclusion** A significant number of preventable and treatable opportunistic infections were identified at screening in a large cohort of IBD patients receiving anti TNF therapy. Clinical assessment of risk alone without approapriate serology will overlook a number of these patients.This study highlights the need for early targeted screening in IBD patients. Cost effectiveness of this structured targetted screening needs further evaluation.

**Disclosure of Interest** None Declared

## OC-060 AN OBSERVATIONAL PROSPECTIVE CLINICAL AUDIT TO DETERMINE THE PRESENCE OF ALCOHOL-RELATED BRAIN INJURY (ARBI) IN PATIENTS PRESENTING TO ACUTE CARE

[1,2]L Owens, [1]L Chinnappan, [2]A Thompson, [3]C Kullu, [1]P Richardson, [4]K Mannix*. *[1]Hepatology, Royal Liverpool & Broadgreen University Hospital Trust; [2]Institute of Translational Medicine, University of Liverpool; [3]Psychiatric Liaison, Mersey Care NHS Trust; [4]Department of Hepatology, Royal Liverpool and Broadgreen Hospital Trust, Liverpool, UK*

10.1136/gutjnl-2016-312388.59

**Introduction** Alcohol dependence is a relapsing condition resulting in significant comorbidity and subsequent use of health resources. Patients are repeatedly admitted into acute care for acute alcohol withdrawal management and stabilisation of their physical condition. Patients are frequently labelled as treatment resistant/non-compliant, despite the fact that a significant proportion of these individuals may have underlying alcohol-related brain injury (ARBI), which results in reduced capacity to understand or engage in treatment.[1] Unfortunately, it is rare that assessment for ARBI is undertaken, and therefore the condition goes undetected.

**Methods** Patients presenting to acute care with an alcohol-related problem were assessed for risk of ARBI by the Alcohol Specialist Nurse performing a **MoCA©**.[2] A score of <26 triggered a referral to a dedicated ARBI clinic delivered by a liaison psychiatrist. The aims of this study were to a) explore the scale of the problem, b) describe the complexity of the patient group c) provide evidence for the need and development of bespoke, integrated care pathways.

**Results** Eighty-nine patients were diagnosed as having ARBI (MoCA < 26) in 12 months 35 female; 57 male, with a mean age of 54 yrs (SD = 10). These patients had average of 9 hospital admissions in 5 years (range 1 to 48). Patients primary reason for admission was; 31 (46%) ALD/Cirrhosis, 21 (23%) alcohol excess (o) 13 (15%) seizure, 6 (7%) ARBI, 2 (1%) stroke and 6 (7%) other. In the previous 5 years; 50 (56%) patients had a fracture, 10 had multiple fractures and 20 had >2 grand mall seizures. Median alcohol consumption was 24 units per day (IQR = 15) at baseline and showed no statistical difference at 3 or 6 month follow-up.

**Conclusion** Screening for ARBI results in detection of otherwise undiagnosed cognitive impairment that renders traditional alcohol treatment approaches ineffective. This group of patients have significant co-morbid conditions likely to benefit from integrated bespoke pathways of care. An acute admission should be utilised as an ideal window of opportunity to assess the patient while they are alcohol free, and plan appropriate treatment which has the potential to prevent people progressing to end stage dementia.

### REFERENCES

1 Wilson K. Alcohol and brain damage in adults with reference to high-risk groups. *Royal College of Psychiatrists*. Report number: CR185, 2014.
2 Wester AJ, Westhoff J, Kessels RPC, *et al*. The Montreal Cognitive Assessment (MoCA) as a measure of severity of amnesia in patients with alcohol-related cognitive impairments and Korsakoff Syndrome. *Clinical Neuropsychiatry*. 2013;**10**:131141.

**Disclosure of Interest** None Declared

## OC-061 ALGORITHM AND CASE-BASED EDUCATIONAL INTERVENTION IMPROVES NURSING STAFF CONFIDENCE IN MANAGEMENT OF PATIENTS ON DIRECT ORAL ANTICOAGULANTS (DOACS) IN ENDOSCOPY

J Catlow*, K Prokas*. *Gastroenterology, Cumberland Infirmary, Carlisle, UK*

10.1136/gutjnl-2016-312388.60

**Introduction** The increased use of DOACs in medicine, is a challenge for endoscopy unit staff, faced with new anticoagulants, new national guidance based on low quality evidence, and new renal function tests to interpret. Guidance by Veitch (2016) and a systematic review by Woodhouse (2013) suggest practical management algorithms for DOACs in endoscopy, which we aimed to summarise into an interactive case based teaching session, to improve nursing confidence.

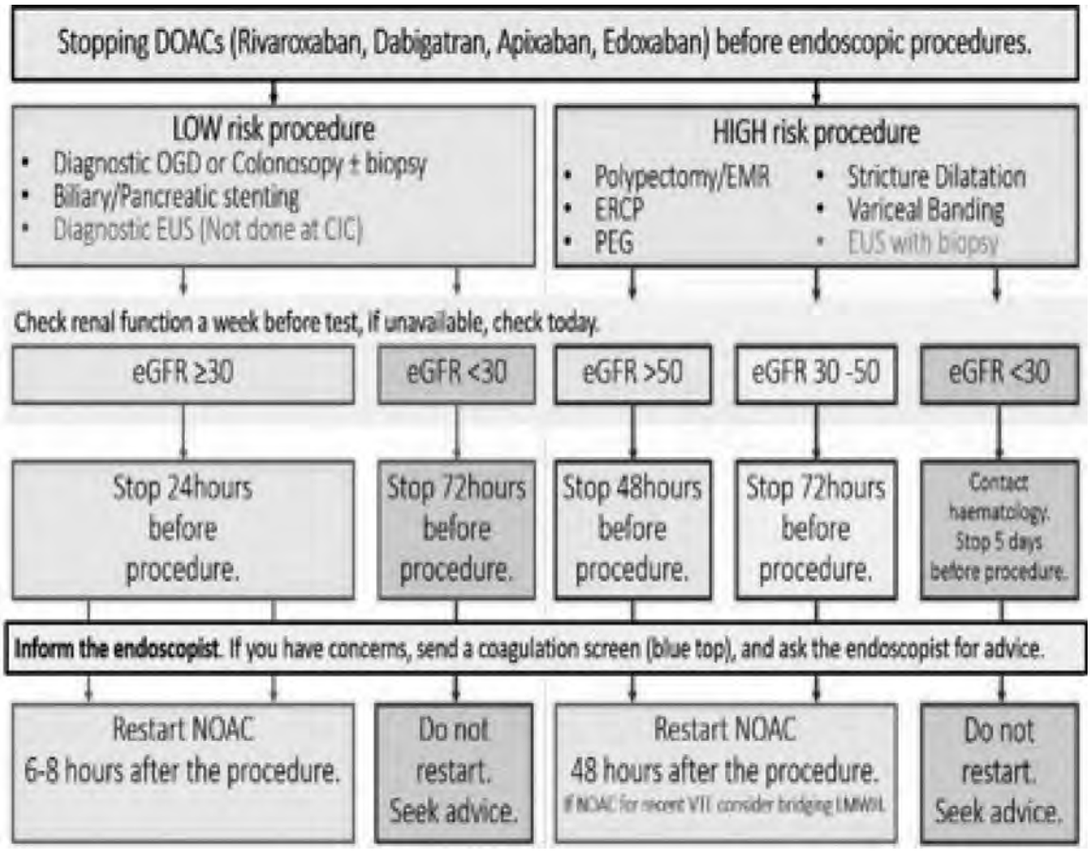
**Methods** We developed an hour long teaching course for all endoscopy nurses in our District General Hospital. Small groups discussed previous experience of DOACs, a brief interactive seminar introduced a locally tailored treatment algorithm based on Veitch (2016) and Woodhouse (2013) (Figure 1). Participants were formatively assessed on identifying DOACs, interpreting renal function and applying a management algorithm to common clinical cases. Subjective confidence on each learning objective was assessed pre- and post-educational intervention, using Likert scales graded 1 (strongly disagree) to 5 (strongly agree), and analysed using a paired T-test. Free text responses were collected and phenomenological analysed.

**Results** 18 endoscopy nursing staff undertook training in two sessions. Mean subjective confidence scores improved significantly, in all learning objectives (Table 1). Eleven free text comments praised the use of case studies and the algorithm, as "*real life scenarios help to consolidate my learning*". Others commented this teaching should be "*cascaded to referrers*".

**Abstract OC-061 Table 1** Mean confidence scores for each objective scored 1–5, and mean improvement

| Objective | Mean post-intervention score | Mean improvement in score (95% Confidence interval) | Paired T Test |
|---|---|---|---|
| Recognising DOACs | **4.8** | **1.2** (0.6–1.7) | p = 0.0005 |
| Organising blood tests | **4.7** | **2.4** (2.0–2.9) | p = 0.0001 |
| Using management algorithm | **4.6** | **1.9** (1.4–2.5) | p = 0.0001 |

**Conclusion** Case based learning activities, using an algorithm approach, amongst nursing staff, significantly increased confidence in managing DOACs in endoscopy. This format is readily reproducible in other endoscopy units, and a useful framework to further educate referrers to endoscopy, and patients taking DOACs.




**Abstract OC-061 Figure 1**

**REFERENCES**
1 Woodhouse C, *et al*. *Frontline Gastroenterology 2013*;**4**:213–218.
2 Veitch AM, *et al*. *Gut* 2016;**65**:374–389.

**Disclosure of Interest** None Declared

## OC-062 REAL LIFE DATA ON SOFOSBUVIR/LEDIPASVIR FOR 8 WEEKS IN GENOTYPE 1 TREATMENT NAIVE, NON CIRRHOTIC PATIENTS IN THE NORTH EAST OF SCOTLAND

P Dundas*, A Fraser, S English, L McLeman, on behalf of Viral Hepatitis Treatment Group, Aberdeen Royal Infirmary. *Digestive Disorders, Aberdeen Royal Infirmary, Aberdeen, UK*

10.1136/gutjnl-2016-312388.61

**Introduction** Studies have identified groups of patients with Genotype 1 HCV infection who may achieve greater than 90% SVR 12 with only 8 weeks of treatment with Sofosbuvir/Ledipasvir (Sof/Led) (ION3 1). Patients in clinical trials tend to be highly selected and therefore our aim was to explore if the SVRs that can be achieved by this shortened duration of treatment in a 'real life' setting match the experience in the trials.
**Methods** Our local guidelines state that Genotype 1, non cirrhotic, treatment naive patients should receive 8 weeks of Sof/Led with the addition of Ribavirin if the viral load is >10 million iu/ml. Data on all patients commenced on Sof/Led between January and November 2015 was collected prospectively. Cirrhosis was defined as a fibroscan >12.5 kpa.
**Results** In total 42 patients have received treatment with Sof/Led for 8 weeks. Of the 42 patients 26 (62%) were male. The average age was 43 years (range 18–78). Average fibroscan score was 5.6 kpa (range 2.9–10.2). There were 4 patients with a fibroscan >9 (classified as F3). All were treatment naive. Opiate substitution therapy was prescribed in 6/42 (14%). The viral load distribution was <10,000 iu/ml – 5/42 (12%), 10001 iu/ml – <10 M iu/ml –34/42 (81%), >10 M–3/42 (7%).

To date all patients have completed treatment (100%). Table 1 outlines the end of treatment (EOT), Week 4 SVR (SVR 4) and Week 12 SVR (SVR 12) data.

**Abstract OC-062 Table 1**

| EOT | 42 | 40 | 2 | 95% |
|---|---|---|---|---|
| SVR 4 | 39 | 37 | 2 | 95% |
| SVR 12 | 28 | 26 | 2 | 93% |

The 2 patients 'unknown' were lost to follow up they completed treatment but did not attend for post treatment bloods. SVR 12 data will be available for all patients at the time of presentation.
**Conclusion** Treatment with 8 weeks of Sofosbuvir/Ledipasvir ± ribavirin is well tolerated with few side effects or premature treatment discontinuations. Our data suggest that the SVRs rates with shortened duration of therapy achieved in clinical trials are achievable in 'real life' settings.

**REFERENCE**
1 Kowdley KV, *et al*, Ledipasvir and Sofosbuvir for 8 or 12 Weeks for Chronic HCV without Cirrhosis. *N Engl J Med*. 2014 May 15;**370**(20):1879–88. doi: 10.1056/NEJMoa1402355. Epub 2014 Apr 10.

**Disclosure of Interest** None Declared

## OC-063 INTRODUCTION OF AN INFLAMMATORY BOWEL DISEASE NURSE FLEXIBLE SIGMOIDOSCOPY CLINIC IMPROVES PATIENT CARE BY INITIATING EARLIER TREATMENT AND SAVES CLINIC SLOTS

HE Johnson*, SA Weaver, SD McLaughlin. *Gastroenterology, Royal Bournemouth Hospital, Bournemouth, UK*

10.1136/gutjnl-2016-312388.62

**Introduction** It is a marker of quality to be able to respond promptly and effectively to a patient with inflammatory bowel disease (IBD) at a time of flare. Many patients who contact the IBD helpline with flare symptoms require a flexible sigmoidoscopy (FS) for accurate assessment. These are usually performed on generic lists where follow up to consider a new treatment plan is arranged resulting in delays in treatment and creating pressure on clinic slots. An experienced IBD nurse prescriber (IBDN) was trained in FS with the aim to endoscopically assess patients and potentially start new treatment the same day.
**Aim** Report the outcomes from the first 2 years of the IBD nurse endoscopist clinic
**Methods** Records were reviewed of all patients attending the IBDN FS clinic. We evaluated the time from referral to FS, diagnoses, demographics and outcomes.
**Results** 410 patients underwwent a FS with the IBDN

- 195 (47.6%) patients referred for rectal bleeding did not have IBD.
- 215 (52.4%) had a known diagnosis of IBD, 152 (70.7%) ulcerative colitis and 63 (29.35%) Crohn's disease. 130 (60.5%) were female, mean age: 48 (range 16 – 88).
- Referral origin: 76 (35.3%) IBD Helpline. 58 (27%) IBD Consultant clinic. 39 (18.1%) IBDN Clinic. 27 (12.6%) Other medical clinic. 11 (5.1%) inpatient. 4 (1.9%) primary care.
- FS outcome: 55 (25.6%) commenced azathioprine, 47 (21.9%) started oral prednisolone, 38 (17.7%) commenced 5 ASA therapy, and 19 (8.8%) no changes to their care. In 41 (19.1%) FS was performed to assess need for or response to biological therapy. The 11 (5%) in-patients returned to the ward, 4 (1.9%) diagnosed with acute severe ulcerative colitis.
- Mean time from referral to test: 7 days, (range 0 – 28).
- In total 137 clinic slots were saved over 2 years, 76 direct from the helpline avoiding an urgent clinic slot. Following FS, 51 (23.7%) patients were discussed at the next IBD MDT, saving a follow up clinic slot. At the MDT the endoscopy findings were reviewed and discussed and appropriate treatment confirmed with the patient in the IBD telephone clinic. 10 (4.7%) patients were referred direct to the day unit to commence biological therapy following confirmation of active disease at FS as per the treatment plan from the Consultant referral.

**Conclusion** The IBDN FS clinic reduced the time interval between developing symptoms and starting a new treatment plan in patients with IBD. The skilled prescribing IBD nurse

endoscopist made changes in 91.2% at the time of the FS. The relatively small number of patients starting 5 ASA therapy suggests this had been optimised prior to FS suggesting patients attending the IBDN FS clinic had moderate to severe IBD. The introduction of the IBDN FS clinic also led to a reduction in demand on outpatient clinic slots.

**Disclosure of Interest** H. Johnson: None Declared, S. Weaver: None Declared, S. McLaughlin Conflict with: Sponsored by Abbvie

## OC-064 RISK FACTORS FOR COLORECTAL NEOPLASIA IN ULCERATIVE COLITIS: RESULTS FROM THE LARGEST AND LONGEST-RUNNING COLONOSCOPIC SURVEILLANCE PROGRAM

[1]CHR Choi*, [1]I Al Bakir, [1]NSJ Ding, [1]M Moorghen, [1]J Warusavitarne, [1]S Thomas-Gibson, [1]B Saunders, [2]M Rutter, [3]T Graham, [1]A Hart. *[1]St. Mark's Hospital, London; [2]University Hospital of North Tees, Stockton-on-Tees; [3]Barts Cancer Institute, London, UK*

10.1136/gutjnl-2016-312388.63

**Introduction** Whilst patients with ulcerative colitis (UC) have an increased risk of developing colorectal cancer (CRC), its absolute risk remains very low. As most CRCs develop from pre-existing dysplasia, identifying those patients at high risk of developing dysplasia is important. The aim of this study was to identify risk factors associated with development of colorectal neoplasia (CRN) in patients with UC.

**Methods** Patients with extensive UC who were under surveillance from 2003 to 2012 were identified and followed up to July 2013. Each surveillance episode was scored for endoscopic and histological severity of inflammation based on the segment worst affected by colitis: (0, normal/quiescent; 1, mild; 2, moderate; 3, severe active). Potential predictors (n = 18) were correlated against colorectal neoplasia (CRN) outcome, which was defined as non-polypoid low-grade dysplasia, high-grade dysplasia or CRC. To take into account the variables that may change over time, we employed Cox-regression analysis with time-dependent covariates.

**Results** A total of 987 UC patients underwent 6,985 colonoscopies (median, 6; interquartile range (IQR), 4–9 per patient) over 12,305 patient-years (median follow-up, 11; IQR, 7–17) since starting their surveillance. Of these, 97 (9.8%) developed CRN (41 cancers). After multivariate analysis, following variables remained as significant contributory factor for the CRN outcome: increased *average* histological inflammation score (average-*HIS*; **average score of all surveillance colonoscopies for each patient**), endoscopic signs of disease chronicity (i.e. tubular, featureless or shortened colon), colonic stricture and primary sclerosing cholangitis (Table 1). Furthermore, while *average-HIS* was the most influential predictor, *HIS* of the immediately preceding colonoscopy showed comparable predictive value (Table 1). Post-inflammatory polyps and scarring were not significant at multivariate level.

**Conclusion** This is the largest detailed cohort study to date looking at individual risk factors for CRC in UC. Patients with PSC, pertinent macroscopic features (tubular, featureless, shortened colon or stricture) or persistent microscopic inflammation require intensive colonoscopic surveillance. In addition,

**Abstract OC-064 Table 1**

| Variables | Hazards ratio (95% CI) | P |
|---|---|---|
| **Average histological inflammation score** (average-HIS)* | **3.1** (2.1–4.5) per 1-unit increase | **<0.001** |
| **HIS of the immediately preceding colonoscopy** | | |
| Normal/quiescent (ref) | 1 | |
| Mild active | **2.4** (1.3 – 4.4) | **0.006** |
| Moderate active | **3.2** (1.6 – 6.1) | **<0.001** |
| Severe active | **4.5** (1.8 – 11.7) | **0.002** |
| **Colonic stricture** | **3.2** (1.3–7.9) | **0.01** |
| Signs of disease chronicity | | |
| None (ref) | 1 | |
| Scarring only | 1.4 (0.8–2.3) | 0.3 |
| **Tubular, featureless or shortened colon** | **1.8** (1.1–2.9) | **0.03** |
| **PSC** | **2.3** (1.1–4.7) | **0.02** |
| Post-inflammatory polyps | 1.2 (0.8–1.8) | 0.4 |
| **Age (at colonoscopy)** | **1.02** (1.00–1.04) | **0.03** |
| Chromoendoscopy | 1.0 (0.6–1.7) | 0.96 |
| **Number of biopsies** (average) | **1.13** (1.07–1.20) | **<0.001** |
| **Surveillance interval** (average) | **0.94** (0.91–0.96) | **<0.001** |

* The histological inflammation score for each surveillance colonoscopy was calculated using the degree of inflammation present in biopsies taken from the segment worst affected by the disease. A-HIS was then calculated by averaging scores of all surveillance colonoscopies.

the histological assessment of inflammation severity at the time of colonoscopy may be used to predict future CRN risk.
**Disclosure of Interest** None Declared

## OC-065 MOTILITY AND OESOPHAGEAL CLEARANCE IN BARRETT'S OESOPHAGUS

[1,2]R Sweis*, [2]A Raeburn, [2]E Athanasakos, [2]N Zarate-Lopez, [1]L Lovat, [1]R Haidry, [1]M Banks, [2]A Emmanuel. *[1]GI Services; [2]GI Physiology Unit, University College London Hospital, London, UK*

10.1136/gutjnl-2016-312388.64

**Introduction** It is not clear if Barrett's is a consequence of excessive reflux only or reduced clearance of refluxed materials. This study compares oesophageal reflux over 24 hours and High Resolution Manometry (HRM) response to solids in Barrett's with non-Barrett's reflux (NBR).
**Methods** Reports for 19 consecutive patients (M58:F14) with ≥2 cm Barrett's during 2015 were compared with 25 patients with NBR (M10:F16) and 13 patient controls with normal physiology/endoscopy (M3:F10). All had at least one typical symptom of heartburn, regurgitation or chest pain. All had HRM with the intention of completing 10x5cc water and 5x1cc bread. Contractile vigour was measured with the Distal Contractile Integral (amplitude x length x contraction time); DCI > 450 mmHg.cm.s and breaks in peristalsis of <5 cm were considered the lower limit of normal contraction as per Chicago Classification 3.0. Standard reflux and impedance parameters were assessed. 11/19 Barrett's were on while all NBR were off treatment.
**Results** Lower oesophageal sphincter pressure was lower in Barrett's (8 vs. 14 mmHg; p = 0.009). Compared to NBR, patients with Barrett's (2–10 cm) had significantly reduced DCI for *both* 5 ml water (318 vs. 650 mmHg.cm.s; p = 0.007) and solid (1096 vs. 2002 mmHg.cm.s; p = 0.009). On the other hand, the likelihood of measuring a DCI of >450 was significantly reduced in Barrett's *only* with solids (69% vs. 100%; p < 0.001) not water (32% vs. 54%; p = 0.224). Peristaltic effectiveness based on HRM was also reduced *only* for solids (44% vs. 65%; p = 0.029).

All reflux parameters were similar between the two groups: total (p = 0.116), upright (p = 0.233) and supine reflux (p = 0.110), symptom index (p = 0.16), symptom association probability (p = 0.106) and total number of reflux events (p = 0.063).

On the other hand, bolus clearance time (BCT) was significantly prolonged for Barrett's (13 vs. 10 s; p = 0.009) solely due to prolonged supine BCT (14 vs. 10 s; p < 0.003). Bolus exposure time (BET) was significantly prolonged for Barrett's (p = 0.011) due to both daytime (4.49% vs. 1.73%; p = 0.015) and nocturnal BET (0.75% vs. 0.24%; p = 0.002).

Comparing those with prior endoscopic Barrett's therapy (n = 6) with treatment naïve (n = 13), there was no difference in any motility or pH monitoring parameter apart from BET which was greater in those who received therapy (5.87% vs. 1.99%; p = 0.046).
**Conclusion** Solids were superior to water swallows in demonstrating ineffective contractility in Barrett's. This was associated with reduced nocturnal oesophageal clearance and increased exposure to refluxate during the day/night. These findings contribute to the theory of impaired contractility and reduced clearance despite acid-reducing medication in Barrett's.

**Disclosure of Interest** R. Sweis Conflict with: Organised Symposium funded by Given img/Diagmed, A. Raeburn: None Declared, E. Athanasakos: None Declared, N. Zarate-Lopez: None Declared, L. Lovat: None Declared, R. Haidry: None Declared, M. Banks: None Declared, A. Emmanuel: None Declared

## OC-066 A NATIONAL SURVEY OF THE PRACTICE AND ATTITUDES TOWARDS INVESTIGATIONS AND BIOFEEDBACK THERAPY FOR ANORECTAL DISORDERS

[1]DH Vasant*, [1]S Hamdy, [2]K Solanki, [2]S Senapati, [3]L Smith, [4]J Barlow, [2]NV Radhakrishnan. *[1]Manchester Academic Health Sciences Centre, University of Manchester, Manchester; [2]Pennine Acute Hospitals, Rochdale; [3]GI Physiology, Sheffield Teaching Hospitals, Sheffield; [4]GI Physiology, Spire Manchester Hospital, Manchester, UK*

10.1136/gutjnl-2016-312388.65

**Introduction** Recent international consensus guidelines on anorectal disorders from the Neurogastroenterology and Motility societies (ANMS-ESNM) recommend biofeedback therapy (BFT) for constipation with dyssynergic defecation (DD) and for faecal incontinence (FI).[1] We conducted a national survey to understand the current practice and opinions on anorectal function tests and BFT in the UK & Ireland.
**Methods** An online survey was developed by a multi-disciplinary panel with medical, surgical and GI physiology representation. All GI clinicians and physiologists/scientists in the UK & Ireland were invited to take the survey through their national societies BSG, AGIP, AUGIS and ACPGBI. All respondents were asked about their views on anorectal function tests and BFT, whilst GI physiologists and lead clinicians regularly involved in these studies were asked specific questions relating to their clinical practice.
**Results** 313 responses (59% Gastroenterologists) included representatives from 98 GI physiology units. Of the units surveyed, 74% have anorectal manometry (ARM) (High Resolution 35%), 59% offer BFT and most have access to other imaging modalities (endoanal ultrasound 64%, colonic transit studies 86% and defecating proctography 67%). Overall, the majority agreed that anorectal function tests are useful in managing chronic functional constipation (FC) (69%) and FI (76%). In FI, 61% found BFT helpful, whereas opinions were divided in constipation with 52% finding BFT helpful for all forms of FC and 47% indicating BFT is only helpful in the DD sub-group. Surprisingly, a high proportion of respondents 'did not know' how useful anorectal function tests (FC 22% and FI 21%) and BFT (FC 26%, DD 33%, FI 31%) were. Responses from GI physiologists/lead clinicians (n = 95) indicated that; 58% have separate rooms for lower GI studies and the numbers of ARMs performed/month in their units (where known) were; none in 20%, 1–20 cases in 37% and >20/month in 28% and similarly numbers of BFTs/month for DD, FC or FI were; none in 37%, 1–20 cases in 21%, >20 in 18%. Only half the GI physiologists/lead clinicians surveyed offer BFT (FI 52%, DD 53% and FC 47%).
**Conclusion** Whilst anorectal function tests are available in most units, BFT appears to be limited to specialist centres, with the majority agreeing that these interventions are useful in managing FC, DD and in particular FI. Up to a third were unsure about the utility of tests and BFT suggesting a worrying lack of knowledge and exposure amongst non-specialists

which could affect the management of patients with these common anorectal disorders.

**REFERENCE**
1 Rao S, *et al*. *NMO* 2015;**27**(5):594–609.

**Disclosure of Interest** None Declared

## OC-067 DIFFERENT MECHANISMS OF DISEASE IN SUBTYPES OF IRRITABLE BOWEL SYNDROME AS DEMONSTRATED BY MRI

[1]C Lam*, [2]G Chaddock, [1]L Marciani, [1]C Costigan, [2]E Cox, [2]C Hoad, [2]S Pritchard, [2]P Gowland, [1]R Spiller. *[1]NIHR Nottingham Digestive Diseases Biomedical Research Unit and Nottingham Digestive Diseases Centre; [2]Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham, UK*

10.1136/gutjnl-2016-312388.66

**Introduction** The study of irritable bowel syndrome (IBS) has been hampered by the absence of biomarkers to accurately categorise subgroups of this heterogeneous condition. Our aim was to assess gut transit, small bowel water content and colonic regional volumes of different clinically defined IBS subtypes both fasted and post-prandially using MRI scans.
**Methods** 91 subjects were recruited (34 healthy volunteers (HV), 30 IBS with diarrhoea (IBS-D), 16 IBS with constipation (IBS-C) and 11 IBS with mixed bowel habit (IBS-M). Subjects underwent MRI scans every 45 min on the study day. Whole gut transit times (WGTT), small bowel water content (SBWC) and regional colonic volumes were assessed as previously described[1,2,3]. Abdominal symptoms were scored using visual analogue score questionnaires after each set of MRI scans. Breakfast was given before t = 0 and lunch after t = 360 min. Postprandial assessment is timed between t = 0 to t = 360 min.
**Results** (See Table 1). Fasting and postprandial SBWC area under the curve (AUC) in IBS-D and IBS-M were significantly less than HV, p = 0.02 & p < 0.01 (1 way ANOVA) respectively. The fasting transverse colon volume in IBS-C was significantly larger compared to HV, IBS-D and IBS-M p = 0.02 (Kruskal-Wallis). The AUC postprandial total colonic volume for IBS-C was significantly larger than HV and IBS-D, p = 0.03(Kruskal-Wallis). The WGTT for IBS-C was significantly longer than HV and IBS-D, p = 0.02(Kruskal-Wallis). There was significant correlation between bloating score (VAS 0–10 cm) and transverse colon volume after lunch (t = 405 min) with spearman r = 0.21, p = 0.04.
**Conclusion** The constricted small bowel in IBS-D & IBS-M and the dilated transverse colon in IBS-C point to significant differences in underlying mechanisms of disease in these IBS subtypes.

**Abstract OC-067 Table 1**

| | HV | IBS-C | IBS-D | IBS-M | P value |
|---|---|---|---|---|---|
| Fasting SWBC (mL) | 63 | 62 | 29 | 22 | 0.03 |
| Mean(SD) | (67) | (44) | (25)[a] | (17)[a] | (Anova) |
| AUC postprandial SBWC (L*min) | 23 | 19 | 14 (8) | 14 (6) | <0.01 |
| Mean(SD) | (10) | (12) | [a] | [a] | (Anova) |
| Fasting transverse colon volume (mL) | 165 | 253 | 212 | 169 | 0.02 |
| [median, IQR] | (117–255) | (200–329)[a] | (103–274)[b] | (119–227)[b] | (Kruskal-Wallis) |
| Area under the curve for postprandial | 180 | 224 | 173 | 171 | p = 0.06 |
| total colonic volume (t = 0 to t = 360 | (137– | (190– | (139– | (146– | Kruskal- |
| min) L*min (median, IQR) | 231)[b] | 251) | 232)[b] | 217) | wallis |
| WGTT (h) | 34 (4– | 69 | 34 | 34 | 0.06 |
| (median, IQR) | 63) | (51–111)[a] | (10–77)[b] | (19–81) | (Kruskal-Wallis) |

[a]p ≤ 0.05 versus HV; [b]p ≤ 0.05 versus IBS-C

**REFERENCES**
1 Chaddock G, *et al*. *Neurogastroenterol Motil* 2014;**26**:205–214.
2 Pritchard SE, *et al*. *Neurogastroenterol Motil* 2014;**26**:124–30.
3 Hoad CL, *et al*. *Phys Med Biol* 2007;**52**:6909–22.

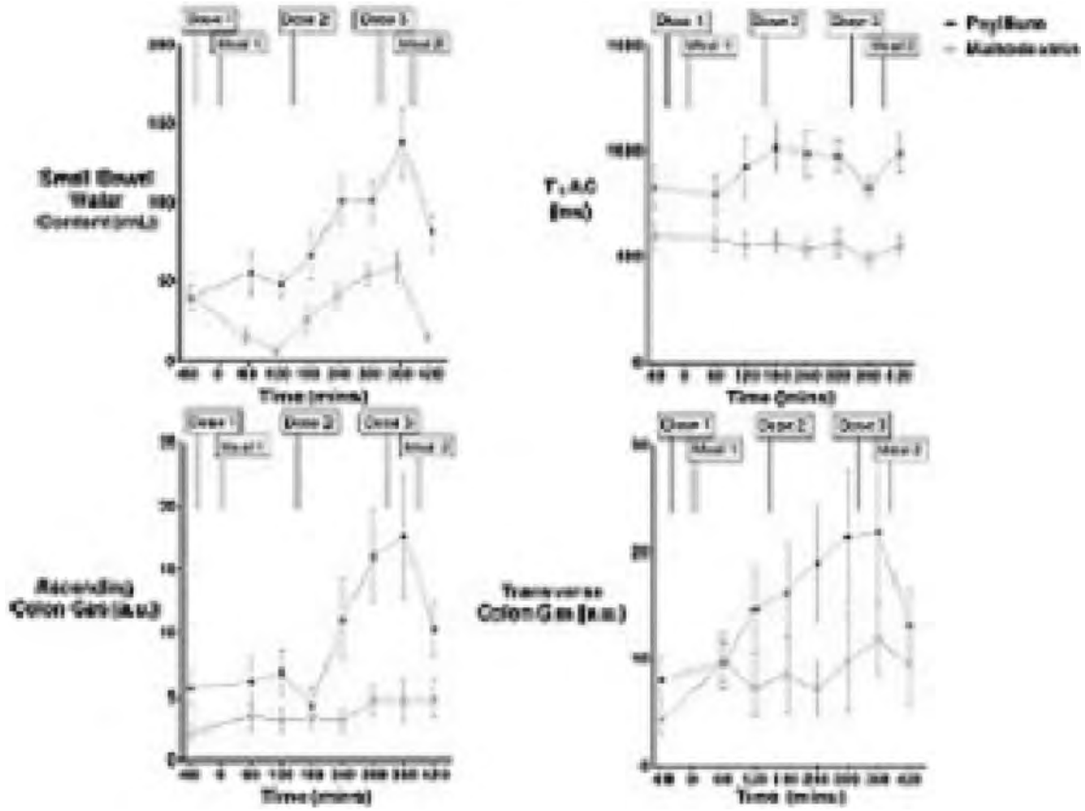
**Disclosure of Interest** C. Lam: None Declared, G. Chaddock: None Declared, L. Marciani: None Declared, C. Costigan: None Declared, E. Cox: None Declared, C. Hoad: None Declared, S. Pritchard: None Declared, P. Gowland: None Declared, R. Spiller Grant/research support from: Lessafre and Ironwood, Consultant for: Almirall, Yuhan Corporation,Ibsen and Danone, Speaker bureau with: Menarini

## OC-068 MEASURING THE EFFECT OF ISPAGHULA ON GUT CONTENT AND FUNCTION USING MRI

[1]G Major*, [2]K Murray, [1]A Nowak, [2]C Hoad, [3]C Kurtz, [3]A Silos-Santiago, [3]J Johnston, [1]L Marciani, [2]P Gowland, [1]R Spiller, on behalf of the Nottingham GI MRI Research Group. *[1]NIHR Nottingham Digestive Diseases Biomedical Research Unit; [2]Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham; [3]Ironwood Pharmaceuticals, Cambridge, UK*

10.1136/gutjnl-2016-312388.67

**Introduction** Ispaghula husk (IS) is believed to modulate functional gastrointestinal symptoms by drawing water into the bowel to soften stool and accelerate transit, and by adding bulk. It is not thought to be readily fermented. Magnetic Resonance Imaging (MRI) can assess gastrointestinal content and function. The aim of the study was to assess whether MRI could detect and quantify the effects of IS in patients with chronic constipation.
**Methods** A double-blind crossover study in adults with functional constipation or constipation-predominant irritable bowel syndrome. Intervention: Metamucil Original Coarse Fibre® (P&G, USA) 14 g tds – daily IS dose 21 g. Placebo: Maltodextrin(MD) 14 g tds. On day 5 subjects swallowed 5 gadolinium filled capsules. On day 6 MRI scans were taken fasting and hourly for 7 hours while subjects ingested a rice pudding meal and treatment (IS or MD). Whole gut transit was assessed by the weighted average position score of the capsules 24 hours after ingestion (WAPS). Free water in the small bowel (SBWC) and ascending colon (ACWC) was measured as were $T_1$ and $T_2$ relaxation times in the ascending and descending colon (AC & DC), colonic volume and gas.
**Results** 16 subjects completed both treatments. Transit was faster after IS with a mean decrease in WAPS of 24% (p = 0.05, 1 tailed). Postprandial SBWC was markedly higher on IS (p < 0.001) with smaller increases seen in ACWC (p < 0.05). Fasting $T_1$ was significantly higher after IS in both AC and DC. $T_2$ fasting values were also higher. A



**Abstract OC-068 Figure 1**

postprandial rise was seen in both $T_1$AC and $T_2$AC after IS but not MD. Fasting colonic volume increased on PS by mean 332 mL or 48%. Exploratory analysis of colonic gas found that after IS significantly more was detectable both fasting ($p < 0.05$) and postprandially ($p < 0.05$). AC gas did not increase until 240 min after PS while transverse colon gas increased steadily through the day.

**Abstract OC-068 Table 1**

| | Maltodextrin | Ispaghula | Mean difference (95% confidence interval) |
|---|---|---|---|
| WAPS | 3.4 (1.6–4.8) | 2.2 (1.5–3.0) | 0.8 (-0.2–1.7) |
| Colonic Volume (mL) | 690 (±55) | 1022 (±60) | 332 (213–451) |
| $T_1$AC (ms) | 596 (±61) | 829 (±98) | 234 (15–453) |
| $T_1$DC (ms) | 366 (±67) | 613 (±94) | 247 (82–411) |

**Conclusion** MRI parameters demonstrated accelerated in transit, increased intestinal water content and increasedcolonic volume with IS. Fasting $T_1$ appears to discriminate constipation from health and responded to treatment. More colonic gas was detected with IS. This may reflect fermentation of IS or interference with small bowel absorption leading to malabsorption of carbohydrate in the rice meal. These novel findings illustrate the potential for MRI to provide insights into the *in vivo* effects and mechanisms of action of gut modulators.

**Disclosure of Interest** None Declared

## OC-069 RANDOMISED CONTROLLED TRIAL – TRANSCUTANEOUS AURICULAR ELECTRICAL VAGAL NERVE STIMULATION PREVENTS THE DEVELOPMENT OF ACID INDUCED ESOPHAGEAL HYPERSENSITIVITY

[1]G Amarasinghe*, [1]Q Aziz, [1,2]AD Farmer. [1]*Wingate Institute of Neurogastroenterology, Barts and the London, London*; [2]*Department of Gastroenterology, University Hospitals of North Midlands, Stoke on Trent, UK*

10.1136/gutjnl-2016-312388.68

**Introduction** We have previously demonstrated that physiologically increasing vagal tone, with deep breathing, prevents the development of acid induced oesophageal pain hypersensitivity.[1] We aimed to determine whether electrical manipulation of parasympathetic tone influences the development of hypersensitivity in a validated model of acid induced oesophageal pain.

**Methods** Prior to, and following, a 30 minute distal oesophageal infusion of 0.15 M hydrochloric acid, pain thresholds to electrical stimulation were determined in the proximal non-acid exposed oesophagus in 15 healthy subjects (11 male, mean age 30 years, range 21–42). Validated sympathetic (cardiac sympathetic index) and parasympathetic (cardiac vagal tone) parameters were measured at baseline and continuously thereafter. Subjects were randomised in a blinded crossover design to receive either external auricular electrical vagal nerve stimulation (VNS), or sham stimulation, during acid infusion.

**Results** VNS increased cardiac vagal tone (31.6% ± 58.7 vs. -9.6 ± 20.6, $p = 0.02$) in comparison to sham stimulation. Mixed effects linear regression, controlling for age and gender,

demonstrated that VNS prevented the development of acid-induced oesophageal hypersensitivity in comparison to sham stimulation (coefficient 15.4 mA /unit time (95% confidence interval 8.8 to 22.2), p = 0.001). Figure 1 demonstrates the percentage change in pain thresholds following a 30 distal oesophageal acid infusion.

**Conclusion** The development of oesophageal hyperalgesia is prevented by electrically stimulating the vagus nerve by increasing parasympathetic tone. This study provides further evidence of the anti-nociceptive role of the parasympathetic nervous system within the oesophagus. Further work is warranted in patients groups such as those with recalcitrant non-erosive reflux disease.

**REFERENCE**

1 Botha C, *et al. Gut* 2014.

**Disclosure of Interest** None Declared

## OC-070 ELUXADOLINE DEMONSTRATES EFFICACY FOR THE TREATMENT OF IRRITABLE BOWEL SYNDROME (IBS) WITH DIARRHOEA (IBS-D) AMONG MULTIPLE CLINICALLY RELEVANT PATIENT SUBGROUPS

[1]B Lacy, [2]W Chey, [3]A Lembo, [4]LS Dove*, [4]PS Covington. *[1]Geisel School of Medicine, Hanover; [2]University of Michigan, Ann Arbour; [3]Beth Israel Deaconess Medical Centre, Boston; [4]Former Employee of Furiex Pharmaceuticals, Inc., An Allergan affiliate, Parsippany, United States*

10.1136/gutjnl-2016-312388.69

**Introduction** Eluxadoline (ELX) is a mixed μ- and κ-opioid receptor (OR) agonist and δ-OR antagonist. It is locally active and approved for the treatment of IBS-D. The effectiveness of ELX was evaluated in clinically relevant subgroups from pooled data from Phase 3 clinical trials.

**Methods** Two double-blind, placebo (PBO)-controlled, Phase 3 clinical trials (IBS-3001 and IBS-3002) randomised patients meeting Rome III criteria for IBS-D to twice-daily treatment with ELX (75 or 100 mg) or PBO. Patients rated IBS symptoms daily including worst abdominal pain (WAP; 0–10 scale) and stool consistency (Bristol Stool Scale). The primary endpoint was composite response (based on simultaneous daily improvement in WAP and stool consistency with ≥50% of days demonstrating a response) evaluated over Weeks 1–12. Subgroup analyses were conducted on the pooled ITT population with comparisons based on a Cochran–Mantel–Haenszel analysis. Subgroups aincluded those based on gender, histories of gastroesophageal reflux disease (GERD) and depression, and prior cholecystectomy status. The impact of baseline IBS pain severity (<5, 5– <8, and ≥8) was examined with a stratified analysis.

**Results** 2423 patients with IBS-D were included. The majority of patients were female (66%) and had baseline WAP scores of 5– <8. Histories of GERD and depression were reported for 31% and 25% of patients, respectively, and 20% of patients had a prior cholecystectomy. In males and females, significantly more patients (p ≤ 0.002) receiving ELX 75 and 100 mg were composite responders than patients receiving PBO (Table). Additionally, significantly greater responder proportions were seen with ELX treatment among patients with histories of GERD (75 and 100 mg) and depression (100 mg), or among patients with a prior cholecystectomy (75 and 100 mg) [Table]. When stratified by baseline WAP, responder proportions were significantly higher for both eluxadoline groups (p < 0.001) vs. placebo.

**Abstract OC-070 Table 1** Composite responders by subgroups

| | n (%) | | |
|---|---|---|---|
| | **Responder** | **Non-responder** | **p value** |
| **Male (n=821)** | | | |
| Placebo BID (n=282) | 43 (15.2) | 239 (84.8) | - |
| Eluxadoline 75 mg BID (n=271) | 74 (27.3) | 197 (72.7) | <0.001 |
| Eluxadoline 100 mg BID (n=268) | 70 (26.1) | 198 (73.9) | 0.002 |
| **Female (n=1602)** | | | |
| Placebo BID (n=527) | 92 (17.5) | 435 (82.5) | - |
| Eluxadoline 75 mg BID (n=537) | 138 (25.7) | 399 (74.3) | 0.001 |
| Eluxadoline 100 mg BID (n=538) | 148 (27.5) | 390 (72.5) | <0.001 |
| **History of GERD (n=742)** | | | |
| Placebo BID (n=246) | 36 (14.6) | 210 (85.4) | - |
| Eluxadoline 75 mg BID (n=242) | 77 (31.8) | 165 (68.2) | <0.001 |
| Eluxadoline 100 mg BID (n=254) | 74 (29.1) | 180 (70.9) | <0.001 |
| **History of depression (n=614)** | | | |
| Placebo BID (n=210) | 33 (15.7) | 177 (84.3) | - |
| Eluxadoline 75 mg BID (n=208) | 47 (22.6) | 161 (77.4) | 0.074 |
| Eluxadoline 100 mg BID (n=196) | 56 (28.6) | 140 (71.4) | 0.002 |
| **Prior cholecystectomy (n=493)** | | | |
| Placebo BID (n=158) | 23 (14.6) | 135 (85.4) | - |
| Eluxadoline 75 mg BID (n=164) | 41 (25.0) | 123 (75.0) | 0.019 |
| Eluxadoline 100 mg BID (n=171) | 48 (28.1) | 123 (71.9) | 0.003 |

p value based on Chi-square test statistic.

**Conclusion** Overall, treatment with ELX is effective in both male and female patients with IBS-D and multiple relevant subgroup populations based on composite response.

**REFERENCE**

1 Previously presented at ACG 2015. Abstract #1760, *Am J Gastroenterol* 2015;**110**:S739–S766. doi:10.1038/ajg.2015.275.

**Disclosure of Interest** B. Lacy Consultant for: Ironwood, Takeda, Salix, Allergan plc, Covidien, W. Chey Grant/research support from: Ironwood, Nestle, Prometheus, Vibrant, Perrigo, Consultant for: Allergan plc, Ardelyx, Asubio, AstraZeneca, Ironwood, Nestle, Prometheus, Salix/Valeant, Sucampo, Takeda, Conflict with: My GI Health, My Nutrition Health, Digital Monometry, My Total Health, A. Lembo Consultant for: Allergan plc, L. Dove Consultant for: Allergan plc, P. Covington: None Declared

## OC-071 DYSPHAGIA PATIENTS WITH NORMAL OESOPHAGEAL HIGH RESOLUTION MANOMETRY: ASSESSING THE DIAGNOSTIC VALUE OF BREAD SWALLOWS

[1]I Miah*, [2]T Orton, [3]G Sui, [3]T Wong, [4]J Jafari. *[1]Oesophageal Lab, Guy's & St Thomas' NHS Trust; [2]King's College London; [3]Guy's & St Thomas' NHS Trust; [4]Guy's & St Thomas NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.70

**Introduction** High resolution manometry (HRM) is currently the gold standard technique to investigate oesophageal motility in patients with dysphagia. However, with routine HRM procedure and use of Chicago classification, a group of patients with dysphagia are considered as being normal and dysphagia remains unexplained.

The aim of this study is to assess the diagnostic value of solid bolus swallows in patients with dysphagia and normal HRM.

**Methods** Patients having dysphagia and normal HRM studies during January-October 2015 were selected. Solid bolus swallows of bread ($1cm^3$ single bread swallows and/or a sandwich meal) followed the routine water swallows on HRM. Patients with a double high pressure zone, oesophageal diverticulum or history of antireflux surgery were excluded. The patients were categorised to symptomatic and asymptomatic groups based on having dysphagia reproduced on bread swallows. Hospital odynophagia and dysphagia questionnaire (HODQ) score, integrated relaxation pressure (IRP), distal contractile integration (DCI), distal latency (DL) and peristaltic abnormality during water swallows were investigated and compared between groups. ROC curve was used to identify the optimum level of sensitivity and specificity of the significant parameters in identifying patients who have a meaningful abnormality on bread swallows. Student t-test is used to compare significance of differences. P value $<0.05$ was considered as significant.

**Results** 72 patients referred with dysphagia and diagnosed with normal HRM were selected.

In the asymptomatic group, 7/22 patients showed abnormality on bread swallows and in the symptomatic group, 45/50 showed abnormal motility (P = 0.0001). ROC analysis showed that having >33.3% abnormal bread swallows has sensitivity of 72%, specificity of 90.91% and likelihood ratio of 7.9 to detect patients who may have abnormal motility and dysphagia on bread swallows. Analysis of water swallow parameters comparing the asymptomatic group against the symptomatic group with abnormal motility on bread swallows did not reveal any significant difference in HODQ score (P = 0.2), IRP (P = 0.17), DL (P = 0.3) and peristaltic abnormalities (P = 0.4).

**Conclusion** Performing solid swallows on HRM can explain dysphagia in a considerable number of patients with dysphagia and normal routine HRM. This complementary test is readily available, and avoids the need for Barium swallowing and radiation exposure.

**Disclosure of Interest** None Declared

## OC-072 THE TOPPIC TRIAL: A RANDOMISED, DOUBLE-BLIND PARALLEL GROUP TRIAL OF MERCAPTOPURINE VS PLACEBO TO PREVENT RECURRENCE OF CROHN'S DISEASE FOLLOWING SURGICAL RESECTION IN 240 PATIENTS

[1]I Arnott*, [2]C Mowat, [3]H Ennis, [3]C Keerie, [3]S Lewis, [4]A Cahill, [4]J Morris, [5]M Dunlop, [6]S Bloom, [7]J Lindsay, [8]S Subramanian, [1]J Satsangi, on behalf of TOPPIC Trial Study Group. *[1]Gastroenterology, NHS Lothian, Edinburgh; [2]Gastroenterology, NHS Tayside, Dundee; [3]Edinburgh Clinical Trials Unit, University of Edinburgh, Edinburgh; [4]Gastroenterology, NHS Greater Glasgow and Clyde, Glasgow; [5]Institute of Genetics and Molecular Medicine, University of Edinburgh, Edinburgh; [6]Gastroenterology, University College London Hospital; [7]Gastroenterology, Royal London Hospital, London; [8]Gastroenterology, Royal Liverpool Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.71

**Introduction** Up to 65% of patients with Crohn's disease (CD) require an operation to control the disease within the first ten years of the condition. This study assessed whether the use of mercaptopurine (MP) can prevent or delay post-operative recurrence in CD.

**Methods** In this randomised, placebo-controlled, double-blind, parallel group trial patients with a confirmed diagnosis of CD undergoing intestinal resection were recruited from 29 UK hospitals. Following informed consent, each patient was randomised to receive a daily oral dose of MP or placebo. Dose was adjusted by weight and thiopurine methyltransferase (TPMT) status and safety monitoring was blinded. Treatment was for a maximum of 36 months. The primary endpoint was defined by clinical recurrence of CD (CDAI > 150 plus 100 point rise) and the need for anti-inflammatory rescue therapy or primary surgical intervention. Secondary endpoints included endoscopic recurrence.

**Results** 240 patients (median age 38 years, 60.8% female, 22.9% smokers were enrolled and received at least one dose of study drug. 128 (53%) were randomised to receive MP and 112 (47%) to placebo. No randomised patients were excluded from the analysis. More patients reached primary endpoint within the placebo (n = 26,23.2%) vs MP groups (n = 16,12.5%) with an adjusted p-value of 0.073 (Hazard Ratio (HR) 0.535, 95% CI 0.27–1.06) and an unadjusted p value of 0.046 (HR 0.527, 95% CI 0.28–0.99) Smokers were more likely to reach primary endpoint than non-smokers (p = 0.018 (HR 0.127,95% CI 0.04–0.46 NNT = 3 amongst smokers, HR 0.898, 95% CI 0.42–1.94 NNT = 31 amongst non-smokers). Smoking habit (HR 2.06, 1.09–3.90) but not age at diagnosis, duration of disease, sex, previous surgery or previous thiopurine or anti-TNF exposure predicted primary outcome. A higher proportion of patients on MP compared with placebo maintained complete endoscopic remission (Rutgeerts i0) at weeks 49 (29.7 v 14.4%, p = 0.006), and 157 (22.5% v 12.5%, p = 0.041) on post-hoc analysis.

**Conclusion** TOPPIC is the largest, double-blind trial of thiopurines to prevent post-operative recurrence in CD. MP modestly reduces the frequency of clinical post-operative recurrence of CD. This was significant amongst smokers, but not in non-smokers. Adverse events did not differ between groups.

**Disclosure of Interest** None Declared

## OC-073 THE FIRST MULTICENTRE EXPERIENCE FROM THE UK AND IRELAND OF THE USE OF THE HOT AXIOS SYSTEM FOR TRANSLUMINAL DRAINAGE OF PANCREATIC FLUID COLLECTIONS

[1]SV Venkatachalapathy*, [2]A Makin, [3]SP Pereira, [3]GJ Johnson, [3]N Bekkali, [4]I Penman, [5]KW Oppong, [5]MK Nayar, [6]NR Carroll, [6]EM Godfrey, [7]BM Ryan, [7]V Parihar, [8]CJ McKay, [1]MT Huggett. *[1]Gastroenterology, Leeds Teaching Hospitals NHS Trust, Leeds; [2]Gastroenterology, Central Manchester University Hospitals NHS Foundation Trust, Manchester; [3]Gastroenterology, University College Hospitals NHS Foundation Trust, London; [4]Gastroenterology, Western General Hospital and Royal Infirmary, Edinburgh; [5]Gastroenterology, The Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle; [6]Radiology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [7]Gastroenterology, The Adelaide and Meath Hospital, Dublin, Ireland; [8]Pancreatic Surgery, Glasgow Royal Infirmary, Glasgow, UK*

10.1136/gutjnl-2016-312388.72

**Introduction** Pancreatic fluid collections (PFC) are a common local complication of pancreatitis with incidences of 5–16% and 20–40% in acute and chronic pancreatitis, respectively.[1] Classification of PFC includes acute peripancreatic fluid collection, pancreatic pseudocyst, acute necrotic collection and walled-off necrosis (WON). A new lumen-apposing, covered self-expanding metal stent on a catheter-based delivery system (Hot AXIOS, Boston Scientific) may have higher technical success rates, easier deployment and lower migration than plastic stents. We present the first multicentre prospective case series from the UK and Ireland to assess success and complication rates associated with Hot AXIOS stent for the drainage of PFC.

**Methods** All adult patients who had Hot AXIOS stent placement for PFC from July 2015-February 2016 were included. Eight centres participated (London, Glasgow, Edinburgh, Newcastle, Cambridge, Manchester, Dublin and Leeds). All patients had CT of the PFC prior to placement. Data including technical success, resolution of collection, complications and stent migration were collected.

**Results** Forty patients were treated with a single Hot AXIOS stent in each case. The median age was 57 years (range 31–78). 25 were male and 15 female. Indications were WON (24), pseudocyst (15) and abscess.[1] The median size of the PFC was 11 cm (4–20 cm). Thirty-eight patients (95%) had trans-gastric stents, 1 had trans-duodenal and 1 had a trans-oesophageal stent. Procedures were technically successful in all patients.

Of 22 patients with available follow-up data to date, the collection resolved in 19 (86%) and reduced in size in 3 (14%). The median time to resolution was 36 (7–208) days. Twelve patients (30%) had 33 necrosectomies and/or endoscopic lavage following stent insertion.

Stents migrated out in 2 patients and was displaced during necrosectomy in 1. Serious adverse events occurred in 1/40 (2.5%): a small bowel obstruction resulting from stent migration, managed surgically. There was no procedure related or 30 day mortality (data available in 27 patients).

**Conclusion** This multicentre case series demonstrates that the Hot AXIOS system is safe and effective in draining PFC with a technical success rate of 100% and low serious adverse event rate.

### REFERENCE

1 Banks PA, Bollen TL, Dervenis C, *et al*. Classification of acute pancreatitis—2012: Revision of the Atlanta classification and definitions by international consensus. *Gut* 2013.

**Disclosure of Interest** None Declared

## OC-074 NOVEL POINT OF CARE TEST FOR DETECTION OF HUMAN PHOSPHOLIPASE A2 TO PREDICT ACUTE PANCREATITIS POST ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP) AND AID SAME DAY DISCHARGE

[1]N Phillips*, [2]M Tyreman, [2]A Bentham, [1]D Bansi, [1]P Vlavianos, [1]D Westaby, [1]CA Wadsworth, [1]SA Khan. *[1]Gastroenterology, Imperial Healthcare NHS Trust, London; [2]Mologic Ltd, Bedford, UK*

10.1136/gutjnl-2016-312388.73

**Introduction** ERCP is a therapeutic procedure which carries a 5% risk of pancreatitis. Most patients who have undergone ERCP are admitted overnight for observation as it can take up to 12 hours for post-ERCP pancreatitis to manifest. Phospholipase A2 Group IB (PLA2GIB) is a sensitive marker of pancreatitis. A rapid, quantitative, point-of-care (POC) test for PLA2GIB has been developed.[1] We aimed to apply this test in a clinical setting, and determine its ability to detect clinically significant episodes of post-ERCP pancreatitis.

**Methods** Ethical approval for the study and informed patient consent were obtained. Patients undergoing ERCP were randomly selected within a tertiary referral HPB centre. Blood amylase levels were obtained before and 3 hrs after ERCP. At the same times, 20μL of blood was taken, added to a running buffer and applied to the POC kit. Movement of the diluent was observed along the lateral flow strip. The lateral flow strip was then read by a micro device, calculating the PLA2-GIB concentration from a standard curve. Cases of post ERCP pancreatitis were idenitified on the basis of characteristic pain, examination findings and elevation in serum amylase.

**Results** 46 patients undergoing ERCP were recruited (26 M). Indication for ERCP included biliary stones (21), biliary strictures (12), biliary stent removal (6), pancreatic duct intervention (2) and other (5). The median pre-ERCP amylase level was 52 IU/L (range 19–316). The median post ERCP amylase was 78 IU/L (32–1720). Median pre-ERCP PLA2GIB concentration was 4 ng/mL (0.5–45). Median post-ERCP PLA2GIB was 6 ng/mL (0.6–418). There was a median 0.3 fold (-0.7-29) increase in PLA2GIB concentration after ERCP.

3 patients developed post-ERCP pancreatitis. These patients all had corresponding elevations in PLA2GIB above 70 ng/mL. A further 3 patients had elevation of amylase >3 x the upper limit of normal but without clinical symptoms of pancreatitis and with a PLA2GIB level <70 ng/mL.

With a cut off level of 70 ng/mL, PLA2GIB had a sensitivity of 100% and specificity of 98%. The PPV was 75% and NPV 100%.

**Conclusion** This is the first clinical trial of a POC test for PLA2GIB activity. The test appears to be highly sensitive for post-ERCP pancreatitis. In our cohort of 46 patients

undergoing ERCP, a negative test at 3 hours would have reliably excluded all cases of post-ERCP pancreatitis. This low cost, easy to use POC test could be used to support same day discharge of patients undergoing ERCP.

**REFERENCE**

1 Chapman R, *et al*. Multivalent nanoparticle networks enable point-of-care detection of human phospholipase-A2 in serum. *ACS Nano* 2015;2565–2573.

**Disclosure of Interest** None Declared

## OC-075 OUTCOMES OF PERCUTANEOUS TRANSHEPATIC CHOLANGIOGRAPHY FOR THE PALLIATIVE RELIEF OF MALIGNANT JAUNDICE IN ENGLAND BETWEEN 2001 AND 2014

[1]JG Rees*, [2]J Mytton, [2]F Evison, [2]P Patel, [1]N Trudgill. *[1]Gastroenterology, Sandwell General Hospital; [2]Informatics, Queen Elizabeth Hospital, Birmingham, UK*

10.1136/gutjnl-2016-312388.74

**Introduction** Percutaneous transcutaneous cholangiography (PTC) is widely used to relieve malignant obstructive jaundice, especially when endoscopic retrograde cholangiopancreatography (ERCP) has failed. Decompression of the biliary tree in patients who are not suitable for surgical resection may improve quality of life and facilitate palliative chemotherapy.
**Methods** Using Hospital Episode Statistics (HES), patients with cancer of the pancreas, biliary tree, gallbladder, small intestine and liver that underwent PTC were identified. Patients who underwent curative resection post PTC were excluded. Mortality, complication rates, readmissions and variation in outcomes between healthcare providers were examined. Associations between age, sex, comorbidity, cancer type and mortality were examined using multivariate regression analysis.
**Results** Between April 2001 and March 2014, 16,363 subjects were identified (50.2% male and mean age 73). Pancreatic cancer was the most common site at 58% and 61.1% of patients had undergone a previous ERCP. In-hospital and 30 day mortality was 15.3% (CI14.8–15.9%) and 23.1% (CI 22.5–23.8%) respectively and median survival was 92 days (IQR 33–244). There was no reduction in mortality over the study period. The percentage of patients receiving chemotherapy after their PTC was 40.7% in those aged under 60 but fell to 2.5% in those aged over 80. Emergency readmission rate was 20.6%. 35.7% of patients suffered a serious complication after their procedure, the most common being infective (16.2%), stent blockage or displacement (6.2%) and acute kidney injury (4.7%). 30 day mortality was associated with increasing age (80+ years, OR 2.91 (95% CI 2.53–3.33) $p < 0.001$), a higher comorbidity score (20+ 3.03 (2.57–3.56) $p < 0.001$) and pre-existing renal dysfunction (2.23 (2.00–2.40) $p < 0.001$). Female patients had a better outlook at 30 days (0.90 (0.84–0.97) $p = 0.009$). 30 day mortality varied from 9.1 to 50% across providers and it was lowest in hospitals performing a higher volume of procedures per year (50+ 0.80 (0.71–0.91) $p < 0.001$).
**Conclusion** In subjects undergoing PTC for the palliative relief of malignant jaundice, 30 day mortality is 23.1%, major complications occur in 35.7% and readmission occurs in 20.6%. Mortality is highest in older males with increasing co-morbidity and in trusts performing low volumes of procedures. Careful multidisciplinary selection of patients who will benefit from PTC for relief of significant symptoms from jaundice or as a bridge to chemotherapy is clearly merited.
**Disclosure of Interest** None Declared

## OC-076 ENDOSCOPIC PLACEMENT OF FULLY COVERED SELF EXPANDING METAL STENTS (FC-SEMS) INTO THE PANCREATIC DUCT OF PATIENTS WITH PAINFUL CHRONIC PANCREATITIS

CA Wadsworth*, A Sangwaiya, R Rajaratnam, MA Butt, N Phillips, D Bansi, P Vlavianos, D Westaby. *Pancreatobiliary Medicine Unit, Hammersmith Hospital, Imperial College Healthcare NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.75

**Introduction** Endoscopic placement of plastic stents into the pancreatic duct (PD) has achieved disappointing outcomes in the treatment of painful chronic pancreatitis (CP), when compared to surgery. However, pancreatic bypass surgery or resection is associated with significant morbidity. Recently, FC-SEMS have proven more effective than plastic stents in the management of strictures of the bile duct. We aimed to assess feasibility, safety and efficacy of PD FC-SEMS in the management of painful CP.
**Methods** Patients were recruited at a single tertiary UK pancreatobiliary centre. Patients were considered for PD FC-SEMS after demonstration of i) CT/MR imaging criteria of chronic pancreatitis including dilatation of the main PD and ii) characteristic pancreatic pain resistant to analgesia. Patients' treatment plans were all determined in a MDT meeting. All patients gave informed consent. Visual analogue pain scores and analgesia requirements were documented prior to intervention and at each follow up appointment. At ERCP, PD cannulation was attempted from the major papilla in all cases. In cases of pancreas divisum, or where PD cannulation via the major papilla failed, cannulation of the minor papilla was attempted. On cannulation of the PD, a pancreatic sphincterotomy was performed before deployment of a 60 mm by 8 mm FC-SEMS. Stent removal was scheduled between 10 and 14 weeks after placement.
**Results** 35 patients (22 M) had FC-SEMS placed into the PD. The median age at time of stent placement was 55 y (range 21–71). In 24 cases the stent was placed via the major papilla, 11 were placed via the minor papilla. The median interval between stent placement and removal was 86 days (13–252) with median follow up of 22 months (3–33). One patient developed a Santorini duct abscess, which precipitated early stent removal but was otherwise managed conservatively. One instance of retrograde stent migration was noted and was managed endoscopically. 20 (57%) patients reported a complete resolution of pancreatic pain, 10 (29%) a partial response and 5 (14%) no response. A concomitant cessation or decline in the use of opiate analgesia was demonstrated. Of the five non- responders, three proceeded to lateral pancreatojejunostomy – two of whom reported a full symptomatic response.
**Conclusion** Placement of FC-SEMS into the pancreatic duct of patients with painful chronic pancreatitis appears to be feasible and safe and does not preclude subsequent surgical intervention. The lengthy follow up data presented suggests that this endoscopic approach may be more effective than would be

expected from historical studies of the use of plastic pancreatic duct stents. A controlled trial is warranted.

**Disclosure of Interest** None Declared

## OC-077 DOES FAECAL OCCULT BLOOD TESTING HELP IDENTIFY ILEO-COLONIC NEUROENDOCRINE TUMOURS IN THE UK BOWEL CANCER SCREENING PROGRAMME (BCSP)?

[1]R Basuroy*, [2]K O'Donnell, [3]C Brooks, [1,4]R Srirajaskanthan, [1,3]J Ramage. *[1]ENETS Neuroendocrine Centre of Excellence, Institute of Liver Studies, King's College Hospital, London; [2]Department of Gastroenterology, Hampshire Hospitals NHS Foundation Trust; [3]Department of Gastroenterology, Hampshire Hospitals NHS Foundation Trust, Basingstoke; [4]Department of Gastroenterology, University Hospital Lewisham, London, UK*

10.1136/gutjnl-2016-312388.76

**Introduction** There has been an increase in the incidence of ileocolonic NETs in recent years, partly from endoscopy. There is no published data on the incidence of NETs diagnosed in the UK 'double' screen BCSP of initial Faecal Occult Blood stool test (FOBt) and, if abnormal, colonoscopy. The incidence (per 100 k) of colorectal cancer (CRC) in FOBt abnormal UK BCSP colonoscopy is 55 times that of the population incidence (10 k vs 184).[1] The aim of this study was to identify NETs diagnosed and recorded at UK BCSP colonoscopy between 2005–14.

**Methods** Data requests were made to UK BCSP for details of screened populations, abnormal FOBts, and colonoscopies performed and CRCs diagnosed. NET related queries were run across 3 database tables; 'Polyp Histology Polyp Architecture', 'Lesion Type', 'Histology Snomed'. Incidence (per 100 k) was compared with those from the SEER database;[2] small intestine and colorectal NETs 2.4; rectal 0.9, other colonic 0.4, appendiceal 0.2, small intestine 0.9.

**Results** 13 million people completed FOBt screening with 260 k abnormal FOBt and 217 k colonoscopies. 146 NETs were identified with an incidence of 67 (per 100 k colonoscopies). The incidence of NETs (per 100 k colonoscopies) by site was 29 rectal, 18 other colonic, 1 appendiceal, and 11 small intestine. Ratios of BCSP to SEER incidences was 29 overall NET, 32 rectal, 45 other colonic, 5 appendiceal, and 12 small intestine.

**Conclusion** The incidence of NETs at UK BCSP colonoscopy following an abnormal FOBt is markedly higher than the SEER population incidence. The effect is greatest for rectal and other colonic NETs although less than that seen with CRC (55 x) following FOBt screening. There is no published data on the incidence of small intestine NETs identified from terminal ileum intubation during 'single' or 'double screen' BCSP. However, the rectal NET incidence in the UK FOBt BCSP is lower (29 per 100 k colonoscopies) than that published from 'single screen' colonoscopy-only BCSP (50–70 per 100 k colonoscopies).[3] This suggests endoscopic screening itself is more helpful than FOBt screening in identifying rectal NETs.

### REFERENCES

1 Logan RF, Patnick J, Nickerson C, *et al*. Outcomes of the Bowel Cancer Screening Programme (BCSP) in England after the first 1 million tests. *Gut* 2012;**61**(10):1439–1446.
2 Modlin IM, Lye KD, Kidd M. A 5-decade analysis of 13,715 carcinoid tumours. *Cancer* 2003;**97**(4):934–959.
3 Kaminski M, Polkowski M, Regula J. Prevalence and endoscopic features of rectal neuroendocrine tumours (carcinoids) among 50148 participants of the Polish colorectal-cancer screening programe. *Gut* 2007;**56**(Suppl III): A310.

**Disclosure of Interest** None Declared

## OC-078 HOW GOOD ARE WE AT LOOKING FOR OSTEOPOROSIS IN CHRONIC PANCREATITIS?

TM El Menabawey*, S Phillpotts, R Preedy, K Besherdas. *Gastroenterology, Barnet Hospital, Royal Free NHS Trust, Hertfordshire, UK*

10.1136/gutjnl-2016-312388.77

**Introduction** Chronic pancreatitis is a common condition managed in the outpatient setting. One of the common complications is osteoporosis and patients have double the risk of fragility fractures compared with the general population. The National Institute of Clinical Excellence (NICE) guidance recognises chronic pancreatitis as a significant risk factor and recommends that all patients aged 50 or over should be considered for DEXA scanning if they are deemed at risk.[1] The purpose of this study was to assess whether patients under review for chronic pancreatitis were being referred for DEXA scanning and to pick up the rate of fragility fractures.

**Methods** A Single Centre, retrospective analysis of all patients identified coded as having "chronic pancreatitis" under ongoing outpatient review in a large NHS Hospital Trust in North London. We reviewed their records and imaging to assess if they had ever been referred for a DEXA scan and whether they had radiological evidence of a fragility fracture whilst under review for pancreatitis.

**Results** Of 106 patients identified, only 1 (0.94%) was referred for DEXA scanning, which did confirm osteoporosis. This patient had been referred incidentally by a GP for another reason not pertaining to their chronic pancreatitis. 14 patients (13.21%) had sustained low impact fractures (5 hip, 3 vertebral, 3 wrist, 2 distal fibula, 1 elbow). Of these fractures 6 (42.9%) had been on no bone protection at all, 6 (42.9%) had been on calcium and vitamin D supplementation, and 2 (14.3%) had been on a bisphosphonate.

**Conclusion** Despite chronic pancreatitis being a well-recognised risk factor for osteoporosis, the investigation and active mitigation of its risk by clinicians in the outpatient setting was poor. This may have resulted in potentially avoidable osteoporotic fractures and future studies should look at whether this is a wider phenomena nationally. We would recommend that risk assessment for osteoporosis should form a part of a routine clinical review in patients under follow up for chronic pancreatitis.

### REFERENCE

1 NICE. Osteroporosis: assessing the risk of fragility fracture. NICE guidelines CG146. August 2012.

**Disclosure of Interest** None Declared

## OC-079 EVALUATION OF TERTIARY CENTRE MANAGEMENT OF TYPE 2 SPHINCTER OF ODDI DYSFUNCTION SUPPORTS MANOMETRY DEFINED ENDOSCOPIC INTERVENTION

[1,2]MA Butt*, [1]JU Kim, [1]A Sangwaiya, [1]P Gummett, [1]S Stawicki, [1]C Wadsworth, [1]P Vlavianos, [1]D Westaby. *[1]Pancreatobiliary Medicine, Hammersmith Hospital; [2]Tissue and Energy, University College London, London, UK*

10.1136/gutjnl-2016-312388.78

**Introduction** There is still doubt about the role of manometry and endoscopic intervention in Type 2 sphincter of Oddi dysfunction (T2SOD). We aimed to examine the efficacy of a manometry guided approach in the evolving management of

T2SOD in our tertiary clinical practice at Hammersmith Hospital, London, UK.

**Methods** We retrospectively evaluated all T2SOD patients referred between 2010 and 2014. Baseline characteristics and procedural outcomes were extracted including manometry readings, type of endoscopic intervention (sphincterotomy or Botulinum toxin injection), complications and pain improvement at 3 and 12 months.

**Results** 74 T2SOD patients were identified, 17 of whom were excluded due to prior sphincterotomy or follow up elsewhere. Botulinum toxin injection was performed in 11 patients with normal manometry; 27% of whom reported short term but unsustained benefit. 46 patients were managed with dual sphincterotomy. Sustained benefit at 12 months was seen significant more often in those with abnormal (72%) than normal (21%) sphincter pressure (p = 0.046, OR = 4.6, CI: 1.2–17.5). Complications occurred in 19.2% (11/57) of patient's post-sphincterotomy, but interestingly were confined only to those with abnormal manometry. Initial pain relief after cholecystectomy (p = 0.037, OR = 11.7, CI = 1.227–110.953) predicted better outcome while those with prior hysterectomy (p = 0.039, OR = 0.039, CI = 0.006-0.849) had worse outcome. Daily opiate users were more likely to suffer complications (p = 0.072, OR = 6.333, CI = 1.114–35.997). Finally, biliary and pancreatic sphincter pressures correlated highly (R = 0.586, p < 0.001).

**Conclusion** We found abnormal manometry predicted both sustained pain improvement post-sphincterotomy and complications. The increased complication risk seems attributable to the underlying disease highlighting the safety of manometry itself. The correlation between biliary and pancreatic sphincter pressure suggests measurement of both may not be necessary before dual sphincterotomy after confirmation of sphincter hypertension. Our study of all-comers advocates a strategy of manometry-defined endoscopic intervention in T2SOD.

**Disclosure of Interest** None Declared

## OC-080 EXCESS STEROID USE IN IBD: TOO MUCH, HOW MUCH AND WHY? RESULTS FROM A NATIONWIDE AUDIT

[1]T Raine*, [2]A Bassi, [3]E Fogden, [4]B Hayee, [5]JK Limdi, [6]H Ludlow, [7]S McLaughlin, [8]GC Parkes, [9]P Patel, [10]MA Smith, [11]C Selinger. *[1]Gastroenterology, Addenbrooke's Hospital, Cambridge; [2]St Helens and Knowsley Teaching Hospitals NHS Trust, St Helens; [3]Gastroenterology, Sandwell and West Birmingham NHS Trust, Birmingham; [4]Gastroenterology, King's College Hospital, London; [5]Gastroenterology, Pennine Acute Hospitals NHS Trust, Manchester; [6]Gastroenterology, Cardiff and Vale UHB, Cardiff; [7]Gastroenterology, The Royal Bournemouth Hospital, Bournemouth; [8]Gastroenterology, St Bartholomew's Hospital, London; [9]Gastroenterology, Epsom and St Helier University Hospitals NHS Trust, Epsom; [10]Gastroenterology, Brighton and Sussex University Hospitals NHS Trust, Brighton; [11]Gastroenterology, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.79

**Introduction** Corticosteroids are the cornerstone of inducing remission in IBD but are limited in their ability to maintain remission, and associated with significant side effects. This is the first nationwide outpatient study of steroid use in IBD and factors affecting their use.

**Methods** We audited consecutive IBD patients attending clinics at 11 centres over 3 months using a web-based assessment tool. Cases meeting criteria for steroid excess (SE) as defined by ECCO guidelines were blind peer reviewed and classified as non-IBD use, unavoidable and inappropriate steroid excess (ISE). Associations between steroid use and patient and institutional factors were analysed.

**Results** Of 1177 patients [48% CD, 49% UC, 3% IBD-U] 79% were in remission/mild disease, 18.5% had moderate and 2.5% severe disease. In the previous 12 months, 30% had received steroids, 13.8% had SE. Peer review revealed that SE was inappropriate in 51.2% of these (8% non-IBD use; 40.7% unavoidable).

Excess steroid exposure was more common in patients with active UC compared to active CD (41.6% vs 26.6%; $p = 0.02$). In multivariate analysis, disease activity was a significant predictor of SE/ISE. In addition, being established on anti-TNF agents protected against SE and ISE in CD. Exposure to thiopurine (SE + ISE) and starting anti-TNF therapy (ISE) were associated with excess steroid use in UC.

CD patients from centres with an IBD MDT were less likely to have SE, similarly CD patients in centres with combined surgical clinics were less likely to experience SE and ISE. Care in centres with dedicated IBD clinics was associated with less SE and ISE in patients with UC. Centres with large numbers of GI trainees showed higher rates of SE in UC and SE and ISE in CD. (All of above independent predictors on multi-variate with significance p < 0.001)

**Conclusion** We identified inappropriate excess steroid use in 7% of UK IBD patients. Risk factors for steroid exposure differed between UC and CD, likely reflecting *inter alia*, differences in access to biologic drugs. Our study is the first to demonstrate positive effects of service configurations (IBD MDT, dedicated IBD clinics, combined surgical clinics) on treatment outcomes even after correction for differences in disease severity. There was an association between ISE in Crohn's and the number of GI trainees per centre suggesting possible gaps in training. Routine recording of excess steroid exposure is feasible and should be considered as a quality marker for outcomes of IBD services.

**Disclosure of Interest** None Declared

## OC-081 NUTRITIONAL OPTIMISATION OF PRE-SURGICAL CROHN'S DISEASE PATIENTS WITH ENTERAL NUTRITION SIGNIFICANTLY DECREASES LENGTH OF STAY AND NEED FOR A STOMA

[1]KV Patel*, [2]AM Sandall, [3]DV O'Hanlon, [4]AA Darakhshan, [4]AB Williams, [4]E Westcott, [1]PM Irving, [2]MC Lomer, [1]JD Sanderson. *[1]Gastroenterology, Guy's and St Thomas' NHS Foundation Trust; [2]Diabetes and Nutritional Sciences Division, King's College London; [3]Dietetics; [4]Colorectal Surgery, Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.80

**Introduction** There is a lack of evidence for a clear nutritional optimisation strategy of pre-surgical Crohn's disease (CD) patients. Limited data suggests that pre-surgical enteral nutrition (EN) increases albumin and decreases CRP as well as reducing anastomotic leakage, intra-abdominal abscess formation and wound infection. We aimed to assess the effect of nutritional optimisation of pre-surgical CD patients with EN on peri- and post-surgical outcomes and anthropometrics.

**Methods** CD patients (n = 32) requiring ileal or ileocolonic resection were identified and nutritionally optimised pre-surgery using a minimum of 6 weeks EN (Modulen IBD, Nestle, Vevey, Switzerland) providing 75–100% nutritional requirements. Peri-surgical (albumin and CRP) and post-surgical (total length of stay, complication rate, readmission days and stoma formation) outcomes were compared with a retrospective

sample of control patients (n = 35) who had not been nutritionally optimised. A subset of nutritionally optimised patients underwent anthropometric analysis pre and post EN. Continuous data are presented as mean ± sd and paired and independent t-tests were used for comparison where appropriate. Categorical data were compared using Chi squared tests. $p < 0.05$ was considered significant.

**Results** Nutritionally optimised patients had significantly shorter total length of stay compared with control patients (9.81 ± 9.97 d vs 16.34 ± 9.95 d, p = 0.009). Only 6 (19%) nutritionally optimised patients versus 19 (54%) control patients had stoma formation (p = 0.005). Nutritionally optimised patients had significantly fewer complication-related readmission days than control patients (0.69 ± 0.37 d vs 1.75 ± 3.64 d, p = 0.02). Twenty six (81%) nutritionally optimised patient had a normal albumin level pre-surgery versus 21 (60%) control patients (p = 0.002) and 20 (63%) nutritionally optimised patients had normal pre-surgery CRP versus 11 (31%) control patients (p = 0.001). Eleven patients (35.3 ± 13.3 years, 5 males) were included in the nutritionally optimised subset analysis. BMI did not change from pre to post EN (23.58 ± 5.04 kg/m2 to 23.03 ± 3.77 kg/m2; p = 0.336) nor did mid arm muscle circumference, waist circumference and handgrip strength.

**Conclusion** Optimisation of nutrition pre-surgery in CD appears to reduce length of stay, stoma rate and additional hospital in-patient days for complications as well as improving albumin and CRP. However it is unclear what anthropometric measurements are useful to assess the effects of EN on nutritional status.

**Disclosure of Interest** None Declared

## OC-082 POSTPRANDIAL INTRAGASTRIC PH LEVELS ARE ELEVATED FOR SIGNIFICANTLY LONGER ON REFLUX MONITORING IN PATIENTS WITH CONFIRMED GASTROPARESIS

[1]JLS Ooi*, [1]G Amarasinghe, [1]K Nikaki, [2]S Gabieta-Sonmez, [1]E Yazaki, [1]D Sifrim, [1,2]P Woodland. *[1]Barts and the London School of Medicine and Dentistry, Queen Mary University of London; [2]Royal London Hospital, Barts Health NHS Trust, London, UK*

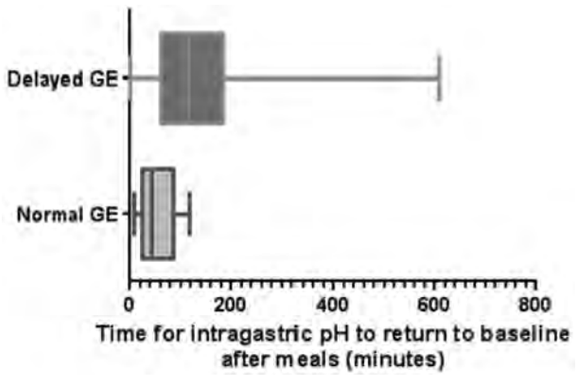
10.1136/gutjnl-2016-312388.81

**Introduction** Many patients present to gastroenterology services with multiple upper GI symptoms. Complaints of postprandial retrosternal/epigastric discomfort with regurgitation are common and can suggest gastro-oesophageal reflux disease, gastroparesis, or both. Disentangling the differentials can be difficult on clinical history alone. The need for several tests to exclude each diagnosis has cost and time implications for clinicians and patients.

It is known that intragastric pH rises from a baseline of ~1 to a median of 4.5 during a meal, and gradually returns to fasting-state as the buffer (i.e. ingested food) leaves the stomach (Gardner et al, 2002). We aimed to establish if reflux monitoring, where intragastric pH is recorded routinely, could also detect longer periods of high pH postprandially in subjects with confirmed gastroparesis compared to those with normal gastric emptying.

**Methods** From our database of patients seen in our tertiary referral GI physiology unit, we identified patients with confirmed delayed gastric emptying on $^{13}$C-octanoic acid breath test from 2009–2015 who had also undergone 24 hour reflux monitoring off PPI (pH-only or combined pH-impedance). Another group of symptomatic patients with normal gastric emptying times on breath test, who also had reflux monitoring, were identified as controls. We interrogated reflux monitoring traces for baseline fasted pH, then measured the time taken for intragastric pH to return to baseline from the end of self-reported mealtimes. Median times for return of postprandial intragastric pH to baseline were compared between groups.

**Results** 80 eligible patients with gastroparesis (54 female; age range 13 to 84 years, median 42 years) were identified and compared with 20 subjects with normal gastric emptying times (12 female; age range 14 to 70 years, median 42 years). Median baseline fasting intragastric pH in both groups was 1.3. The median duration for postprandial intragastric pH to return to baseline for the gastroparesis group was 118 minutes (95% CI: 109–153 min) compared to 42.5 min for the control group (95% CI: 36–68 min). The difference between the two groups was extremely significant (two-tailed $p < 0.0001$).




**Abstract OC-082 Figure 1**

**Conclusion** Intragastric pH is elevated for longer periods postprandially in patients with gastroparesis. The intragastric pH data readily captured on reflux monitoring shows promise as an alternative modality for identifying gastroparesis. To evaluate this hypothesis, a prospective study where $^{13}$ C-octanoic acid breath testing using standardised meals is performed with concurrent reflux monitoring is currently underway at our unit.

**Disclosure of Interest** J. Ooi: None Declared, G. Amarasinghe: None Declared, K. Nikaki: None Declared, S. Gabieta-Sonmez: None Declared, E. Yazaki: None Declared, D. Sifrim Grant/research support from: Reckitt Benckiser, Hull, UK; Sandhill Scientific, Colorado, USA, P. Woodland Grant/research support from: Reckitt Benckiser, Hull, UK

## OC-083 LOW FODMAPS THERAPY ADMINISTERED IN A GROUP SETTING IS LESS EFFECTIVE THAN INDIVIDUAL THERAPY IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

A Cox*, J Eady, K Keetarut, N Zarate-Lopez, E Feurtado, R Rutherford, A Emmanuel. *University College Hospital (UCLH), London, UK*

10.1136/gutjnl-2016-312388.82

**Introduction** A low FODMAPs diet has been showed to be an effective dietary intervention for the management of irritable bowel syndrome (IBS). Traditionally the complex low FODMAP diet is thought to require patient education by a dietitian, a labour intensive process on a one-on-one basis. We hypothesised that group education might offer a cost effective alternative.
**Methods** 167 patients with a Rome III IBS diagnosis who completed low FODMAP dietary education therapy were analysed according to whether they underwent individual (n = 68, 54 f, mean age 39) or group (n = 99, 77 f, mean age 43) sessions. Symptoms were assessed at baseline and follow up (median duration 63 days after treatment ended) via self-administered questionnaire. The primary endpoint was a composite symptom severity score (scale of 0–5), based on pain, bloating, constipation and diarrhoea. A reduction of $\geq$1 pt in score was used for responder analysis.
**Results** Across all patients, at the end of low FODMAP diet there was an improvement in symptom severity (from 2.4 to 1.6, $p < 0.001$). A greater improvement was seen in those receiving individual education compared to those with group (2.7 to 1.6 vs 2.4 to 1.6 respectively, $p < 0.01$). There were 63 responders, 34/68 individual vs. 29/99 group (chi-sq $p = 0.007$). The cost per patient for initial appointment and follow up is £30.54 for group and £73.68 for individual education.
**Conclusion** This study suggests that the complexity of a low FODMAP diet requires delivery on an individual rather than group basis, albeit being more expensive.
**Disclosure of Interest** None Declared

## OC-084 COLONIC MOTOR RESPONSES TO A MEAL AND TO BISACODYL AND SENSATIONS EVALUATED DURING HIGH-RESOLUTION MANOMETRY (HRM) DIFFER BETWEEN LAXATIVE-REFRACTORY SLOW TRANSIT CONSTIPATION WITH OR WITHOUT PAIN

[1]M Corsetti*, [1]A Thys, [1]T Vanuytsel, [1]I Demedts, [1]E Deloose, [2]A Wolthuis, [2]A D'Hoore, [1]J Tack. [1]*TARGID*; [2]*Abdominal Surgery Department, Kuleuven, Leuven, Belgium*

10.1136/gutjnl-2016-312388.83

**Introduction** In clinical practice colonic manometry is recommended to exclude colonic inertia (no response to meal and to drug stimulation, i.e. bisacodyl) in patients with slow transit laxative-refractory constipation (Bharucha 2013). As to date, this has not been assessed by colonic HRM in adults, our *aim* was to evaluate the sensations and colonic motor response to a meal and to bisacodyl in patients with slow-transit laxative-refractory constipation.
**Methods** Consecutive patients with slow-transit and laxative-refractory Rome III constipation were enrolled. During colonoscopy, an HRM catheter (40 sensors, 2.5 cm spaced) and an infusion tube were advanced as far as possible (caecum) and clipped to the mucosa. Colonic pressures were recorded for three hours before and two after a standardised meal, and for one hour after intra-colonic bisacodyl (10 mg). Abdominal discomfort, abdominal gas, desire to evacuate gas, desire to defecate and urgency to defecate were evaluated by means of 100 mm visual analogue scale (VAS) every 15 minutes. Number of pan-colonic pressurizations (PCPs, Corsetti 2015) and of low-amplitude (LAPSs, Dinning 2014) and high-amplitude propagating sequences (HAPSs, De Schryver 2002) were evaluated. A normal response to bisacodyl was identified by the occurrence of at least one HAPS. Data (mean±SD) were compared with those obtained in 10 healthy subjects (HS) (30±11 years, 5 females).
**Results** A total of 24 refractory slow-transit constipation patients (43±13 years, 22 females) were studied; 15 of these also referred pain or discomfort. As compared to HS, the total number of PCPs and of LAPSs was significantly lower in patients without pain (respectively, 19±21 vs 89±40 and 6 ±10 vs 52±39, all $p < 0.01$), while it did not differ in patients with pain (respectively, 60±41 and 38±46). PCPs significantly increased after a meal in HS and in patients with ($p < 0.01$) but not in those without pain ($p = 0.20$). Retrograde LAPSs increased significantly after the meal in HS ($p = 0.01$) but not in patients, regardless of the presence of pain (all $p > 0.25$). The response to bisacodyl was normal in all patients with pain and in 2/8 (25%) of those without pain ($p = 0.01$). VAS scores for discomfort differed significantly between patients with pain as compared to both patients without pain and healthy subjects ($P = 0.006$).
**Conclusion** Compared to slow transit patients without pain, patients with pain have a partially preserved response to meal (increased PCPs but not LAPSs), a higher prevalence of a normal response to bisacodyl and report higher score for discomfort during manometry.
**Disclosure of Interest** None Declared

## OC-085 LOWER GASTROINTESTINAL POLYPECTOMY COMPETENCIES IN THE UK: RETROSPECTIVE ANALYSIS

[1,2]A Rajendran*, [3,4]S Thomas-Gibson, [1]R Rameshshanker, [5]P Dunckley, [2]N Sevdalis, [1,4]A Haycock. [1]*Gastroenterology, St Mark's Hospital, Harrow*; [2]*King's College, London*; [3]*Gastroenterology, St Mark's Hospital, Harrow, London*; [4]*Imperial College, London*; [5]*Gastroenterology, Gloucester Royal Hospital, Gloucester, UK*

10.1136/gutjnl-2016-312388.84

**Introduction** The Directly Observed Polypectomy Skills (DOPyS) is a validated tool used to assess polypectomy skills in the UK.[1] The overall competency for polypectomy is graded on a scale of 1 to 4 and is used to certify trainees for level 1 polypectomy (size < 1 cm) and level 2 polypectomy (size 0–2 cm). Trainees are certified as competent if they achieve grades 3 or 4 for more than 90% in their last 4 consecutive DOPyS and a caecal intubation rate (CIR) >90% over last 3 months. The aim of the study was to investigate the progress of competency in polypectomy for endoscopy
**Methods** Retrospective data from the e-portfolio from Jan 2009 to Sept 2015 was extracted using pre-determined criteria. 749 DOPyS data from 61 trainees was analysed. 42 trainees had achieved provisional (level 1 polypectomy) certification and 19 trainees in the same cohort subsequently achieved full (level 2 polypectomy) certification. Data collected included time (in days) & number of lower GI procedures to the start of first recorded polypectomy assessment (1 st DOPyS), time in days needed to achieve level 1 & level 2 competency from 1st DOPyS & from the first recorded lower GI procedure, caecal intubation rate (CIR) at time of 1st DOPyS & at last recorded DOPyS before certification.

**Results**

**Abstract OC-085 Table 1**

| | Median | n |
|---|---|---|
| Time to 1 st DOPyS (days) | 449 (0–2585) | 61 |
| Lower GI endoscopic procedures at 1 st DOPyS | 137 (5–508) | 61 |
| CIR at 1 st DOPyS (%) | 73 (0–100) | 61 |
| Time to level 1 competency from 1 st DOPyS (days) | 494 (144–1404) | 42 |
| Time to level 2 competency from 1 st DOPyS (days) | 616 (228–1324) | 19 |
| Time from level 1 to level 2 competency (days) | 203 (0–734) | 19 |
| CIR at last DOPyS before provisional certification (%) | 86 (47–94) | 42 |
| CIR at last DOPyS before full certification (%) | 88 (60–93) | 19 |

**Conclusion**

- Trainees in the UK start formative assessment for polypectomy after > 130 lower GI procedures & CIR of >70%
- Median time for trainees to achieve level 1 & level 2 competencies from 1st DOPyS is < 2 years
- Median time for trainees to achieve level 1 competency from first recorded lower GI procedure is > 3 years
- Time to progress to level 2 competency from level 1 competency is > 200 days & may correspond to the rarity of polyps > 1cm in training cases
- Polypectomy competency in this cohort of UK trainees is achieved after reaching an overall CIR >85%
- Further studies are needed to analyse the learning curve of polypectomy & to implement changes to improve efficiency of training

**REFERENCE**

1 Gupta S, Bassett P, Man R, Suzuki N, Vance ME, Thomas-Gibson S. Validation of anovel method for assessing competency in polypectomy. *Gastrointest Endosc* 2012;**75**(3):568–575.e1.

**Disclosure of Interest** None Declared

## OC-086 THE CHARACTERISTICS OF ILEO-COLONIC NEUROENDOCRINE TUMOURS IDENTIFIED IN THE UK BOWEL CANCER SCREENING PROGRAMME (BCSP)?

[1]R Basuroy*, [2]K O'Donnell, [2]C Brooks, [1,3]R Srirajaskanthan, [4,5]J Ramage. *[1]ENETS Neuroendocrine Centre of Excellence, Institute of Liver Studies, King's College Hospital, London; [2]Department of Gastroenterology, Hampshire Hospitals NHS Foundation Trust, Basingstoke; [3]Department of Gastroenterology, University Hospital Lewisham; [4]ENETS Neuroendocrine Centre of Excellence, Institute of Liver Studies, King's College Hospital, London; [5]Department of Gastroenterology, Hampshire Hospitals NHS Foundation Trust, Basingstoke, UK*

10.1136/gutjnl-2016-312388.85

**Introduction** Neuroendocrine tumours (NETs) identified during BCSP, in particular rectal NETs, are reported to be smaller and earlier stage than those identified otherwise. There is no published data on the characteristics of NETs identified as part of the UK BCSP.

**Methods** Data requests were made to UK BCSP and NET related queries were run which identified 146 patients

| | | T stage | | | | |
|---|---|---|---|---|---|---|
| Rectal NET by size | No | 1a | 1b | 2 | 3 | - |
| <10mm | 45 | 35 | | 1 | | 9 |
| 10-20mm | 4 | | 1 | | 3 | |
| >20mm | 2 | | | | 2 | |
| **Grand Total** | **51** | **35** | **1** | **1** | **5** | **9** |

| | | N Stage | | | |
|---|---|---|---|---|---|
| Rectal NET by size | No | 0 | 1 | x | - |
| <10mm | 45 | 12 | | 23 | 10 |
| 10-20mm | 4 | 1 | 2 | 1 | |
| >20mm | 2 | | 2 | | |
| **Grand Total** | **51** | **13** | **4** | **24** | **10** |

| | | M Stage | | | |
|---|---|---|---|---|---|
| Rectal NET by size | No | 0 | 1 | x | - |
| <10mm | 45 | 11 | | 24 | 10 |
| 10-20mm | 4 | 1 | 1 | 2 | |
| >20mm | 2 | | 1 | 1 | |
| **Grand Total** | **51** | **12** | **2** | **27** | **10** |

**Abstract OC-086 Figure 1**

between 2005–14. Written requests to individual BCSP practitioners to complete a proforma about endoscopy, histology, and secondary therapy assesments (including supplemental anonymised reports).

**Results** 102 written proformas were returned for analysis with sites, sizes and grades outlined below. Colorectal cancer was identified as a co-malignancy in 7% of patients with NETs.

**Abstract OC-086 Table 1**

| Site | Number | Average Size mm | Grade 1 | Grade 2 | Grade 3 |
|---|---|---|---|---|---|
| Rectum | 51 | 6 | 41 | 1 | 3 |
| Appendix | 8 | 17 | 6 | 2 | |
| Ileum | 28 | 21 | 24 | 1 | |
| Caecum | 7 | 27 | 6 | 1 | |
| Other | 2 | 20 | 1 | 1 | |
| Transverse colon | 2 | 30 | | | 2 |
| Recto/sigmoid | 1 | | | | 1 |
| Sigmoid colon | 3 | 18 | 2 | | 1 |
| Grand Total | 102 | 13 | 80 | 6 | 7 |

53% of the ileal NETs were staged as T3/4 with nodal disease in 78% and metastases in 14%. The TNM assessment of rectal NETs by size is shown in the attached image.

**Conclusion** 50% of NETs identified are rectal NETs which are invariably small (<10mm), low grade and early stage. 27% of NETs identified are small bowel NETS that can have invasive, nodal and metastatic disease. The results corroborate findings of early disease in rectal NETs but additionally informs on advanced disease in NETs from other primary sites.

**Disclosure of Interest** None Declared

## OC-087 FREQUENCY OF HEALTH RISK BEHAVIOURS IN YOUNG PEOPLE WITH INFLAMMATORY BOWEL DISEASE

[1]AJ Brooks*, [2]G Rowse, [2]EJ Peach, [2]A Ryder, [3]P Narula, [4]BM Corfe, [5]P Norman, [1]AJ Lobo. *[1]Gastroenterology, Sheffield Teaching Hospitals NHS Foundation Trust; [2]Clinical Psychology Unit, University of Sheffield; [3]Gastroenterology, Sheffield Children's Hospital NHS Foundation Trust; [4]Department of Oncology; [5]Department of Psychology, University of Sheffield, Sheffieldm, UK*

10.1136/gutjnl-2016-312388.86

**Introduction** Young people (YP) with any chronic illness are 3 times more likely to engage in health risk behaviours (HRBs) than healthy peers.[1] HRBs are a leading cause of morbidity and mortality, and are associated with poor self-management skills in adulthood. The aim of this study was to investigate the frequency of HRBs in YP with inflammatory bowel disease (IBD).

**Methods** YP aged 16–22 years with a confirmed diagnosis of IBD were recruited from a paediatric and adult IBD centre. Participants completed The Youth Risk Behaviour Survey (YRBS)–adapted, with demographic, disease and treatment-related data.

**Results** 121 patients were studied (75 (62%) CD, 39 (32%) UC, 7 (6%) IBDU), median age 19 years (range 16–22 years). Eight HRBs were identified including; 1) daily smoking in 15/117 (13%); 2) current alcohol misuse in 58/117 (49%); 3) current cannabis use in 12/117 (10%); 4) current use of other illegal drug in 20/121 (17%) with 39/118 (33%) offered, given or sold illegal drugs in the preceding 12 months; 5) previous sexual activity in 71/118 (59%), of whom 25/71 (35%) ≥4 previous sexual partners and 40/71 (56%) without condom use; 6) violent acts with physical fights in 8/118 (7%) and forced sexual intercourse in 5/118 (4%); 7) drink driving in 6/119 (5%) and texting whilst driving 14/118 (12%); 8) suicidal ideation in 9/118 (9%) and attempted suicide in 2/118 (2%). Of these HRBs, males were significantly more likely to participate in current illegal drug use (14/60 vs. 6/61) ($P = 0.02$) and drink driving (6/59 vs. 0/59) ($P = 0.03$). YP aged ≥19-22years were significantly more likely to participate in current illegal drug use (15/65 vs 5/56) ($P = 0.05$), ≥4 sexual partners (21/45 vs. 4/26) ($P = 0.01$), without condom use (31/45 vs. 9/26) ($P = 0.007$) and to text whilst driving (13/64 vs. 1/54) ($P = 0.003$) compared to YP aged 16- <19 years.

**Conclusion** In YP with IBD high levels of alcohol misuse and illegal drug use are observed compared to other chronic health conditions and healthy peers.[1] Clinician awareness of HRBs is vital for both paediatric and adult healthcare providers, with specific YP training for discussion of HRBs needed. Research is needed to understand factors which predispose YP with IBD to participate in HRBs, the impact on disease severity, and possible related outcomes such as psychological distress/morbidity that may have significant long-term health economic implications.

### REFERENCE

1 Suris JC, *et al*. Paediatrics 2008;**122**(5):e113–elll8.

**Disclosure of Interest** None Declared

## OC-088 ASSOCIATIONS BETWEEN MICROBIOTA, COLONIC VOLUME AND TRANSIT DURING A LOW FODMAP DIET

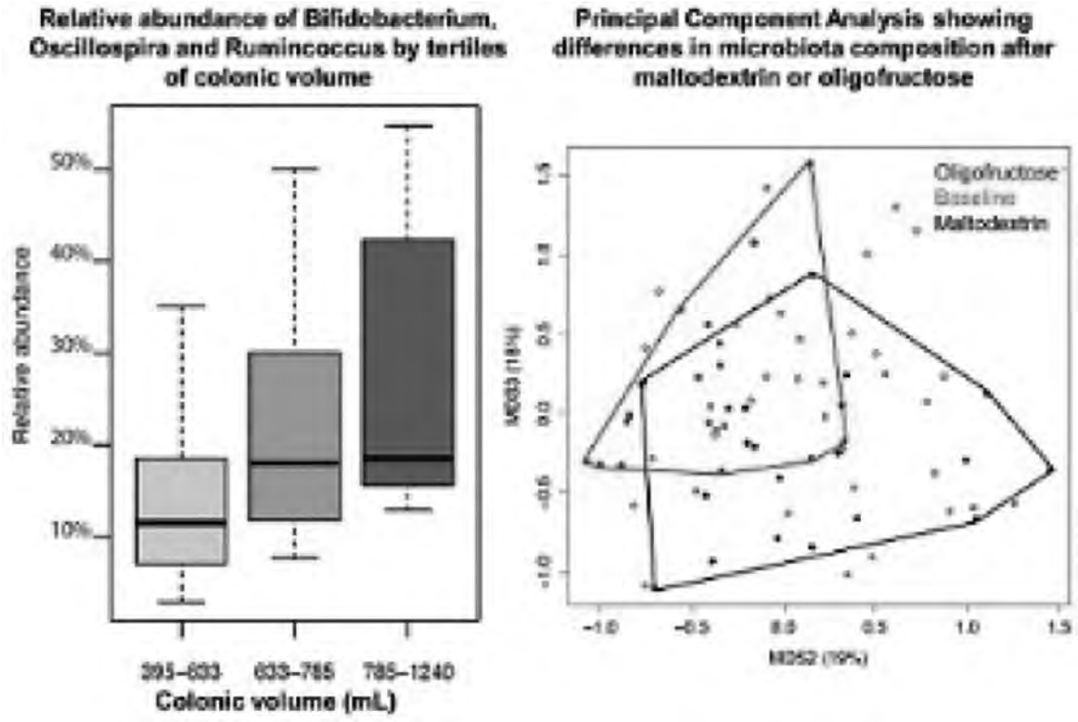
[1]J Jalanka, [2]T Sloan, [3]G Major*, [4]S Krishnasamy, [5]S Pritchard, [4]C Mulvenna, [6]M Lomer, [5]P Gowland, [3]R Spiller, on behalf of Nottingham GI MRI Research Group. *[1]Immunobiology Research Program, University of Helsinki, Helsinki, Finland; [2]Centre for Biomolecular Sciences; [3]NIHR Nottingham Digestive Diseases Biomedical Research Unit; [4]Nottingham Digestive Diseases Centre; [5]Sir Peter Mansfield Imaging Centre, University of Nottingham, Nottingham; [6]Diabetes and Nutritional Sciences Division, King's College London, London, UK*

10.1136/gutjnl-2016-312388.87

**Introduction** Ingestion of poorly digested carbohydrates can induce functional gastrointestinal symptoms, which may be relieved by a diet low in fermentable oligo-, di-, mono-saccharides and polyols (FODMAPs). How dietary changes alter intestinal microbiota and gut function remains unclear. This abstract reports changes in microbiota seen in a randomised controlled trial presented at DDW 2014[1] and associations with colonic volume (CV), transit and dietary oligofructose.

**Methods** All subjects (healthy adults) followed a low FODMAP diet for 7 days, supervised by a registered dietitian. They supplemented their diet with oligofructose (OF) or maltodextrin (MD) 7 g twice daily. CV and transit were assessed by magnetic resonance imaging pre- and post-intervention, as were fasting breath hydrogen($H_2$) and methane($CH_4$). Stool samples were collected before and after intervention for exploratory analysis of microbiota by 16 S Miseq sequencing.

**Results** 37 subjects (19 OF: 18 MD) completed the trial. All reported results were significant at corrected level $p = 0.05$ unless stated. At baseline the combined abundance of 3 bacterial genera - Bifidobacteria, Ruminococcus and Oscillospira - correlated positively with CV ($r = 0.49$) and transit time ($r = 0.29$, $p < 0.1$) while the levels of Faecalibacteria and




**Abstract OC-088 Figure 1**

Lachnospiraceae correlated negatively with CV (r = 0.57) and transit (r = 0.35). CV increased in both groups but changes in microbial composition were different. Relative abundance of Actinobacteria, predominantly Bifidobacterium, decreased in the MD + low FODMAP diet group while the relative abundance of Coprococcus, Oscillospira and uncultured Clostridia increased. Abundance of the latter two correlated with fasting breath $CH_4$. In contrast Bifidobacteria and breath $H_2$ both increased in the OF + low FODMAP diet group while abundance of Lachnospiraceae decreased.

**Conclusion** Increase in Bifidobacteria and $H_2$ confirm previous reports after OF or the low FODMAP diet. The increase in certain bacterial taxa after MD may result from polysaccharides included in the low FODMAP diet. Larger volumes were associated with specific bacteria but the mechanism is unclear. Future research should include assessment of volumes, transit and microbiota to provide new insights into the complex relationship between microbiology, physiology and therapy.

## REFERENCE

1 Major, *et al*. OC-114, DDF 2014.

**Disclosure of Interest** None Declared

## PTU-001 CHROMOENDOSCOPY FOR ANGIECTASIAS IN CAPSULE ENDOSCOPY; BLUE OR JUST WHITE?

[1]A Koulaouzidis, [1]DE Yung*, [2]E Rondonotti, [3]D Voulgarakis, [3]DK Iakovidis. *[1]Endoscopy Unit, The Royal Infirmary of Edinburgh, Edinburgh, UK; [2]Gastroenterology Department, Ospedale Valduce, Como, Italy; [3]Department of Computer Science & Biomedical Informatics, University of Thessaly, Lamia, Greece*

10.1136/gutjnl-2016-312388.88

**Introduction** Blue mode (BM) is one of the features of proprietary software (RAPID®; Medtronic Ltd) for capsule endoscopy (CE) review. BM is a colour coefficient shift of light in the short wavelength range (490–430 nm) superimposed onto a white light (WL) image.[1] Recently, studies have shown that BM improves visualisation of vascular and erythematous non-vascular CE lesions.[1,2] We aimed to objectively evaluate the validity of BM in CE in assessing the surface annotations of angiectasias as compared to WL.

**Methods** A set of 100 anonymised images of angiectasias was used, with the lesions captured both in WL and BM in the same pose. The entire dataset is available in our online database, KID (http://is-innovation.eu/kid). Three reviewers (2 experts and one novice in CE review) graphically annotated the lesions using Ratsnake annotation tool (http://is-innovation.eu/ratsnake). The images were reviewed in WL and BM twice to estimate the inter- and intra-observer variability (at least 7 days apart). The Jaccard index (JI) was used to assess the similarity (agreement) of the annotations performed by the reviewers.

**Results** Under WL, the average inter-observer agreement ranged between 65±15% (novice vs. expert reviewer) and 67 ±13% (between experts), while the intra-observer agreement, ranged between 69±17% and 71±13%. Under BM, the average inter-observer agreement ranged between 56±19% (novice vs. expert reviewer) and 78±18% (between experts). The average intra-observer agreement in BM ranged between 69 ±20% and 73±8.

**Conclusion** BM CE image review does not improve significantly the surface annotations of angiectasias -as compared to WL- for expert or novice reviewers.[3,4]

## REFERENCES

1 Abdelaal UM, *et al*. Blue mode imaging may improve the detection and visualisation of small-bowel lesions: A capsule endoscopy study. *Saudi J Gastroentero* 2015;**21**:418–22.
2 Krystallis C, *et al*. Chromoendoscopy in small bowel capsule endoscopy: Blue mode or Fuji Intelligent Colour Enhancement? *Dig Liver Dis* 2011;**43**:953–7.

3 Koulaouzidis A, *et al*. Blue mode does not offer any benefit over white light when calculating Lewis score in small-bowel capsule endoscopy. *World J Gastrointest Endosc* 2012;**4**:33–7.
4 Koulaouzidis A, et al. QuickView in small-bowelcapsule endoscopy is useful in certain clinical settings, but QuickView with BlueMode is of no additional benefit. *Eur J Gastroenterol Hepatol* 2012;**24**:1099–104.

**Disclosure of Interest** None Declared

## PTU-002 EUS-GUIDED INSERTION OF FULLY COVERED SELF-EXPANDABLE METAL STENTS FOR DRAINAGE OF PANCREATIC WALLED-OFF NECROSIS DOES NOT REQUIRE FLUOROSCOPY

[1]B Braden, [1]A Koutsoumpas*, [2]M Silva, [2]Z Soonawalla, [3]CF Dietrich. *[1]Translational Gastroenterology Unit; [2]Department of HPB surgery, Oxford University Hospitals NHS Foundation Trust, Oxford, UK; [3]Medical Department, Caritas Hospital, Bad Mergentheim, Germany*

10.1136/gutjnl-2016-312388.89

**Introduction** Transgastric placement of specially designed fully covered self-expandable metal stent (FCSMS) has improved the management and the outcome of walled-off necrosis (WON) after severe pancreatitis. Reduction of radiation exposure is of increasing importance. Therefore, we investigated whether transgastric insertion of FCMS for drainage of WON is possible only by EUS-guidance.
**Methods** Patients with symptomatic pancreatic walled-off necrosis referred for endoscopic drainage were included. EUS-guided stent insertion was performed under concious sedation or endotracheal intubation. The pancreatic collection was accessed from the stomach using a linear echoendoscope with a 19 G access needle, a cystotome or directly using the hot Axios® device. After insertion of a guidewire and enlargement of the transgastric access by diathermy a fully covered self-expandable metal stent was inserted under EUS guidance without fluoroscopy. As clinically indicated, endoscopic necrosectomy was performed through the large diameter metal stent. When the collection had shrunk to less than 4 cm, symptoms and inflammatory parametrs had improved, the stent was endoscopically removed.
**Results** 18 patients (median age: 55 years; range 48–63 years) with symptomatic WON (median diameter: 14 cm; range 8–18 cm) were referred for EUS-guided drainage. In 2 patients large traversing arteries within the cavity were detected by colour Doppler imaging during EUS, therefore the insertion of FCSMS was not attempted to avoid possible erosion of the vessels by the stent edges with reducing collection size. In all other patients (88.9%) the completely EUS-guided transgastric stent insertion without fluoroscopy was technically successful (6 AXIOS® and 10 Nagi® stents were inserted). The stent insertion into the cavity and the opening of the distal flange could be clearly visualised by EUS in all cases. After correct positioning of the FCSMS by EUS the proximal stent flange was deployed under endoscopic guidance. Two patients were readmitted with fever when the stent was blocked with debris. Seven patients required endoscopic necrosectomy through the FCSMS. One patient developed self-limiting bleeding. WON resolved in all patients within 8 weeks.
**Conclusion** The good sonographic visibility of the FCSMS throughout the procedure allows safe and easy insertion of transgastric drainage under EUS-guidance without fluoroscopy.

**REFERENCE**

1 Seifert H, Wehrmann T, Schmitt T, Zeuzem S, Caspary WF. Retroperito-neal endoscopic debridement for infected peripancreatic necrosis. *Lancet* 2000; **356**:653–5.

**Disclosure of Interest** None Declared

## PTU-003 VIDEO: INSERTION AND REMOVAL OF AN ILEOCOLONIC STENT IN A COMPLEX CROHN'S STRICTURE

[1]A Cole*, [2]R Singh. *[1]Derby Digestive Disease Centre; [2]Department of Diagnostic Imaging, Royal Derby Teaching Hospital, Derby, UK*

10.1136/gutjnl-2016-312388.90

**Introduction** Crohn's disease often causes stricturing to occur at surgical anastomoses. This may be treated by further surgery or balloon dilatation. This often requires repeated procedures because of the elastic recoil of tissues and restenosis. More recently commercially available removeable stents have been introduced onto the market. We present a video of the successful use and subsequent removal of an entero-colonic stent to treat a complex recurrent post surgical stenosis in a patient with Crohns disease.
**Methods** Xray still and Video images are presented of enterocoloic stent insertion and subsequent removal after two weeks in a patient who had had 4 previous surgeries and had a double stricture in the neoterminal ileum. A 9 cm Diagamed Removeable covered Ileocolonic stent was used.
**Results** See Video, Successful placement of covered TTS self expanding stent across double neoterminal ileal stricture and TI and removal. The patient at subsequent follow up reported a dramatic improvement in their previous symptoms and gained weight rapidly.
**Conclusion** The use of removeable through the scope self expanding metal stents is now a real option for treating Crohns patients with anastomotic strictures as is illustrated by this video.
**Disclosure of Interest** None Declared

## PTU-004 SAFE AND EFFECTIVE DAY CASE ENDOSCOPIC RESECTION OF GIANT COLORECTAL ADENOMAS GREATER THAN 8CM IS ACHIEVABLE IN A TERTIARY REFERRAL UNIT

A Emmanuel*, S Gulati, M Burt, B Hayee, A Haji. *King's College Hospital, London, UK*

10.1136/gutjnl-2016-312388.91

**Introduction** There are few reports on the management of very large sessile colorectal polyps in western practice. Endoscopic resection of these lesions can be technically challenging and they have traditionally been subjected to surgical resection in western centres. Our aim was to determine the safety and effectiveness of endoscopic resection of giant colorectal polyps in a tertiary referral interventional endoscopy unit.
**Methods** All lesions were assessed with magnification chromoendoscopy. Patients with colorectal polyps greater than or equal to 8 cm deemed suitable for endoscopic resection were included. Several techniques were employed including piecemeal endoscopic mucosal resection (EMR), endoscopic submucosal dissection (ESD), and hybrid techniques involving EMR,

ESD, transanal resection or transanal endoscopic microsurgery (TEMS). All patients underwent surveillance magnification chromoendoscopy at 3 and 12 months.

**Results** 88 lesions greater than or equal to 8 cm were resected with a median size of 10 cm (range 8 cm-16cm). Mean age was 74 years. 49 lesions were in the rectum or rectosigmoid, 13 in the right colon and 27 in the descending and sigmoid colon. There were 6 tubular adenomas, 73 tubulovillous adenomas, 7 adenocarcinomas and 1 sessile serrated adenoma. The recurrence rate was 17%, 64% detected at the first surveillance endoscopy and 36% later recurrences. Of these, 2 patients required surgery in the form of TEMS and a right hemicolectomy, 1 died of unrelated causes, and the rest were managed with a repeat endoscopic resection and were free from recurrence at last surveillance. There were no clinically significant perforations. 3 perforations were closed with endoscopic clips and managed conservatively without complications. There were 2 unplanned admissions for bleeding which did not require further intervention. The recurrence and complication rate were significantly higher than for adenomas smaller than 8 cm. 72% were successfully completed as day cases. Of those patients without invasive cancer at their initial resection and alive at last follow up, 93% avoided surgery and were free from recurrence.

**Conclusion** Successful endoscopic resection of giant colorectal adenomas is achievable in a western setting with a low risk of complications. In our series, none of 49 patients with rectal or rectosigmoid lesions, who would have traditionally required an anterior resection or abdominoperineal excision, required a major surgical resection. Almost all patients with benign polyps were successfully treated endoscopically and avoided surgery. Nonetheless, it is associated with a higher risk of complications and recurrence compared with lesions less than 8 cm and therefore should be considered in specialist units.

**Disclosure of Interest** None Declared

## PTU-005 RISK FACTORS FOR RECURRENCE FOLLOWING ENDOSCOPIC RESECTION OF LARGE COLORECTAL POLYPS IN A WESTERN POPULATION

A Emmanuel*, S Gulati, M Burt, B Hayee, A Haji. *King's College Hospital, London, UK*

10.1136/gutjnl-2016-312388.92

**Introduction** Although consistent risk factors for recurrence after resection of colorectal polyps have been identified in eastern series, there are few data on risk factors in western practice which may have different patient populations, experience, referral patterns and employ different techniques. Our unit is one of only a few specialist interventional endoscopy units in the UK. As a result, many referred patients have very large polyps, deeply scarred lesions from previous attempts at resection and several had been deemed too frail to undergo treatment. We aimed to determine the risk factors for recurrence after endoscopic resection of large colorectal polyps in this population.

**Methods** We analysed a series of endoscopic resections of large colorectal polyps. Several techniques were employed including EMR, ESD and hybrid techniques involving combinations of EMR, ESD, TEMS and transanal resection for particularly challenging polyps. Visible vessels were routinely coagulated. After resection, the area was scrutinised with magnification chromoendoscopy to check for residual polyp which was resected or ablated. Surveillance endoscopy was performed at 3 and 12 months.

**Results** 363 polyps with a mean size of 56 mm were resected in 326 patients who had a mean age of 71 years: 309 by EMR, 38 by ESD and 16 by hybrid procedures. Mean follow up was 12.2 months. 38% of polyps were deeply scarred. Recurrence occurred in 9.7% of patients, 17% of which were diminutive. 66% of recurrences were apparent on the first surveillance endoscopy.

Size > 30 mm, piecemeal resection, deeply scarred lesions and the use of argon plasma coagulation were associated with recurrence on univariate analysis. However, logistic regression revealed only piecemeal resection was independently associated with recurrence (OR 5.1, $p = 0.03$). Intraprocedural bleeding, old age, high grade dysplasia, rectal location and histological type were not significantly associated with recurrence. Furthermore, there were no significant differences in recurrence between lesions resected by ESD or EMR, or between lesions resected with traditional techniques and those using a hybrid of various endoscopic and minimally invasive surgical techniques.

**Conclusion** In contrast to other series, we found only piecemeal resection to be associated with recurrence. We feel that the routine use of techniques such as post-resection assessment using magnification chromoendoscopy to detect residual polyp and routine coagulation of visible vessels helps to eliminate some of the risk factors for recurrence. These techniques may also account for the success of hybrid procedures to resect large polyps in difficult locations with similar recurrence rates, which are an invaluable option in some challenging cases.

**Disclosure of Interest** None Declared

## PTU-006 THE VALUE OF EUS IN DIAGNOSING LIVER HILAR LESIONS

[1]B Maher*, [1]C Forde, [1]A Pallan, [2]R Boulton, [2]C Shekhar, [1]BS Mahon. *[1]Department of Radiology; [2]Department of Gastroenterology, Queen Elizabeth University Hospital, Birmingham, UK*

10.1136/gutjnl-2016-312388.93

**Introduction** The aetiology of liver hilar strictures remains a challenging area to diagnose. Advances in cross sectional imaging have improved our ability to better delineate these lesions. However, in the absence of a significant mass, benign and malignant disease may demonstrate similar imaging features, underlining the importance of obtaining a definitive tissue diagnosis prior to potential surgery or chemotherapy. As both treatments carry significant morbidity, and mortality in the case of surgery, obtaining an accurate diagnosis remains imperative. Obtaining a pathological diagnosis remains challenging in particular as the liver hilum is not easily amenable to percutaneous tissue sampling. The yield of endobiliary techniques, principally ERCP guided brushings and endobiliary biopsy is reported to range widely between 33% and 80%, and in practice remains low. Although these methods are highly specific for diagnosis of malignancy, they have a low sensitivity, ranging between 46% and 73%. EUS is a powerful tool in the assessment of hilar lesions with an ability to perform FNA and obtain tissue. We sought to assess the ability of EUS to make a positive diagnosis in these lesions.

**Methods** A retrospective review was performed on all patients who were referred with a hilar mass or stricture that proceeded to EUS assessment between 2009 and April 2015. Hilar lesions were defined as those involving the common hepatic duct (i.e. proximal to the cystic duct insertion) and/or confluence of the right and left intrahepatic ducts. Assessment involved review of patient medical records, EUS findings, cytological results, pre and post procedure imaging up to 12 months post EUS FNA and clinical outcomes.
**Results** 129 patients underwent EUS FNA, of which 76 were male, 53 were female and the mean age was 61 years old. 3 patients were excluded due to lack of follow up data. 87 (67.4%) patients were diagnosed with malignant disease, of which 93% had cholangiocarcinoma. 83% of those with a positive diagnosis were acquired in the first biopsy. EUS FNA had a sensitivity of 83%, specificity of 100%, positive predictive value of 100% and a negative predictive value of 66%.
**Conclusion** This is the largest such series to date in the published literature. In obtaining a diagnosis from a hilar lesion, EUS proves superior to other techniques such as endobiliary biopsy. It is a highly sensitive and specific technique and should be considered as a first line in assessment of lesions in this challenging area.
**Disclosure of Interest** None Declared

## PTU-007 COMPARISON OF DIAGNOSTIC PERFORMANCE BETWEEN TWO CORE BIOPSY NEEDLES FOR ENDOSCOPIC ULTRASOUND-GUIDED TISSUE ACQUISITION OF SOLID PANCREATIC LESIONS

[1]B Paranandi*, [1]KW Oppong, [1]M Dawwas, [1]JS Leeds, [2]A Darne, [2]B Haugk, [1]D Majumdar, [2]MM Ahmed, [1]MK Nayar. *[1]HPB Unit, Freeman Hospital; [2]Department of Cellular Pathology, Royal Victoria Infirmary, Newcastle upon Tyne Hospitals NHS Trust, Newcastle, UK*

10.1136/gutjnl-2016-312388.94

**Introduction** A new core biopsy needle (SharkCore) with a novel design has recently been introduced for endoscopic ultrasound guided biopsy. There is as yet no data on how its diagnostic performance compares to the existing core biopsy needle (Procore) in the diagnosis of pancreatic masses.

The aim of this study was to compare the diagnostic performance and yield of the two core biopsy needles i.e. the ProCore and the Sharkcore needles in the biopsy of solid pancreatic lesions. This is the first study in literature to compare 2 core biopsy needles.
**Methods** A retrospective comparison of a prospectively maintained database. Consecutive patients who had EUS guided fine needle biopsy with Procore (100) and Sharkcore (101) were included in the study. Demographic details, site of lesion, number of passes and histological diagnosis. Final diagnosis was based on positive histology or at least 6 months follow up in cases with a benign pathology. Primary outcome was to compare the diagnostic accuracy of the two needles using only samples graded as definitely malignant as diagnostic for malignancy. The secondary outcome was to compare the diagnostic yield for both needles.
**Results** The sensitivity, specificity, negative predictive value and accuracy between the groups were - Procore =71%, 100%, 28% and 74% vs. Sharkcore =91%, 100%, 53% and 94%. There was a significant difference in sensitivity ($p = 0.0003$) and accuracy ($p = 0.006$). The proportion of samples classified as adequate for histological analysis was 87% for Procore and 99% for Sharkcore - this was significantly different ($p = 0.0009$). There were no complications in either group.
**Conclusion** In this study the SharkCore biopsy needle demonstrated significantly better diagnostic accuracy and tissue yield. Prospective randomised studies are required.
**Disclosure of Interest** None Declared

## PTU-008 ARE PATIENTS UNDERGOING ENDOSCOPIC MUCOSAL RESECTION FOR COLORECTAL LESIONS APPROPRIATELY ASSESSED AND REFERRED PRIOR TO THEIR PROCEDURE

R Preedy, C Wilkins*, K Besherdas. *Gastroenterology, Royal Free NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.95

**Introduction** Endoscopic Mucosal Resection (EMR) has been developed for minimally invasive endoscopic removal of large benign and early malignant lesions. Before carrying out colorectal EMR, it is important to characterise the lesion for removal distinguishing between adenoma and adenocarcinoma and the marginal demarcation of the lesion. There are a number of tools an endoscopist can use to characterise a lesion such as observation (e.g. lesion colour, presence of depression and use of the Paris classification) as well as more advanced techniques such as chromo-endoscopic observation (using Kudo classification) and then check for non-lifting sign in presumed colorectal cancers
**Methods** A single centre, retrospective analysis in a large London NHS Foundation Hospital was performed. All patients undergoing EMR were identified using Unisoft Endoscopy reporting software across a period of 12 months (Jan 2015-Jan2016). Data was collected regarding the referral, EMR procedure and the patients' histological diagnosis.
**Results** 32 patients were referred and underwent EMR with colorectal lesions greater then 2 cm in size. 23 lesions were accurately described in terms of size. 17 lesions were only described in terms of polyp, with no further distinguishing features. Only 9 of the lesions were commented on with regards to Pitt pattern or Paris classification. 3 lesions were identified as cancerous at the time of endoscopy with only one checked for lift sign. 13 lesions were biopsied, prior to EMR. 6 lesions were rectal and only 8 out of the remaining lesions were tattooed. In referral of the lesions 7 had specified the number of units required for the EMR procedure, 3 were referred for MDT discussion the rest had no further details.
**Conclusion** Our case series shows a wide variation in practice in regards to lesion description which can have detrimental effects on patient care. A large number of polyps referrals to EMR are not clearly described in terms of Paris or Kudo classification and the absence of the non-lifting sign. The planning of EMR could be made easier if the pre-EMR assessment included size of the lesion, and clear description with regards to pit pattern and Paris classification. In addition allowing adequate time can be difficulty without a clear lesion description. Regular auditing and presentation go some way to improving practice in a department but endoscopists can come from different departments, be locums or endoscopy can be out sourced. Our opinion would be to ensure that cues are placed in the reporting software to enable accurate assessment and management of lesion considered for EMR as an alternative to EMR endoscopist having to repeat the colonoscopy to assess the lesion prior to scheduling the EMR with appropriate length of time to perform to the procedure.
**Disclosure of Interest** None Declared

## PTU-009 ENDOSCOPIC RESECTION OF CAECAL LESIONS ≥10 MM: INCOMPLETE RESECTION AND COMPLICATION RATE

[1]C Lam*, [1]S Sansone, [1,2]K Ragunath, [1,2]A Parra-Blanco. [1]*Gastroenterology, Nottingham University Hospitals Trust*; [2]*NIHR Nottingham Digestive Diseases Biomedical Research Unit, University of Nottingham, Nottingham, UK*

10.1136/gutjnl-2016-312388.96

**Introduction** Endoscopic resection (ER) of caecal lesions remains technically challenging due to instability of the scope, bowel preparation and thinner bowel wall. Such limitations can affect completeness of ER. Currently there are very few data on endoscopic outcomes following ER of caecal lesions ≥10 mm. Our aim was to assess completeness and complication of ER.

**Methods** Retrospective data was collected between 2011–2015 from documentation system ENDOBASE for all patients who had caecal ER. All lesions ≥10 mm were included. Morphology was categorised as per Paris classification. The following variables were recorded: lesion size and shape, type of ER (en bloc vs piecemeal), completeness of ER, histology, early complications, endoscopic follow up and remnant neoplasia on follow up.

**Results** Mean (SD). A total of 111 caecal resections were performed. See table 1 for demographic details. Average lesion size was 17.2 (8.3) mm; Ip 15.0 (7.0), Is 14.7 (4.6), non-polypoid lesion 17.9 (8.8) mm. En bloc resection was achieved in 63%. In lesions <20 mm, en bloc resection was 82% vs 26% in ≥20 mm lesion ($p < 0.001$). Complete endoscopic resection was in 93% (97% in lesions <20 mm vs 31% in ≥20 mm; $p < 0.02$). However definite histological confirmation of complete resection was in 23%. There was no early major complication. 68% of these lesions showed low-grade dysplasia, 7% high grade dysplasia, 5% serrated lesions and 21% were hyperplastic. Only 58 of 111 were followed up with colonoscopy in 3–36 months. In this group, 17% had endoscopic recurrent neoplasia on follow up. Average follow up was 7 months. Recurrence was treated with either or a combination of repeat EMR (42%), APC (17%) or biopsy forceps (42%). On average, it took 3.5 colonoscopies to achieve complete clearance. In patients with recurrent caecal lesions, there was no difference if their first ER was either by piecemeal or en bloc resection ($p = 0.97$). Recurrence was detected in 9% for all completely resected caecal lesions and 11% recurrence in ≥20 mm lesions. Recurrence was detected in all incomplete resected lesions ($n = 5$). 1 additional patient had remnant tissue detected only on biopsy on normal looking scar. The only variable associated with remnant neoplasia was an incomplete resection.

**Abstract PTU-009 Table 1**

| | |
|---|---|
| **Average age** | **68.6 (9.4)** |
| Male: Female | 64:47 |
| sessile polyp | 49% |
| pedunculated polyp | 2% |
| non-polypoid lesion | 49% |

**Conclusion** Remnant tissue post ER was similar to the UK national guidelines for colorectal polyps.[1] Endoscopic resection of caecal lesions remains a challenge. Incomplete resection lesion invariably has remnant neoplasia on follow up. Strategies such as ESD/hybrid EMR should be considered.

### REFERENCE

1 Rutter *et al*. doi:10.1136/gutjl-2015-309576

**Disclosure of Interest** None Declared

## PTU-010 A COMBINATION OF PILLCAM®SB2 AND SMARTPILL® IN THE INVESTIGATION OF PATIENTS REFERRED FOR ASSESSMENT OF KNOWN OR SUSPECTED SMALL-BOWEL CROHN'S DISEASE & THEIR ASSOCIATION WITH FAECAL CALPROTECTIN LEVELS; CASE SERIES

DE Yung*, J Plevris, A Koulaouzidis. *Centre of Liver & Digestive Disorders, Royal Infirmary of Edinburgh, Edinburgh, UK*

10.1136/gutjnl-2016-312388.97

**Introduction** SmartPill® (Given Imaging Corp., Yoqneam, Israel) is an ingestible, wireless, non-imaging capsule device that records physiological data including contractions, pH and temperature throughout the gastrointestinal (GI) tract.[1] There are currently scarce data looking at SmartPill® assessment of patients with known or suspected small-bowel Crohn's Disease(CD).[2] We designed this pilot study to investigate feasibility and safety of SmartPill® assessment of gut motility in this group (local ethics committee approval ref.12/SS/0013).

**Methods** Over one year (2012), patients with known or suspected CD, referred for small-bowel capsule endoscopy (SBCE), were invited to participate. Patients underwent hydrogen breath test to exclude small-bowel bacterial overgrowth, patency capsule (Agile®) to confirm luminal patency and provided stool samples for faecal calprotectin (FC). Patients ingested PillCam®SB2, then SmartPill®4 h afterwards. Thirty-three healthy controls were obtained from unpublished data. For statistical analysis, $P < 0.05$ was considered significant.

**Results** Over the aforementioned period, 12 patients were recruited (7 F/5 M, mean age 44.2 ±16.6 years). 10 underwent complete SmartPill® examination (1 stomach retention, 1 dropout). Pillcam®SB2 was complete in 10 (1 stomach retention, 1 dropout). Mean FC was 340 ±307.7 μg/g. The study group had longer transit times and lower gut motility index (MI) compared to controls, where MI = Ln (sum of pressure amplitudes × number of contractions + 1). The difference in motility appears statistically significant ($P < 0.05$). Transit times for SmartPill® were longer than PillCam®SB2 (not statistically significant), possibly due to differences in capsule specifications. Limitations: signal loss from SmartPill® (5/10 studies), possibly due to radiofrequency interference.

**Conclusion** This study is the first pilot to attempt combining SBCE and SmartPill® in clinical assessment of small-bowel CD. Current data on motility in CD is scarce. Multimodal information could provide a clearer clinical picture.[3–5] Furthermore, despite concerns about capsule retention in CD patients, our study suggests SmartPill® appears safe for use if a patency capsule is employed beforehand.

### REFERENCES

1 Tran K, Brun R, Kuo B. Evaluation of regional and whole gut motility using the wireless motility capsule: relevance in clinical practice. *Therap Adv Gastroenterol* 2012;**5**:249–260.
2 Rao SSC, Camilleri M, Haler WL, *et al*. Evaluation of gastrointestinal transit in clinical practice: position paper of the American and European Neurogastroenterology and Motility Societies. *Neurogastroenterol Motil* 2011;**23**:8–23.

3 Koulaouzidis A, Iakovidis DK, Karargyris A, *et al*. Wireless endoscopy in 2020: Will it still be a capsule? *World J Gastroenterol* 2015;**21**:5119–30.
4 Dignass A, Van Assche G, Lindsay JO, Lémann M, Söderholm J, *et al*. The second European evidence-based consensus on the diagnosis and management of Crohn's disease: current management. *J Crohns Colitis* 2010;**4**:28–62.
5 Fireman Z, Mahajna E, Broide E, Shapiro M, Fich L, *et al*. Diagnosing small bowel Crohn's disease with wireless capsule endoscopy. *Gut* 2003;**52**:390–92.

**Disclosure of Interest** D. Yung: None Declared, J. Plevris: None Declared, A. Koulaouzidis Grant/research support from: ESGE- Given®Imaging Research grant 2011

## PTU-011 SMALL BOWEL MALIGNANCY IN PATIENTS UNDERGOING CAPSULE ENDOSCOPY IN A TERTIARY CARE ACADEMIC INSTITUTION

[1]C Johnston, [2]DE Yung*, [2]A Koulaouzidis, [2]J Plevris. *[1]College of Medicine and Veterinary Medicine, The University of Edinburgh; [2]Centre of Liver & Digestive Disorders, Royal Infirmary of Edinburgh, Edinburgh, UK*

10.1136/gutjnl-2016-312388.98

**Introduction** Cancer of the small-bowel (SB) is rare accounting for <5% of all gastrointestinal (GI) neoplasms.[1] Furthermore, diagnosis of SB cancer is often delayed.[2] Capsule endoscopy (CE) has become the procedure of choice for non-invasive diagnosis of SB diseases[3]. Nevertheless, data on the use of CE in diagnosis of SB cancer is limited.[4]
**Methods** Retrospective study; the records of all patients who underwent SBCE at our centre from Mar 2005 – Oct 2015 were reviewed; we retrieved those whose CEs were reported as suggestive of neoplasia. Further data was gathered on preceding and subsequent investigations, management and outcome of these patients.
**Results** From a total of 1949 CE studies (1082 PillCam™/867 MiroCam™), SB neoplasia was diagnosed in 7 patients (0.36%; 2 F/5 M; median age 50, range 34–67). Two had lymphoma, 2 gastrointestinal stromal tumours (GIST), 2 duodenal adenocarcinomas, 1 jejunal metastasis from a sarcomatoid lung tumour. In these patients, CE was performed for: iron-deficiency anaemia (IDA) (n = 5), diarrhoea (n = 1) & suspicion of SB lymphoma (n = 1). 6/7 patients had prior negative bidirectional GI endoscopies; 1 had a normal gastroscopy. Prior to CE, two patients had abdominal USS, 4 had CT scan, 2 had SB follow-through and 1 had a bone marrow aspirate. Two patients had capsule retention; one was removed with a gastroscope, the other with push enteroscopy.

All 7 patients had further investigations after CE. Six had a chest, abdomen & pelvis CT scan for staging. Two patients had push enteroscopy, both of whom were diagnosed with duodenal adenocarcinoma. One had double balloon enteroscopy (DBE), two had colonoscopy, two had UGIE; there was one abdominal USS and one bone marrow aspirate. Four pts underwent SB resection. Following resection, 1 patient with GIST had imatinib chemotherapy. Of the two individuals with duodenal adenocarcinoma, one underwent gastroenterostomy and the other had an elective Whipple procedure. Four patients passed away. Two remain under follow up with oncology and one with the GI team.
**Conclusion** SB cancers are rare and our experience is in agreement with other studies. The median age of 50 indicates that SB malignancy is more common in relatively younger patients. Unexplained iron deficiency anaemia was the main presenting complaint in our patients which triggered further investigation despite negative bidirectional endoscopies. CE is effective in picking up SB neoplasia where other imaging modalities have failed.

### REFERENCES

1 Schottenfeld D, Beebe-Dimmer JL, Vigneau FD. The epidemiology and pathogenesis of neoplasia in the small intestine. *Ann Epidemiol* 2009;**19**:58–69.
2 Pennazio M, Rondonotti E, de Franchis R. Capsule endoscopy in neoplastic diseases. *World J Gastroenterol* 2008;**14**:5245–53.
3 Pennazio M, Spada C, Eliakim R, *et al*. Small-bowel capsule endoscopy and device-assisted enteroscopy for diagnosis and treatment of small-bowel disorders: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline. *Endoscopy* 2015;**47**:352–86.
4 Rondonotti E, Pennazio M, Toth E, *et al*. Small-bowel neoplasms in patients undergoing video capsule endoscopy: a multicenter European study. *Endoscopy* 2008;**40**:488–95.

**Disclosure of Interest** C. Johnston: None Declared, D. Yung: None Declared, A. Koulaouzidis Grant/research support from: ESGE- Given®Imaging Research grant 2011, J. Plevris: None Declared

## PTU-012 FAECAL CALPROTECTIN AS PREDICTOR OF SMALL-BOWEL CROHN'S DISEASE IN CAPSULE ENDOSCOPY – A SYSTEMATIC REVIEW AND META-ANALYSIS

[1]U Kopylov, [2]DE Yung*, [1]T Engel, [3]T Avni, [4]R Battat, [1]R Eliakim, [2]A Koulaouzidis. *[1]Sheba Medical Centre, Tel Hashomer, Israel; [2]Royal Infirmary of Edinburgh, Edinburgh, UK; [3]Rabin Medical Centre, Petah-Tikva, Israel; [4]McGill University Health Centre, Montreal, QC, Canada*

10.1136/gutjnl-2016-312388.99

**Introduction** Faecal calprotectin (FC) is a well-established marker of gut inflammation. While the correlation of elevated FC levels with colonic inflammation has been confirmed in several studies,[1,2] data regarding the correlation of FC with small-bowel inflammation is either scarce or conflicting.[3] Capsule endoscopy (CE) is the modality of choice for detection of small-bowel inflammation and/or small-bowel Crohn's disease (CD).[4] Therefore, we aimed to systematically review and meta-analyse the evidence for the diagnostic accuracy of FC as a predictor of small-bowel CD.
**Methods** A comprehensive literature search of the databases PubMed and Embase was performed, using the search string: "capsule endoscopy" + calprotectin. Studies including patients with suspected and/or established CD evaluated by both FC and CE were retrieved. Corresponding authors were contacted for any missing data. The following FC cut-offs were evaluated: >50, 100 and 200 μg/g, as available in each included study. A diagnostic meta-analysis was performed; pooled diagnostic sensitivity (Se), specificity (Sp) and diagnostic odds ratio (DOR) with 95% confidence intervals (95% CI) were obtained for each of the cut-offs. Bias was evaluated using the quality assessment of studies of diagnostic accuracy in systematic reviews (QUADAS) 2 tool. A minimum of 4 studies was required for each analysis.
**Results** A total of 135 studies were identified; seven (3 prospective, 4 retrospective) studies, including 463 patients, entered the final analysis. Overall, the methodological quality of the studies was high, with 6/7 studies showing low risk of bias. For studies including only patients with suspected CD, the diagnostic accuracy of FC for the cut-off of 50 μg/g was as follows: 5 studies, 305 patients; Se 89% (CI 68%;97%), Sp 55% (CI 36%;73%), DOR 10.3 (CI 3.7;28.6) . For all included studies (suspected and established CD), the DOR was significant for all the evaluated FC cut-offs. **FC > 50μg/g**: 7 studies, 463 patients; Se 83% (CI 73%;90%), Sp 53% (CI

36%;71%), DOR 5.64 (CI 3.2;10.1). **FC > 100μg/g**: 5 studies, 379 patients; Se 68% (CI 56%;76%), Sp 71% (CI 46%;88%), DOR 5.01 (CI 2.03;12.07). **FC > 200μg/g**: 4 studies, 309 patients; Se 42% (CI 26%;64%), Sp 94% (CI 64%;99%), DOR 13.64 (CI 2.01;88.6). Sensitivity analysis based on methodological quality did not change those results significantly.

**Conclusion** This meta-analysis confirms that FC, when used as a predictor of small-bowel CD prior to CE, has high diagnostic accuracy. For patients with suspected CD, a FC cut-off level of 50 μg/g provided high sensitivity and DOR, while for the entire patient cohort (suspected and established CD) FC > 200 μg/g provided the best overall DOR. The likelihood of diagnosing small-bowel CD is extremely low in suspected CD patients with FC < 50μg/g.

## REFERENCES


1 D'Haens G, *et al*. Faecal calprotectin is a surrogate marker for endoscopic lesions in inflammatory bowel disease. *Inflamm Bowel Dis* 2012;**18**:2218–2224.
2 Van Rheenen PF, *et al*. Faecal calprotectin for screening of patients with suspected inflammatory bowel disease: diagnostic meta-analysis. *BMJ* 2010;**341**: c3369.
3 Mao R, *et al*. Faecal calprotectin in predicting relapse of inflammatory bowel diseases: A meta-analysis of prospective studies. *Inflamm Bowel Dis* 2012;**18**:1894–1899.
4 Annese V, *et al*. European evidence based consensus for endoscopy in inflammatory bowel disease. *J Crohns Colitis* 2013;**7**:982–1018.


**Disclosure of Interest** None Declared

## PTU-013 CAPSULE ENDOSCOPY IN YOUNG PATIENTS WITH IRON DEFICIENCY ANAEMIA


[1]E Rondonotti, [2]DE Yung*, [3]A Giannakou, [4]B Rosa, [5]E Toth, [6]A Lucendo, [7]R Sidhu, [8]H Beaumont, [9]P Ellul, [10]L Negreanu, [11]VA Jiménez-García, [2,12]JN Plevris, [2]A Koulaouzidis, on behalf of the Capsule Endoscopy in Young IDA Patients research group. *[1]Valduce Hospital, Como, Italy*; *[2]RIE, Edinburgh, UK*; *[3]Open University, Nicosia, Cyprus*; *[4]Hospital da Senhora da Oliveira, Guimarães, Portugal*; *[5]SUH, Malmö, Sweden*; *[6]Tomelloso Hospital, Tomelloso, Spain*; *[7]Royal Hallamshire Hospital, Sheffield, UK*; *[8]VUMC, Amsterdam, Netherlands*; *[9]Mater Dei Hospital, Malta, Malta*; *[10]Bucharest University Hospital, Bucharest, Romania*; *[11]University Virgen Macarena Hospital, Seville, Spain*; *[12]UoE, Edinburgh, UK*


10.1136/gutjnl-2016-312388.100

**Introduction** Recent data imply young pts (≤50 yrs) investigated with capsule endoscopy(CE) for iron deficiency anaemia (IDA) show higher diagnostic yield(DY) for sinister findings. We aim to investigate DY of CE in a large cohort of young IDA pts and factors associated with sinister pathology.

**Methods** Retrospective multicentre study (2010–2015); consecutive pts ≤ 50 yrs undergoing CE for IDA at 19 centres in 12 countries. Exclusion criteria: ongoing/previous gastrointestinal (GI) bleeding; age > 50 or <19; comorbidities associated with IDA e.g. inflammatory bowel disease, coeliac disease. Data retrieved: indication for SBCE, investigations before CE (Hb, MCV, GI endoscopies/imaging, coeliac biopsies/serology), medications (NSAIDs, antiplatelets, warfarin/heparin), findings and final diagnosis. Clinical findings were analysed by multivariate logistic regression, and Akaike Information Criterion was used to include or exclude predictors.

**Results** 389 pts (262 F/127 M; mean age 39.4±9.3 yrs) were recruited. 169 pts (43.4%) were excluded from further analysis because clinically relevant data were not available; 220 pts were included in final analysis. They were grouped according to final diagnosis: neoplastic pathology (11/220; 5.0%); non-neoplastic but clinically significant findings (60/220; 27.3%); normal/minimal findings (149/220; 67.7%). The most common non-neoplastic findings were angiodysplasias(22/60) and Crohn's disease(15/60). On multivariate analysis, MCV was associated with occurrence of neoplasia (OR: 0.96; 95% CI:0.93-0.99; p = 0.033), i.e. the odds of SB neoplasia increased 4% for every unit of decrease in MCV. Weak evidence existed for the association between use of antiplatelet drugs and risk of SB neoplasms (OR: 5.83; 95%CI: 1.0–34.0; p = 0.05).

**Conclusion** In IDA patients ≤50 years, overall DY of SBCE for significant findings is 32.3%. Around 5% are diagnosed with SB malignancy. In this cohort, lower MCV or antiplatelet use have been associated with higher DY for SB neoplasia or clinically significant findings on CE.

## REFERENCES


1 Koulaouzidis A, *et al*. The use of small-bowel capsule endoscopy in iron-deficiency anaemia alone; be aware of the young anaemic patient. *Scand J Gastroenterol* 2012;**47**:1094–100.
2 Sidhu PS, *et al*. The utility of capsule endoscopy in patients under 50 years of age with recurrent iron deficiency anaemia: Is the juice worth the squeeze? *Gastroenterol Res Prac* 2015:**948574**.


**Disclosure of Interest** E. Rondonotti: None Declared, D. Yung Grant/research support from: Dr Falk/ Core F1/F2 Award 2015, A. Giannakou: None Declared, B. Rosa: None Declared, E. Toth: None Declared, A. Lucendo: None Declared, R. Sidhu: None Declared, H. Beaumont: None Declared, P. Ellul: None Declared, L. Negreanu: None Declared, V. Jiménez-García: None Declared, J. Plevris: None Declared, A. Koulaouzidis: None Declared

## PTU-014 RELATIONSHIP BETWEEN FERRITIN/MCV AND GI PATHOLOGY IN PATIENTS REFERRED FROM PRIMARY CARE WITH IRON DEFICIENCY ANAEMIA


E Atallah*, S Kumar, S Chatharoo, A Agrawal. *Gastroenterology, Doncaster Royal Infirmary, Doncaster, UK*


10.1136/gutjnl-2016-312388.101

**Introduction** Iron deficiency anaemia (IDA) is common with BSG guidance suggesting Gastrointestinal (GI) blood loss from colonic or gastric cancer, and malabsorption in coeliac disease are the most important causes.[1] Serum ferritin, microcytosis and hypochromia are the most sensitive markers for iron deficiency.[2] Our objective was to investigate the correlation between MCV/ferritin and GI pathology in patients with IDA by comparing GI pathology in patients with low ferritin versus normal ferritin; and in patients with microcytosis versus normocytosis.

**Methods** Retrospective cohort study for consecutive patients who had undergone bi-directional endoscopy and/or GI imaging to investigate unexplained anaemia were included. Data was retrieved including Hb, MCV, folate, B12, co-morbidities and findings at endoscopy, histology and imaging were recorded. Patients with normal haemoglobin as per our laboratory's cut off were excluded. Included patients were stratified according to serum ferritin and MCV into 2 groups (low/normal) for each marker. We used the cut-off concentration as per our local laboratory (10 μg/l for ferritin and 78 FL for MCV). The outcome assessed was any GI pathology found

that may explain the IDA. Data was analysed including and excluding the diagnosis of gastritis/oesophagitis as possible GI causes of anaemia.

**Results** 265 included patients (mean age: 68; range: 16–91 years old; 124 males and 141 females) had undergone GI investigations for IDA. Of these, 84 patients had low ferritin (31.6%) whereas 181 patients had normal ferritin. GI pathology excluding gastritis/oesophagitis occurred in 40 (47.6%) and 68 (37.5%) patients in low and normal ferritin group respectively. P = 0.12.

Based on MCV, 96 patients had low MCV (36.2%) whereas 169 patients had normal MCV. GI pathology occurred in 38 patients in low MCV group (39.5%) and in 70 patients with normal MCV (41.4%), P = 0.76. No differences were noted upon including gastritis/oesophagitis.

**Abstract PTU-014 Table 1**

| GI Pathology | Low Ferritin | Normal Ferritin | Low MCV | Normal MCV |
|---|---|---|---|---|
| Gastric/duodenal ulcer | 1 | 12 | 2 | 11 |
| Coeliac disease | 6 | 2 | 4 | 4 |
| Polyps/adenomas | 17 | 22 | 13 | 26 |
| Colitis/IBD | 3 | 6 | 2 | 7 |
| Angiodysplasia | 1 | 9 | 4 | 6 |
| Haemorrhoids | 3 | 0 | 2 | 1 |
| Upper GI malignancy | 3 | 7 | 4 | 6 |
| Colorectal malignancy | 6 | 10 | 7 | 9 |
| Total number | 40/84 | 68/181 | 38/96 | 70/169 |

**Conclusion** There was no clinical or statistical difference in GI pathology in patients presenting with anaemia with or without evidence of iron deficiency. Although a significant number of patients had a GI workup despite no evidence of iron deficiency, the lesion pickup was similar in both groups. Therefore, our study demonstrates the MCV/ferritin might be sensitive markers for IDA but they don't correlate with GI pathology.

## REFERENCES

1 *Gut* 2011;**60**:1309e–1316. doi:10.1136/gut.2010.228874
2 Prevalence of hypochromia vs microcytosis in iron deficiency. *Clin Lab Haematol* 2000;**22**:79e80.

**Disclosure of Interest** None Declared

## PTU-015 COLONOSCOPIC PERFORATION: WHAT ARE THE INDICATORS FOR CONSERVATIVE MANAGEMENT?

[1]E Derbyshire*, [2]AP Hungin, [1]MD Rutter , on behalf of Bowel Cancer Screening Programme Evaluation Group. [1]*Department of Gastroenterology, North Tees & Hartlepool NHS Foundation Trust*; [2]*School of Medicine, Pharmacy & Health, Durham University, Stockton-on-Tees, UK*

10.1136/gutjnl-2016-312388.102

**Introduction** Perforation is one of the most serious adverse events associated with colonoscopy and may be managed conservatively or surgically. We have previously reported outcomes following colonoscopic perforations in the English National Health Service Bowel Cancer Screening Programme, showing that those perforations managed conservatively with bowel rest, intravenous fluids and antibiotics did not develop post perforation morbidity.[1] We therefore aimed to examine which factors could be used as indicators for conservative management.

**Methods** We re-evaluated our national database of 115 colonoscopic perforations admitted to hospital, including 62 patients who had surgery and 51 who didn't (two patients in whom it was unclear if surgery had occurred were excluded from the analysis). Explanatory variables examined were admission immediately following colonoscopy, the presence of abdominal pain at initial review, initial temperature, pulse rate and respiratory rate (RR). Statistical Analysis was performed using Statistical Package for the Social Sciences version 20. Fisher's exact test and pearson chi-square were used to test association between explanatory and outcome variables with a p value $<0.05$ considered to be significant.

**Results**

**Abstract PTU-015 Table 1**

| | Surgery (n = 62) | Conservative (n = 51) | |
|---|---|---|---|
| Admission following colonoscopy | 30.6% | 33.3% | (p = 0.840) (RR:0.95, 95% CI 0.66–1.36) |
| Abdominal Pain | 83.9% | 64.7% | (p = 0.012) (OR:0.52, 95% CI 0.29–0.95) |
| Pulse Rate > 100 beats per minute | 22.6% | 5.9% | (p = 0.049) (RR:0.65 95% CI 0.47–0.89) |
| Respiratory Rate > 20 breaths per minute | 14.5% | 0% | (p = 0.009) (RR:0.53, 95% CI 0.42–0.68) |
| Temperature ≥38.0°C | 14.5% | 13.7% | (p = 1.000) (RR: 1.04, 95% CI 0.65–1.69) |

15.0% of the patients had none of: abdominal pain at initial review, a pulse rate > 100 beats per minute or a RR > 20 breaths per minute. 23.5% of these patients had surgery.

**Conclusion**

- The presence of abdominal pain, a pulse rate > 100 beats per minute and RR > 20 breaths per minute were significantly associated with the patient having surgery.
- Small numbers of patients with no abdominal pain, a pulse rate ≤ 100 beats per minute and a RR ≤ 20 breaths per minute underwent surgery. It is unclear from this retrospective data whether this surgery was actually necessary.
- It is possible that the absence of abdominal pain, a pulse rate ≤ 100 beats per minute and a RR ≤ 20 breaths per minute may be useful objective measures to determine whether surgery is required.
- Further prospective work using these indicators to guide conservative management is required.

## REFERENCE

1 Derbyshire, *et al*. *UEG Journal* October 2015;**3**:1–145.

**Disclosure of Interest** None Declared

## PTU-016 THE ENDOSCOPIC SUBMUCOSAL DISSECTION LEARNING CURVE: THE EXPERIENCE OF A LARGE VOLUME ITALIAN COLORECTAL (CRC) SCREENING CENTRE

[1]E Rosa-Rizzotto*, [1]E Guido, [1]D Caroli, [1]A Dupuis, [2]M Lo Mele, [2]M Rugge, [3]P Pilati, [1]F De Lazzari. *[1]Specialized Medicine, St Anthony Hospital; [2]Pathology Unit; [3]Surgery Unit, Padova, Italy*

10.1136/gutjnl-2016-312388.103

**Introduction** Endoscopic submucosal dissection (ESD) is an advanced endoscopic technique. In Eastern countries the learning curve is begun with gastric GI lesions carried out under expert supervision and then goes on to address esophageal and colon lesions. As Early Gastric Cancer (EGC) is a rare disease in Western countries, expert guidance is not commonly available.

**Methods** All the ESD performed in our Endoscopy Unit in Padua from February 2012 to December 2015 including 12,552 colonoscopies were recruited retrospectively in this study. We considered the learning curve of a single endoscopist who performed 10 ESD on in vivo animal models under expert supervision before starting on human subjects. All the dissections were performed using a Hybridknife needle and ERBEJET2 (ERBE®). ESD was performed if the neoplastic lesion was considered susceptible to ESD regardless to the size. T tests for unpaired data and Pearson's chi-test were used for statistical analysis.

**Results** 49 ESD were performed, 28 M(57%), mean age 63 yr. The breadown was: 29 rectum (59%), 12 sigmoid tract (24%), 2 trasverse colon (4%), 4 ascending colon (8%), 2 stomach (4%). The neoplastic lesions were: 36 laterally spreading tumours (73%), 5 polypoid lesions 0 Is (10%), 4 recurrent ton scars (8%), 4 polypoid lesions 0 Isp(10%). Mean polyp area was 17.6 $cm^2$ (range 1–70). Mean intervention time was 98 min (range 20–240). En-bloc dissection was successful in 34/49 (69%) and R0 was reached in 24/33 (72%). The histological features of the polyps were: 10 LGD (20%), 27 HGD (55%), 9 pT1 (18%), 3 pT2 (6%). The procedural complications that took place (14/49 = 28%) included: perforation during the procedure in 10/49 (20%), delayed bleeding in 3/49 (6%), rectal stenosis in 3/49 (6%). No deaths or surgical interventions followed the periprocedural complications. From the $12^{th}$ procedure onwards the surgical performance became acceptable 22/27 (81%) vs 3/12 (25%) ($p < 0.001$). From the $30^{th}$ procedure onwards the surgical performance became good 17/19 (90%, $p < 0.05$) and the mean execution time was significantly lower 55 vs 122 min ($p < 0.0001$) with no significant difference in the mean area of the lesions 15.6 vs 18.2 $cm^2$ (p=ns). Only 3 complications occurred after the $30^{th}$ procedure (p=ns).

**Conclusion** Our findings demonstrate than an endoscopist can reach a satisfactory level of competence in ESD procedures by beginning training with in vivo animal models (at least 10 procedures) and then should go on to colo-rectal neoplasms (without size limits and no less than 12 procedures). Trainees have probably still not reached a learning curve plateau even after 40 procedures.

**Disclosure of Interest** None Declared

## PTU-017 PER ORAL ENDOSCOPIC MYOTOMY (POEM) FOR ACHALASIA

F Chedgy*, K Kandiah, S Subramaniam, S Thayalasekaran, G Longcroft-Wheaton, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.104

**Introduction** Achalasia is an oesophageal motor disorder due to inhibitory neuron dysfunction, resulting in loss of oesophageal peristalsis and impaired lower oesophageal sphincter relaxation. POEM is emerging as a viable alternative to laparoscopic Heller's myotomy (LHM) for the treatment of achalasia. However, it is still in it's infancy in the West with no reported cases from UK.

We aim to present two videos and discuss the technical details of the procedure in a simple type II achalasia and in a complex sigmoid achalasia.

**Methods** Prior to undertaking POEM patients are investigated with barium swallow, gastroscopy and high-resolution manometry to confirm the diagnosis of achalasia and delineate the anatomy of the oesophagus. Eckhardt score is calculated pre and post POEM. Informed consent is undertaken, including alternatives to POEM: LHM, pneumatic dilatation and Botox injection. The procedure steps include (video): 1. Submucosal injection and incision 2. Creation of submucosal tunnel 3. Endoscopic myotomy 4. Closure of mucosal entry.

**Results Case 1:** A 61 year-old lady, presenting with dysphagia, retrosternal chest pain and regurgitation (Eckhardt score 6). Barium swallow demonstrated typical appearances of achalasia (see video). Pre-POEM manometry confirmed Type II achalasia with a resting lower oesophageal sphincter (LOS) pressure of 26. She underwent an uneventful POEM procedure via the anterior approach using a combination of flush-knife and triangular tip knife to achieve a 10+4 cm myotomy. On follow-up she has no symptoms (Eckhardt score 0) and repeat manometry shows a reduction in LOS pressure to 15.

**Case 2:** A 52 year-old lady, presenting with dysphagia, retrosternal chest pain, regurgitation and weight loss (Eckhardt score 11). Barium swallow demonstrated advanced achalasia with severe dilatation and a sigmoid appearance (see video). She was treated at her local centre with two sessions of PD and one of Botox despite which she suffered ongoing symptoms. Pre-POEM manometry revealed Type II achalasia and an LOS pressure of 25.5. She underwent an uneventful POEM procedure via the posterior approach using the O-type Erbe hybrid knife to achieve an 11 + 4 cm myotomy. Significant fibrosis was encountered due to previous intervention. On follow-up her symptoms improved significantly. Repeat manometry is awaited.

**Conclusion**

- Here we describe the technique of POEM at the two ends of the disease spectrum of achalasia
- We demonstrate the feasibility of the technique in the hands of a UK Endoscopist.
- We demonstrate two different approaches to POEMS (Anterior vs Posterior) and with two different knives and will discuss the Pros and Cons of these approaches.
- Despite previous intervention and submucosal fibrosis, POEM is still a viable treatment for patients with ongoing symptoms.

**Disclosure of Interest** None Declared

## PTU-018 THE EMPEROR'S NEW CLOTHES: AN ALTERNATIVE PERSPECTIVE ON COLONOSCOPY

HE Ojidu*, M McAlindon. *Gastroenterology, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.105

**Introduction** Following the quality improvement programme introduced to pave the way for the UK Bowel Cancer Screening Programme (BCSP), there was an improvement in caecal intubation rate from 76.9% in 1999 to 92.3% in 2011.[1] 90.2% suffered mild discomfort or less, although this was assessed and reported by the endoscopist. 53.6% of symptomatic patients had abnormal examinations but it was not clear how many of the pathologies identified were incidental findings. We aimed to determine the percentage of patients whose colonoscopy findings explained their symptoms (the diagnostic yield) and to compare endoscopist and patient assessment of colonoscopy tolerance.

**Methods** Endoscopists and patients undergoing colonoscopy independently provided a Gloucester comfort score (GCS 1: comfortable; 5: severe discomfort). Endoscopic and subsequent histological findings were recorded.

**Results** Symptomatic patients (n = 107; 46.7% male, mean age 55.0±1.6 yrs) were younger than BCSP patients (n = 46; 65.2% male, mean age 67.0±0.9; P < 0.001, two sample T test). In the symptomatic group, in whom the diagnostic yield was 17%, moderate to severe discomfort (GCS 4–5) was reported by endoscopist and patient in 21.7% and 46.2% (P = 0.001, Mann Whitney) and in the BCSP group, by 21.8% and 26.1% (P = 0.6) respectively. Moderate to severe patient discomfort was more common in the symptomatic than BCSP group (P = 0.019), but overall was less common in males than females (P < 0.02). Sedation had no effect on tolerance (P = 0.9).

**Conclusion** Almost half of patients having diagnostic colonoscopy reported moderate to severe discomfort, which was markedly underestimated by endoscopists. If the true diagnostic yield is only 17%, it would seem appropriate to offer patients a less invasive, better tolerated alternative as a first line test. Procedural tolerance was much better in the BCSP, where endoscopists were more accurate in grading patient discomfort, which may partly be explained by the male predominance. However, GCS 4–5 scores were still three times as common as reported in the national audit.

### REFERENCE

1 Gavin DR, *et al*. *Gut* 2013;**62**:242–249.

**Disclosure of Interest** None Declared

## PTU-019 QUALITY OF UPPER GASTROINTESTINAL ENDOSCOPY REPORTING IN SUSPECTED CANCER PATIENTS

H Measuria*, S Greer, M Bhalme. *Gastroenterology, Royal Bolton Hospital, Bolton, UK*

10.1136/gutjnl-2016-312388.106

**Introduction** Accurate endoscopy reporting is vital for upper gastrointestinal (GI) cancer management decisions. Effects of poor reporting are unknown but they are likely to cause delay in providing definitive treatment plans.

**Methods** The Somerset Upper GI cancer database was used to identify patients between March 2014 and February 2015. Endoscopy report obtained from Endobase, radiological imaging report from PACS and local cancer multi-disciplinary team (MDT) index outcomes were then used to assess reporting quality and draw comparison. Reports were assessed against an expected ideal reporting criteria (anatomic extent of examination and its limitations, tissue samples obtained, description of findings, diagnostic impression and photodocumentation), against which the crucial computed tomography (CT) findings and subsequent MDT decisions could be made.

**Results** A 12 month sample size of 84 confirmed upper GI cancer patients were identified (68% males; median age 70 years). Median time difference between endoscopy and staging CT scan was 7 days (range 0–46 days).

In 86% (n = 72) the endoscopist reported the exact tumour location when correlated to CT findings. Only 56% (n = 47) mentioned that biopsies had been taken but of these only 51% (n = 24) mentioned the number of biopsies taken. All the visualised lesions had a reported description of how the lesion appeared i.e. malignant features.

In total, 19 (23%) patients were identified having repeat gastroscopies and of these 6 (7%) were felt to be avoidable repeats. Of these, 2 were repeated for clarification of previous endoscopy reports while 4 were required due to insufficient biopsies for adequate histological confirmation of cancer.

Overall the delay in organising these avoidable repeat gastroscopies ranged from 14–69 days (median 16.5).

Of the 6 index gastroscopies that required repeating, 3 were undertaken by GI consultants (two surgeons, one physician), 1 trainee endoscopist, 1 nurse endoscopist, 1 acute physician consultant endoscopist.

**Conclusion** Poor endoscopy reporting practice can cause significant delays in cancer diagnosis and management. Some technical difficulties are inevitable in clinical practice however attention to details in report is important. We recommend that every endoscopy unit must ensure that regular internal audits on endoscopy reporting are undertaken for quality assurance.

**Disclosure of Interest** None Declared

## PTU-020 POST ENDOSCOPY MISSED GASTROINTESTINAL CANCER AT A LOCAL DGH - IMPLICATIONS FOR PRACTICE

S Sultan, I Salehi*, G Williams, I Jaly, H Khadim, MI Yahya, A El-Sayed, M Mirzaali, J Rademaker. *Gastroentorology, Conquest Hospital, East Sussex, UK*

10.1136/gutjnl-2016-312388.107

**Introduction** Upper gastroenterology tract cancers (UGIT) are the 4 th commonest malignancy worldwide. The best treatment remains early detection allowing for prompt intervention. Oesophagogastroduodenoscopy (OGD) is the gold standard of diagnosing UGIT cancers however it remains imperfect. There is still a substantial rate of missed UGIT cancers at endoscopy. It is estimated that in the UK the national rate of missed UGIT cancers is 7.2%.

It is important that endoscopic techniques undergo regular review ensuring a process of continuous quality improvement. Our aim is to review the missed rate of cancers after a negative OGD examination and to explore the reasons behind this

and to propose methods of reducing the rate of missed cancers.

**Methods** A retrospective case analysis over a five year period (2010–2015) investigating patients who received a diagnosis of UGIT cancer at our local district general hospital. We used our local clinical databases in identifying relevant patients who had been investigated with a negative endoscopy in the prior year but then went on to receive a diagnosis of colorectal cancer.

**Results** 415 patients (F 143; M 272) were audited with an average age of 76 (range 31–102). 31 patients were excluded as cancer diagnosis was discovered by other means (CT, ERCP and emergency operations). Of the 415 patients audited 54 (14%) were investigated with an OGD in the prior year which was negative. We also investigated the presenting pathway and found that the majority of patients (166; 28%) were presenting through the urgent suspected cancer pathway.

**Conclusion** Our results show a high rate of missed lesions on initial endoscopy. This has serious implications for practice and suggested published reasons for this are largely thought to be the variability in experience of the endoscopist. To that end it is our recommendation that training for OGD be prolonged. There is also a large variability in reporting of the procedure therefore following a more standardised approach is advocated. Also operators are strongly encouraged to take multiple biopsies of lesions that appear suspicious. Finally we would like to implement a strict, rigorous follow up system whereby patients presenting with alarm symptoms and a negative OGD can be followed up with repeat procedures to ensure no cancers are missed.

## REFERENCES


1 Yalamarthi S, Witherspoon P, McCole D, Auld CD. Missed diagnosis with upper gastrointestinal cancers. *Endoscopy* 2004;**36**(10):874–9.
2 Gado A, Ebeid B. Gastric cancer missed at endoscopy. *Alexandria Journal of Medicine* 2013;**49**(1):25–27.
3 Enns R. Missed cancers in the upper gastrointestinal tract after esophagogastroduodenoscopy. *Gastroenterol Hepatol* 2010;**6:**691–693.


**Disclosure of Interest** None Declared

## PTU-021 EFFICACY, SAFETY AND COMPLICATIONS OF ENDOSCOPIC SUBMUCOSAL DISSECTION FOR COLONIC LESIONS IN THE VERY ELDERLY PATIENTS ABOVE EIGHTY YEARS OF AGE


J Woo*, J Matsuoka, Y Kowazaki, M Nishimura. *Gastroenterology, Tokyo Metropolitan Geriatric Hospital, Tokyo, Japan*



10.1136/gutjnl-2016-312388.108


**Introduction** Endoscopic submucosal dissection (ESD) has been safely utilised for resection of colonic lesions.[1,2] More evidence is required in determining the safety profile of ESD in colonic lesion resection, particularly in the super elderly patients ≥80 years of age. In Japan, ESD is approved for both large adenomatous and superficial neoplastic lesions. Our hospital has been a centre for elderly gastroenterology care in North Western Tokyo, and has been an established ESD centre since 2013. The aim of this study is to provide further comparative data on the safety and feasibility of ESD provision in elderly patients ≥80 years of age.

**Methods** A single centre retrospective analysis of our hospital's ESD database was undertaken. Patients had ESD performed for colonic lesions from July 2013 till December 2015 were included and divided into 2 groups-either ≥80 years old or <80 years old. Data on baseline characteristics (age, sex, comorbidity), ESD procedure data, complications and specimen histology were analysed and compared.

**Results** A total of 119 patients were included in this study of which 41 (34%) were ≥80 years of age and 78 (66%) were <80 years old. Baseline comorbidity were indifferent between the two groups (p = 0.49).

**Abstract PTU-021 Table 1**

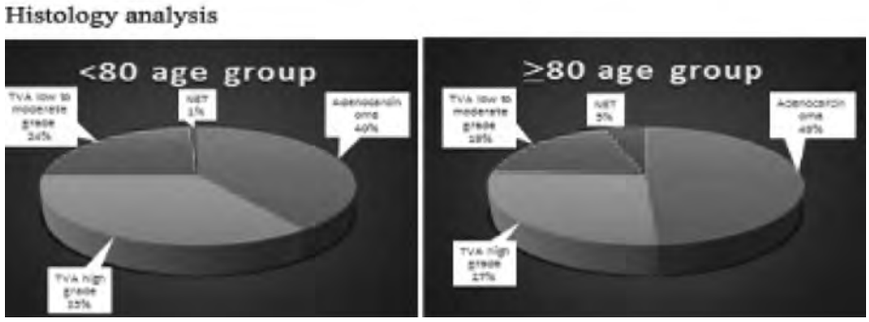
| ESD procedure data | <80 age group | ≥80 age group |
|---|---|---|
| Average procedure time (minutes) | 55 | 50.66 |
| Mean resected lesion size | 31.8 mm | 30.1 mm |
| En bloc resection rate | 94% | 98% |
| Post ESD average inpatient stay | 7.47 days | 9.22 days |

All complications recorded including bleeding, hypo/hypertension, desaturation and tachy/bradyarrythmia were all successfully corrected during the ESD procedure. Bleeding episodes were treated with needle knife coagulation and/or coagrasper.

Post ESD, 2.5% of ≥80 group and 4% of the < 80 age group experienced bleeding requiring urgent endoscopy. All cases of post ESD bleeding occurred within 24 hours post ESD, and were all successfully treated endoscopically without subsequent rebleed. There was no peforation, followup surgery or intensive-care admission reported. Overall, no major adverse events reported during or post ESD.

A colonic ESD video is included for demonstration.

**Conclusion** ESD is a safe and minimally invasive procedure for resection of colonic lesions even in elderly patients above




**Abstract PTU-021 Figure 1**

80 years of age. In addition to an excellent en-bloc resection rate, direct visualisation of the submucosal layer during the dissection process in experienced operators allows a safer and virtually perforation free resection.


**REFERENCES**

1 Tamegai Y, Saito Y, *et al*. Endoscopic submucosal dissection: a safe technique for colorectal tumours. *Endoscopy*. 2007;**39**(5):418–422.
2 Saito Y, Uraoka, *et al*. Endoscopic treatment of large superficial colorectal tumours: a case series of 200 endoscopic submucosal dissections. *GI Endoscopy* 2007;**66**(5):966–73.


**Disclosure of Interest** None Declared

## PTU-022 NEEDLEKNIFE ASSISTED CANNULATION IN A UK TERTIARY REFERRAL CENTRE – UTILISATION AND COMPLICATIONS IN STANDARD PRACTICE


[1,2]KA Mcwhirter*, [1]J McLaughlin, [2]A Makin. *[1]University of Manchester; [2]Gastroenterology, Central Manchester NHS Foundation Trust, Manchester, UK*


10.1136/gutjnl-2016-312388.109

**Introduction** Needleknife assisted cannulation has been shown to be effective in ERCPs where standard techniques have failed. Concerns regarding risk of complication, particularly pancreatitis and perforation, have led to it being used only as a last resort. We evaluated the current practice and safety profile in a regional tertiary referral centre.
**Methods** We performed a prospective observational study of ERCP outcomes in patients with intact ampullae. Experienced endoscopists with HPB expertise performed all ERCPs, and were asked to follow their standard practice. We used three ampulla classifications; non-prominent, prominent and distorted by tumour. The number of attempts at cannulation was recorded, as were the techniques used. Primary outcome measures were cannulation success and complication rates.
**Results** Over a period of 8 months, 222 procedures were performed on patients who had not had previous ERCP. Successful cannulation in this group was achieved in 91.7%. Needleknife assisted cannulation was performed in 37 cases (17%). All needleknife cuts were started at the ampullary orifice.

Needleknife use varied between different ampulla types ($p = 0.44$). Needleknife cannulation was most frequently attempted in ampullae involving tumour (33% attempted) but often unsuccessful (60% failure), compared to non-distorted (16.7% attempted, 22% failure rate).

There was a wide range in the number of cannulation attempts made in both the needleknife and non needleknife groups (range 1–25) but there was a significant difference between the number of cannulation attempts in the standard cannulation and needleknife groups ($p < 0.001$). Despite this, there was no difference in the complication rate between standard cannulation and needleknife groups 5.6% v 7.3% ($p = 0.522$).
**Conclusion** Needleknife assisted cannulation is more likely to be used where the ampulla is involved with tumour and where ERCP is indicated for malignant disease. However, in this context, needleknife assisted cannulation is more likely to fail.

Reassuringly despite being used after failed attempts at cannulation using standard techniques, the complication rate for needleknife-assisted cannulation is not statistically different.

The likelihood of progression to needleknife use may be predicted by ERCP indication and ampullary characteristics. This may facilitate consideration of an early conversion to needleknife-assisted cannulation, but also early abandonment of procedure for alternative methods (percutaneous or surgical) in these groups.
**Disclosure of Interest** None Declared

## PTU-023 THE 2015 "BE CLEAR ON CANCER" CAMPAIGN: ITS IMPACT ON GASTROENTEROLOGY REFERRAL RATES AND CANCER DIAGNOSIS: A TWIN-CENTRE REVIEW


[1]K Siau*, [2]S Hingley, [3]A Veitch, [2]N Fisher. *[1]Department of Gastroenterology, Royal Wolverhampton NHS Trust, Wolverhampton; [2]Department of Gastroenterology, Dudley Group NHS Foundation Trust, Dudley; [3]Department of Gastroenterology, Royal Wolverhampton Hospital NHS Trust, Wolverhampton, UK*


10.1136/gutjnl-2016-312388.110

**Introduction** The "Be Clear on Cancer" campaign was launched by Public Health England to raise awareness of gastro-oesophageal cancers, and ran for four weeks from January to February 2015.[1] The key message advertised on television was: 'Having heartburn, most days, for 3 weeks or more, could be a sign of cancer – tell your doctor.' We aimed to measure how this campaign affected the following: 1) 2 WW gastroscopy referrals, 2) incidence of target diagnoses (Barrett's and gastro-oesophageal cancer, 3) stage of cancers at diagnosis, 4) cancer survival.
**Methods** We performed a retrospective study using pooled data from 2 NHS trusts (Royal Wolverhampton and Dudley Group NHS Trust), with a combined population of 699000 in 2014 and 798000 in 2015. Patients referred for 2 WW open access endoscopy for 3 months after campaign start (Feb to April 2015) were identified from Trust clinical databases. Diagnoses, endoscopy, staging, and 9 month survival were compared with data from corresponding months in 2014. Analyses were performed using Fisher's exact and t-test.
**Results** 832 referrals were received in the 3 months of 2015, compared with 519 in 2014. After adjusting for population, 2 WW endoscopy demand had increased by 40.4% ($p < 0.03$). 63 cases of Barrett's and carcinoma were diagnosed in 2015, compared with 50 cases in 2015. Overall, there was 10.4% increase in detection of significant diagnoses ($p = 0.6$). 23 cases of oesophageal malignancy were detected, compared with 19 in 2014. The incidence of gastro-oesophageal cancer was 11.5 per 100,000 in 2015, compared with 10.8 per 100,000 population in 2014 (relative increase of 6%, $p = 0.85$). Due to the increase in gastroscopies performed, the yield of significant diagnoses fell from 8.0% in 2014 to 6.7% in 2015. 8/20 patients had presented with T2 or earlier stage of oesophageal cancer, compared with 3/16 in 2014 (odds ratio 2.9 for ≤T2 disease, $p = 0.28$). 8/20 had localised disease (N0 and M0) in 2015, with 6/18 in 2014 (OR 1.33 for localised disease, $p = 0.74$). The unadjusted 9 month mortality rates were 38% (10/28) in 2015 and 52% (12/23) (OR for 9 month survival in 2015 was 0.57, $p = 0.39$).
**Conclusion** The "Be Clear on Cancer" campaign significantly increased the demand for 2 WW gastroscopies. A trend towards a higher incidence of Barrett's or cancer diagnosis was noted, although the overall yield of endoscopy procedures was lower. The odds ratios appear promising for diagnostic yield, earlier presentation and 9 month survival but this was

not statistically significant. Larger studies are required to validate our findings.


**REFERENCE**

1 https://www.england.nhs.uk/wp-content/uploads/2014/09/bcoc-tri-partite-lett-0914.pdf (accessed 25/2/16).


**Disclosure of Interest** None Declared

## PTU-024 ENDOSCOPIC CHOLECYSTOGASTROSTOMY IN A PATIENT WITH GALLBLADDER EMPYEMA SECONDARY TO CHOLANGIOCARCINOMA


[1]B Paranandi, [1]MK Nayar, [2]J Scott, [3]RM Charnley, [3]C Wilson, [1]KW Oppong*. *[1]Gastroenterology; [2]Radiology; [3]HPB Surgery, Freeman Hospital, Newcastle upon Tyne, Newcastle upon Tyne, UK*


10.1136/gutjnl-2016-312388.111

**Introduction** In cases of obstruction of the gallbladder (GB) or cystic duct where surgery is high risk, EUS guided GB drainage (EUS-GBD) is reported to have comparable efficacy to percutaneous drainage.[1] However, the technique has not been widely adopted due to lack of specific devices and concerns about leakage and stent migration. Lumen apposing metal stents (LAMS) have been developed to minimise the risk and simplify the procedure. A novel (Hot AXIOS™) device has recently become available and this consists of a stent and electrocautery-enhanced delivery system, enabling a single device to be used when previously multiple devices and steps were required. There is a single case report of its use for EUS-GBD in the literature.[2]

A 68 year-old female, presented with obstructive jaundice, due to inoperable hilar cholangiocarcinoma. A Percutaneous transhepatic cholangiography (PTC) procedure was performed and an internal external drain placed.

Shortly afterwards she developed clinical features of cholecystitis. A CT scan showed gross distension of the GB and a GB stone. There was extensive pericholecystic fluid with fat stranding. Following HPB MDT discussion, a decision was made to perform EUS-GBD using a Hot AXIOS™.

**Methods** The procedure was undertaken under conscious sedation, using a therapeutic echoendoscope. The optimal site for access was identified as being in the antrum. The GB was punctured with the Hot-AXIOS device (15 mm x 10 mm (W x L) 24 mm flange diameter stent) and a cutting current was applied. X-ray screening was used; however, deployment was entirely under EUS control. The stent was dilated with a 10 mm balloon.

**Results** The procedure was well tolerated and completed within 15 minutes. The stent was in a good position on EUS and fluoroscopy. A large amount of pus drained immediately. There was a rapid improvement in clinical condition and inflammatory markers over the next few days. Biliary drainage was internalised with placement of 2 metal stents. CT scans 8 days and 7 weeks post placement showed the stent in a good position with resolution of the cholecystitis.

**Conclusion** Technical and clinical success was achieved in this case which to the best of our knowledge is the first EUS-GBD procedure in the UK utilising this device. Further experience of EUS-GBD with the Hot AXIOS™ and randomised controlled trials against percutaneous drainage are required to delineate its role in high risk surgical cases.


**REFERENCES**

1 Jang JW, *et al*. Gastroenterol. 2012 Apr;**142**(4):805–11.
2 Teoh AYB, *et al. GIE* 2014;**80**(6):1171.


**Disclosure of Interest** None Declared

## PTU-025 EFFECT OF THE MAGNETIC ENDOSCOPE IMAGER ON COLONOSCOPY PERFORMANCE BY A SINGLE ENDOSCOPIST


LB Materacki*, J Kennedy, H Kriel, T Brooklyn. *Gastroenterology, Cheltenham General Hospital, Cheltenham, UK*


10.1136/gutjnl-2016-312388.112

**Introduction** Colonoscopy is the gold standard investigation for colonic assessment. To maintain clinical excellence in colonoscopy several performance indicators are recognised.[1] Colonic looping is a common patient-related factor which may reduce completion rates. The magnetic endoscope imager (MEI), a device which generates a three-dimensional map of colonoscope orientation, provides feedback regarding tip location and loop formation. MEI may improve colonoscopy outcomes however findings are inconsistent. This study aimed to evaluate whether MEI use improves outcomes in colonoscopy completed by a single endoscopist.

**Methods** This retrospective cohort study investigated the effect of MEI on procedure completion, polyp detection, medication doses (sedation, analgesia and buscopan), endoscopist and nurse discomfort scores and patient satisfaction in patients undergoing colonoscopy. Data was obtained by interrogation of electronic colonoscopy records for a single gastroenterologist between December 2009 and November 2014. The equipment used for all colonoscopies was identical in make and age, the only difference being the presence or absence of the MEI. Statistical analysis was completed using Wizard©.

**Results** 2129 colonoscopies were completed during the study period across three endoscopy units. After exclusion of incomplete data, study groups significantly differed by age demographics. By excluding patients older than 74 y, study groups ($n = 914$ without MEI, $n = 359$ with MEI) had similar age ($p = 0.06$) and gender ($p = 0.962$) characteristics. MEI use did not significantly influence colonoscopy completion (97.2% vs 96.3%, ($p = 0.412$)) or polyp detection (24.8% vs 29.1%, ($p = 0.132$)). Colonoscopies completed without MEI were associated with higher doses of midazolam (1.618 mg ± 0.051 vs 1.379 mg ± 0.097, $p < 0.001$), fentanyl (1.313 µg ± 0.557 vs 0.348 0µg ± 0.493, $p = 0.044$), pethidine (24.858 mg ± 0.986 vs 23.259 mg ± 1.784, $p = 0.104$) and buscopan (16.247 mg ± 0.526 vs 13.510 mg ± 1.041, $p < 0.001$). Comfort scores and patient satisfaction outcomes were sub-analysed in colonoscopies completed without analgesia or sedation ($n = 244$). MEI use did not significantly affect endoscopist ($p = 0.383$) or nurse discomfort scores ($p = 0.383$ and $p = 0.971$) or patient satisfaction ratings ($p = 0.209$).

**Conclusion** Real world use of MEI at colonoscopy did not improve polyp detection or completion rates but was associated with decreased analgesia, sedation and buscopan use. Unsedated colonoscopy was associated with similar comfort and satisfaction scores regardless of MEI use. Endoscopists may anticipate greater discomfort without MEI and overcompensate sedation doses. Medication dosing should remain consistent regardless of MEI availability.

**REFERENCE**
1 BSG quality and safety indicators for endoscopy. JAG advisory group on GI endoscopy. March 2007.

**Disclosure of Interest** None Declared

## PTU-026 THE YIELD OF BIDIRECTIONAL INVESTIGATIONS IN IRON DEFICIENCY ANAEMIA – ARE GASTROSCOPIES REDUNDANT?

[1]MS Lau*, [2]J Schembri, [1]DS Sanders, [2]JM Hebden. [1]*Academic Department of Gastroenterology, Royal Hallamshire Hospital*; [2]*Gastroenterology, Northern General Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.113

**Introduction** Iron deficiency anaemia (IDA) is common, affecting 2–5% of people in the developed world. The BSG guidelines recommend bidirectional (upper and lower gastrointestinal [GI] tracts) investigations for patients with IDA in men, and in women who are postmenopausal, age > 50 or with a family history of colorectal cancer (CRC). We aimed to evaluate the yield of bidirectional investigations for GI malignant and non malignant causes.
**Methods** We prospectively collected data on patients attending a single consultant led IDA clinic from 2013–2015. IDA was defined as anaemia with microcytosis, low ferritin, raised zinc protoporphyrin or a compatible iron profile. Gastroscopy and colonoscopy were requested unless frailty, comorbidity, or patient choice dictated otherwise. Alternatives included barium studies, CT pneumocolon or CT abdomen. Coeliac and intrinsic factor (IF) antibodies, urine microscopy and renal tract ultrasound (unless patient had a CT) were also requested. Polyps or ulcers <1 cm, non-haemorrhagic or non-friable oesophagitis, gastritis or Barrett's oesophagus were not considered to be the cause for the iron deficiency.
**Results** A total of 282 IDA and 11 patients with isolated hypoferritinaemia attended the clinic. 21 patients were excluded as they declined investigations, leaving 272 for analysis. 264 (97.1%) patients had UGI tests (240 gastroscopy/20 Barium swallow/4 CT) and 266 (97.8%) had LGI tests (198 colonoscopy/11 barium enema/57 CT). There were 170 symptomatic and 91 asymptomatic IDA patients, and 7 symptomatic and 4 asymptomatic hypoferritinaemic patients. CRC was found in 17 (6.4%) patients, with 10 and 7 in the symptomatic and asymptomatic IDA groups respectively. No malignancies were identified by any gastroscopies. An identifiable non-malignant cause of IDA was found in 8 (3%) gastroscopies. CT identified thickening of the gastric wall in an elderly patient who declined further investigations. In the isolated hypoferritinaemia group, there was no positive yield apart from 1 bleeding haemorrhoids. 1.5% (4/262) patients had pernicious anaemia and 0.7% (2/273) had coeliac disease.
**Conclusion** The yield of UGI and LGI cancer was 0.38% (1/264) and 6.4% (17/266). There was no yield for malignancy from all 240 gastroscopies undertaken. This suggests that gastroscopies provide very limited diagnostic value as a first line investigation in patients with IDA without UGI symptoms or suspected coeliac disease.
**Disclosure of Interest** None Declared

**Abstract PTU-026 Table 1**

| Positive yield in IDA | Findings | Number of patients |
|---|---|---|
| UGI tests (n = 264) | Vascular lesions | 4 |
| | Haemorrhagic gastritis | 2 |
| | Coeliac disease | 2 |
| | Probable gastric cancer | 1 |
| LGI tests (n = 266) | CRC | 17 |
| | Haemorrhoids with per rectal bleed | 2 |
| | Large polyp | 2 |
| | Prostate cancer, malignant melanoma with metastases (both found on CT) | 1, 1 |
| | Inflammatory bowel disease | 1 |

## PTU-027 COLONOSCOPY WITHDRAWAL TIME IN NON-SCREENING COLONOSCOPIES. 6 MINUTES OR NOT?

[1]M El-Feki, [2]R Wilson, [1]A Hopper, [1]MH Thoufeeq*. [1]*Endoscopy/ Gastroenterology*; [2]*Medicine, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.114

**Introduction** Several studies have shown that, in screening colonoscopies, ADR is significantly related to endoscopists with a colonoscopy withdrawal time (CWT).[1] A CWT of more than than 6 minutes is recommended. Studies have also demonstrated that if the endoscopists aware of being monitored they might increase their CWT (the Hawthorne effect). The bowel cancer screening program actively monitors the CWT of endoscopists to ensure that all colonoscopies are of adequate quality but non-screening colonoscopies are not routinely monitored in the same way.
**Methods** We prospectively looked at 19 endoscopists' practice of colonoscopy of 210 procedures. This included 10 gastroenterologists and 9 non-gastroenterologists. We calculated their withdrawal time by looking at time duration between caecal and rectal retroflexion images. Exclusion criteria included procedures that were incomplete, poor preparation, screening patients, patients in whom polyps were found and planned therapeutic procedures.

In order to avoid 'Hawthorne effect', endoscopists were unaware that they were being monitored. Subsequent to that we did a statistical analysis to see if withdrawal time correlated with adenoma detection rate. The ADR was available from the unit's annual endoscopy audit.
**Results** CWT was less than 6 minutes in 20% of procedures. The mean CWT varied greatly among endoscopists. The mean CWT was significantly longer where the endoscopist was a gastroenterologist rather than a non-gastroenterologist ($p = 0.0003$). All of the endoscopists that had a mean CWT less than 6 minutes were part of the non-gastroenterologist group.

Although we found ADR levels lower in mean CWT of less than 6 minutes and a positive correlation, this however did not reach statistical significance($p = 0.62$).
**Conclusion** In our study we found in majority of the non-screening colonoscopies, withdrawal time was more than the recommended 6 minutes. Statistically significant correlation between

ADR and withdrawal in non-screening colonoscopies may be achieved by participating in large multi-centred studies.

**REFERENCE**

1 Lee TJ, Blanks RG, Rees CJ, Wright KC, Nickerson C, Moss SM, Chilton A, Goddard AF, Patnick J, McNally RJ, Rutter MD. Longer mean colonoscopy withdrawal time is associated with increased adenoma detection: evidence from the Bowel cancer screening programme in England. *Endoscopy* 2013;**45**(1):20–6.

**Disclosure of Interest** None Declared

## PTU-028 BALLOON SPHINCTEROPLASTY AFTER SPHINCTEROTOMY: A SAFE WAY TO ENSURE A BRITISH SOCIETY OF GASTROENTEROLOGY ERCP TARGET IS ACHIEVED

P Wolfson*, S Bouri, R Sayers, M Shariff, B Macfarlane, A King, A Leahy. *Gastroenterology, West Hertfordshire Hospitals NHS Trust, Watford, UK*

10.1136/gutjnl-2016-312388.115

**Introduction** Sphincterotomy and balloon/basket trawl at ERCP is the standard treatment to clear stones from the common bile duct. The BSG in 2014 published a key performance indicator of >75% stone clearance during first ERCP. Balloon sphincteroplasty as an adjunct to sphincterotomy can increase stone clearance. The aim of this study is to review the success/safety for balloon sphincteroplasty compared to sphincterotomy alone.

**Methods** Retrospective study between 1st April 2010–2014 in a large district general hospital of all ERCPs documenting a common bile duct stone. Electronic records were analysed with the following exclusion criteria: anticoagulants, biliary leak, unchecked cardiac device or incomplete follow up. Balloon sphincteroplasty was always performed after a sphincterotomy, using a Boston Scientific CRE wire guided balloon with a maximal diameter dilation that corresponded to the patient's mid common bile duct diameter (8–15 mm).

**Results** Total study population was 390 patients. Stone clearance with initial sphincterotomy alone and balloon/basket trawl was successful in 70% (n = 274) patients. 116 patients underwent additional balloon sphincteroplasty with a success rate of 85.5% (n = 100). The remaining patients underwent mechanical lithotripsy (n = 15) or tertiary care referral (n = 1). Therefore, sphincterotomy +/- balloon sphincteroplasty achieved stone clearance in 96% (n = 374) of patients.

No statistically significant diferences were observed for complication rates when comparing sphincterotomy alone to balloon sphincteroplasty. Actual complication rates for sphincterotomy alone/balloon sphincteroplasty were: overall 5%/5.2%; pancreatitis 1%/2.6%; cholangitis 3%/3%; bleeding 3%/0% perforation 0%/0%.

**Conclusion** Balloon sphincteroplasty is an effective and safe adjunct in patients who do not achieve bile duct stone clearance with sphincterotomy and balloon/basket trawl alone, allowing clearance rates to exceed current guideline recommendations.

**REFERENCE**

1 Wilkinson, *et al*. BSG ERCP – the way forward, A standards framework. 2014. http://www.bsg.org.uk

**Disclosure of Interest** None Declared

## PTU-029 NICE CLASSIFICATION FOR OPTICAL DIAGNOSIS OF COLONIC LESIONS IS EQUALLY APPLICABLE WHEN USING BLUE LASER IMAGING

[1,2]R Rameshshanker*, [1]A Wilson, [1]S Thomas- Gibson, [1]N Suzuki, [2]P Tekkis, [1]BP Saunders. *[1]Wolfson Endoscopy Unit, St Mark's Hospital, Harrow; [2]Imperial College, London, UK*

10.1136/gutjnl-2016-312388.116

**Introduction** Optical diagnosis of colonic polyps offers the potential for significant improvements in colonoscopy efficiency and cost saving. BLI is a new, push button, image enhancement endoscopy technology using two laser light sources to accentuate mucosal surface and vascular pattern of polyps. It's visual appearance is similar to NBI. This study assessed whether the validated NICE classification system for colonic polyps (NBI) was applicable for BLI images of polyps.

**Objectives**

- To assess whether NICE classification could be used to interpret BLI images
- To assess the diagnostic performance of BLI imaging modalities in characterising colonic polyps

**Methods** High quality still images of 25 polyps were retrieved from an endoscopy image database. For each polyp we examined 4 different images: BLI, BLI with magnification (BLI MAG), BLI bright (BLI BR) and BLI BR with magnification (BLI BR MAG) (total of 100 images). Four experienced endoscopists were asked to make an optical diagnosis based on NICE (NBI International Colo rectal Endoscopic classification) for each BLI modality images.

**Results** A total of 100 polyp images were reviewed. Reviewers were able to identify a minimum of one NICE feature in all cases (100%) and all three NICE features (colour, vessel and surface pattern) in 90% of the images. There was no significant difference in the accuracy of predicting polyp histology between BLI BR and BLI BR MAG (89.6% vs 92%, $p = 0.47$) or BLI and BLI MAG (90.5% vs 92%, $p = 0.8$). However, the confidence levels were significantly increased when presented with magnified images (BLI BR vs BLI BR MAG, 55.4% vs 91.3%, $p < 0.0001$ and BLI vs BLI MAG 55.3% vs 91.3%).

**Conclusion** Our preliminary data highlights that the NICE classification could be used efficiently to interpret BLI images. The confidence levels in making an optical diagnosis were significantly increased with BLI magnification. Further studies are needed to validate these observations.

**Disclosure of Interest** None Declared

## PTU-030 NUMBER OF SIGNIFICANT POLYPS DETECTED PER SIX MINUTES OF WITHDRAWAL TIME AT COLONOSCOPY (SP6): A NEW MEASURE OF COLONOSCOPY EFFICIENCY AND QUALITY

[1,2]R Rameshshanker*, [1]A Wilson, [1]Z Tsiamoulos, [2]P Tekkis, [1]BP Saunders. *[1]Wolfson Endoscopy Unit, St Mark's Hospital, Harrow; [2]Imperial College, London, UK*

10.1136/gutjnl-2016-312388.117

**Introduction** There is an increasing focus on quality, safety and efficiency of colonoscopy procedures. Colonoscopic efficiency could be defined as the ability to detect clinically relevant pathologies with a minimum expenditure of time and effort without compromising the safety of the procedure. Adenoma Detection Rate (ADR) is considered as a surrogate

marker for quality of colonoscopic examination. However, ADR does not take into account sessile serrated polyps/adenomas (SSP/A) or the efficiency of detection. We therefore propose a new measure of colonoscopy efficiency the SP6 that can be used to evaluate both individual endoscopist's performance and to compare different detection interventions.

Our objective was to assess the SP6 for an individual colonoscopist during standard and Endocuff –assisted colonoscopy (EAC)

**Methods** A prospective service evaluation of screening colonoscopies was performed by an experienced endoscopist between October 2014 and September 2015. For consecutive colonoscopies, patient demographics and procedural data were collected.

**Results** 96 patients had screening colonoscopy during this period. The median age was 65 years (55–74 years). A distal disposable attachment such as Endocuff Vision$^{TM}$ was used at the endoscopists' discretion. 49 patients had Endocuff Vision-assisted colonoscopy and the remainder had standard colonoscopy. Figure 1 summarises the main findings. There was no significant difference in caecal intubation time and withdrawal time between the two groups. Both ADR and SP6 were significantly improved and SP6 demonstrated that EAC appears to significantly improve colonoscopy efficiency with approximately twice as many pre-cancerous lesions detected and removed per 6 minutes of withdrawal time (1.11 vs 0.6, p = 0.004).

**Abstract PTU-030 Table 1**

| | Endocuff assisted colonoscopy | Standard colonoscopy | P value |
|---|---|---|---|
| No of patients | 49 | 47 | |
| Caecal intubation time (mean ± SD) | 5.6±3.0 | 6.2±3.85 | 0.39 |
| Withdrawal time (mean ± SD) | 10.9±4.5 | 11.3±5.33 | 0.72 |
| No of polyps | 113 | 62 | 0.001 |
| No of adenomas | 95 | 51 | 0.0005 |
| No of SSP/A | 04 | 02 | 1.0 |
| ADR | 83.67% | 55.32% | 0.004 |
| SP6 (adenomas+SSP/A) | 1.11 | 0.6 | 0.0004 |

**Conclusion** From this preliminary data an SP6 (colonoscopy efficiency metric) appeared significantly higher when Endocuff Vision$^{TM}$ is used. An SP6 >1 can be achieved in the context of bowel cancer screening FOBT positive colonoscopy and may act as a new benchmark to demonstrate high quality examinations.

**Disclosure of Interest** None Declared

## PTU-031 WHAT IS THE VALUE OF PERFORMING AN ENDOSCOPY IN PATIENTS UNDER THE AGE OF 50 WITH SYMPTOMS OF GASTRO-OESOPHAGEAL REFLUX DISEASE

R Preedy*, S Phillpotts, T El Menabawey, K Besherdas. *Gastroenterology, Royal Free NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.118

**Introduction** For gastro-esophageal reflux (GORD), upper endoscopy may be indicated in older men with chronic GORD symptoms (greater than 5 years) and additional risk factors such as elevated body mass index and tobacco use, to increase detection of Barretts oesophagus and esophageal adenocarcinoma.

Upper endoscopy is indicated in patients with GORD and alarm symptoms such as dysphagia, weight loss, bleeding, anaemia and recurrent vomiting. Without alarm symptoms upper endoscopy is only indicated when symptoms of GORD persist or progress despite appropriate medical therapy.

Inappropriate use of upper endoscopy does not improve the health of patients, exposes them to preventable harms, can lead to unnecessary interventions and result in unnecessary costs with no benefit.

Our aim was to assess the findings at upper endoscopy performed in patients under the age of 50 presenting with GERD without alarm symptoms.

**Methods** A single centre, retrospective analysis in a large London NHS Foundation Hospital was performed. All patients endoscoped for reflux were identified using Unisoft Endoscopy reporting software across a period of 10 years (June 2005-May2015). Data from the patients' electronic records was reviewed for histological diagnosis of Barrett's or cancer.

**Results** 124 of the 1772 patients endoscoped for reflux symptoms alone were found to have Barrett's (7%).

627 of the 1772 patients were under the age of 50 at time of endoscopy Out of the patients under the age of 50, 23 (3.6%) were identified as having Barrett's at the time of endoscopy but histologically proven in only 13 (2%) the others were shown to have reflux oesophagitis only. No patients were found to have cancer of the oesophagus or stomach.

Out of the 13 patients with proven Barrett's 4 patients had a length longer than 3 cm with a maximum length of 6 cm. All other patients had short segments of Barrett's (less than 3 cm) and none had evidence of dysphasia or malignancy.

**Conclusion** The role of endoscopy in patients under the age of 50 with symptoms of GORD only would appear to be an inappropriate first line investigation. In our case series only 2% patients endoscoped under the age of 50 were identified a histological positive diagnosis of Barrett's. Inview of current guidelines only 0.3% would require surveillance endoscopy but this in itself remains questionable.

**Disclosure of Interest** None Declared

## PTU-032 IRON DEFICIENCY ANAEMIA (IDA) AND NORMAL UPPER AND LOWER GASTROINTESTINAL ENDOSCOPIES: LONG TERM OUTCOMES FOR PATIENTS INVESTIGATED ACCORDING TO BRITISH SOCIETY OF GASTROENTEROLOGY (BSG) GUIDELINES

G Perin*, R Young, M Rogers. *Mid Yorkshire NHS Trust, Wakefield, UK*

10.1136/gutjnl-2016-312388.119

**Introduction** Limited outcome data exists for patients with iron deficiency anaemia (IDA) investigated in accordance with the British Society of Gastroenterology (BSG) guidelines following normal gastrointestinal endoscopy.[1] The importance of missed diagnoses in such patients is a key quality indicator for endoscopy services.[2] The aim of this study was to evaluate long term outcomes for patients with IDA and normal upper and lower gastrointestinal endoscopy managed in accordance with BSG guidelines.[1]

**Methods** Review of a large consecutive series of adult patients referred for investigation of IDA from 1999–2006 to a UK district general hospital. All patients underwent successful oesophago-gastro-duodenoscopy (OGD) and colonoscopy. Those who received a definitive diagnosis were excluded (colorectal/upper gastrointestinal carcinoma, coeliac disease or inflammatory bowel disease). If endoscopic assessment found no cause for IDA no further investigations were undertaken aside from colonic adenoma surveillance. Case notes, laboratory, endoscopy and radiology records were reviewed to determine recurrence and re-investigation of IDA in these patients, any significant gastrointestinal pathology and patient outcomes. Survival was determined using the Kaplan-Meier technique.

**Results** 116 of 142 (82.3%) referred patients had no cause found for IDA on index endoscopic evaluations. Over a median follow up period of 12 years (153 months, range 108–192) there were 45 deaths in this cohort. 5- and 10 year survival rates were 91% and 74% respectively. 23 (19.8%) patients were re-referred for investigation of IDA of which 20 had further normal endoscopies. Overall 2 (1.7%) patients were diagnosed with gastrointestinal cancers during the period of follow up we reviewed. Neither could obviously be classified as a missed diagnosis; one oesophageal and one gastric cancer were diagnosed 12 years post index investigations. All endoscopies that patients subsequently underwent following index investigations were reviewed, including those for other indications and screening. In total 38 patients underwent endoscopy and one had a CT virtual colonoscopy. One patient was diagnosed with terminal ileal Crohn's disease following re-referral with change in bowel habit 2 years after index investigations and one had haemorrhoids diagnosed on flexible sigmoidoscopy.

**Conclusion** Patients with IDA and normal upper and lower gastrointestinal endoscopies who were managed in accordance with BSG guidelines had acceptable long term outcomes. Overall this data supports the recommendations made by the BSG.

## REFERENCES

1 Goddard AF, *et al*. Gut 2011;**60**(10):1309–16.
2 Morris EJ, *et al*. Gut 2015;**64**(8):1248–56.

**Disclosure of Interest** None Declared

## PTU-033 ENDOSCOPIC MUCOSAL RESECTION OF ADENOMAS AND SESSILE SERRATED POLYPS, IS THERE A DIFFERENCE IN COMPLICATION RATES?

R Kassam*, J Subhani. *Gastroenterology, Basildon and Thurrock University Hospital, London, UK*

10.1136/gutjnl-2016-312388.120

**Introduction** Introduction: within a regional, DGH based, EMR service, we evaluated whether there is a difference in the complication rate of EMR of adenomas and SSA/P's.

**Methods** Method: from January 2007 to February 2016 we prospectively collected data for a single endoscopist (a consultant gastroenterologist, within our institution), for EMR of all large (>19mm) non-pedunculated polyps. A standard EMR technique was used in all patients, a lifting solution consisting of colloid, methylene blue and adrenaline was injected into the submucosal plane. Appropriately lifting lesions were removed with the use of diathermy through a range of standard snare's. A CONMED diathermy unit using Endocut setting was used for all EMR's. Lesions were removed either en bloc or piecemeal dependent upon the safety of either resection technique. Following snare resection any residual polyp tissue was treated with APC.

Following uncomplicated EMR's patients were discharged home with two follow up telephone interviews with a sister in the endoscopy unit scheduled for day 1 and 14 post procedure assessing for complications. Adverse events recorded included perforation, late bleeding or admission. A "site check" was routinely performed at 3 months and if clear at 12 months following the EMR, to assess for recurrence.

Histological analysis was carried out by a GI pathologist at our hospital, sessile serrated lesions were classified as per the WHO (2010) classification:[1] SSA/P's without cytological dysplasia, SSA/P's with cytological dysplasia, traditional serrated adenomas and hyperplastic polyps.

**Results** A single endoscopist attempted 386 adenoma resections, completing 379 of these. 3 (0.8%) perforations were diagnosed. 20 (5.2%) late bleeds occurred in the adenoma group, 12 (3.1%) of patients with late bleeding required admission. Recurrence in the adenoma group was 10.9% at 12 months(249 patients have completed there 1 year follow up to date).

During the same period the same endoscopist attempted the resection of 19 SSP's. In this group 3 (16.7%) perforations were diagnosed, there was the same number of patients with delayed bleeding but only 2 (11.1%) patients required admission for bleeding. Recurrence of SSP's at 12 months 0% (5 patients have completed their 1 year follow up colonoscopy to date).

**Conclusion** Though a clear difference in size of the cohorts, our data demonstrates a strikingly higher rate of perforations in the SSP group. We note no significant difference in complication rates was observed in a large prospective, multicentre study of 2000 lesions.[2]

## REFERENCES

1 Snover DC, *et al*. Serrated polyps of the colon and rectum. WHO Classification Tumours of Digestive System. 2010:160–165.
2 Pellise M, *et al*. EMR for large serrated lesions in comparison with adenomas: a prospective multicentre study of 2000 lesions. *Gut online first*, January 2016.

**Disclosure of Interest** None Declared

## PTU-034 STRICTURE FORMATION AFTER ENDOSCOPIC MUCOSAL RESECTION OF LARGE COLONIC POLYPS

R Kassam*, J Subhani. *Gastroenterology, Basildon and Thurrock University Hospital, London, UK*

10.1136/gutjnl-2016-312388.121

**Introduction** Post endoscopic resection strictures are seen in oesophagus in up to 20–30% of circumferential resection.[1,2] Probably due to the greater circumference of the colon these have not been described in Colorectal EMR. However with larger lesions being tackled the prospect of this complication arises.

**Methods** Details of lesions assessed for EMR by a single endoscopist (JMS) were kept prospectively. Non-pedunculated

polyps >59 mm were assessed to see if the patients developed significant strictures. Only those who developed obstructive symptoms were considered significant.

**Results** here were 801 non Ip lesions, with 749 attempted resections on the database. There were 80 lesions >59 mm and 72 proceeded to attempted resection (8 not attempted all subsequently diagnosed as cancer).

The 72 lesions will be the focus of the study. Mean size 68 mm (60–120 mm), 36 rectal, 15 other left-sided, 9 caecal, 12 other right-sided lesions. 23 (32%) involved 25–50% of the circumference, 35 (49%) 50–75% and 14 (19%) involved 75–100%.

In 47/72 cases the resection was completed at the first session. In 25 cases the initial resection was stopped due to suspicion of CA, technical difficulty or length of procedure. 11/25 patients subsequently underwent surgery, 14 further endoscopic resection. After completed endoscopic resections 1 other patient required surgery. 60/72 treated endoscopically.

4 subsequently developed symptoms from strictures requiring dilation all had 75–100% circumferential involvement. 2 sigmoid (70, 100 mm), 2 rectal (90, 100 mm). All had LGD histology and only received a small amount of APC. 3 were completed in a single session, one required 2 sessions.

Only 11 patients had >75% circumferential involvement and had complete endoscopic resection. 4 developed strictures.

The 4 were treated with endoscopic dilation successfully. However, one patient who had twice been dilated to 15 mm, on a third session was dilated to 18 mm causing a perforation and subsequently required surgery.

**Conclusion** In large colorectal EMR if <75% of circumference involved there is little chance of functional significant structure. However if >75% there maybe a 40% chance of a functional significant stricture. Appropriate measures such as laxative and a 4 week endoscopic assessment is appropriate.

## REFERENCES

1 Bahin FF, *et al*. Endoscopy 2016 Jan;**48**(1):71–4.
2 Komeda Y, *et al*. Endosc Int Open 2014 Jun;**2**(2) E58–E64.

**Disclosure of Interest** None Declared

## PTU-035 SPHINCTEROTOMY IN PERIAMPULLARY DUODENAL DIVERTICULUM

S Mogan*, R tighe. *Norfolk and Norwich University Hospital NHS foundation trust, Stanmore, UK*

10.1136/gutjnl-2016-312388.122

**Introduction** Periampullary duodenal diverticulum (PAD) was first described by J. Chomel in 1710.[1] The pathophysiological mechanism of occurrence may include both traction and pulsion. Incidence widely varies between 7%–32% of the patients at the time of endoscopic retrograde cholangiopancreatography (ERCP).[2] There is conflicting data on cannulation rates and Post ERCP complications in patients with PAD.

**Methods** We conducted a retrospective review on the data of all patients who underwent a sphincterotomy in the presence of Periampullary diverticulum between Jan 2007 and Aug 2015. Comprehensive information was gathered with regards to patient's demographics, procedural indications and procedure success rates. We assessed the cannulation rates, complications and number of procedures required to clear stones during the first ERCP.

**Results** 389 patients with periampullary diverticulum who underwent sphincterotomy were identified and analysed during this period. The incidence of PAD was 13.2%. 54% were females and the mean age was 74 years (range, 35–100 years). 257 patients (66%) were above the age of 65. The most common underlying diagnoses were Common bile duct (CBD) stones (74%) and Cholangiocarcinoma (12%) followed by Chronic Pancreatitis (6%), Bile leak (2%) and Pancreatic cancer (2%). Other indications were Sphincter of oddi dysfunction, Primary sclerosing cholangitis and IgG4 related cholnagiopathy (4%). Successful cannulation was achieved in 359 patients (92%). 60 patients (15%) needed at least two procedures for successful stone clearance. Successful stone clearance was achieved in 227 patients (79%) of patients with CBD stones. 16 patients (5%) with CBD stones needed more than two ERCP procedures to achieve stone clearance. Combined endoscopic (rendezvous) and percutaneous approach was needed in 12 patients (3%). 11 patients developed post ERCP Pancreatitis (3%). 3 patients (0.84%) had retroperitoneal perforation post sphincterotomy. 8 patients (2%) had moderate to severe post sphincterotomy bleeding requiring transfusion or endoscopic/angiographic intervention. There were no reported cases of procedure related mortality.

**Conclusion** Endoscopic sphincterotomy is safe in this cohort given the right indication. An other safe adjunct is balloon sphincteroplasty. We did not see any significant increase in Post ERCP mortality or morbidity comparing with national standards. The finding of PAD had no effect on successful cannulation.

## REFERENCES

1 Chomel JB. *The Royal Academy of History, Paris*. Paris: The Institute France, Academy of Sciences; 1710. p. 37.
2 Tyagi P, Sharma P, Sharma BC, Puri AS. Periampullary diverticula and technical success of endoscopic retrograde cholangiopancreatography. *Surg Endosc* 2009;**23**:1342–5.

**Disclosure of Interest** None Declared

## PTU-036 SAFETY OF RADIOFREQUENCY ABLATION FOLLOWING ENDOSCOPIC RESECTION IN BARRETT'S NEOPLASIA: DOES RESECTION METHOD MATTER?

S Subramaniam*, F Chedgy, K Kandiah, S Thayalasekaran, P Bhandari. *Department of Gastroenterology, Portsmouth Hospitals NHS Trust, Portsmouth, UK*

10.1136/gutjnl-2016-312388.123

**Introduction** The current standard of treating Barrett's neoplasia is resection of visible lesions followed by ablative therapy to the Barrett's segment. Endoscopic mucosal resection (EMR) is the conventional method of resection although there is growing evidence for the use of endoscopic submucosal dissection (ESD). Radiofrequency ablation (RFA) is a safe and effective ablation technique but carries a risk of complications including bleeding, stricture and perforation. ESD is associated with much deeper submucosal dissection then EMR, resulting in a deeper and thicker scar. This has been a cause for concern whilst performing RFA after ESD and experts have raised the possibility of higher stricture or perforation rates with RFA after ESD. We wish to compare the safety and efficacy of radiofrequency ablation following EMR and ESD and to ascertain if there are any significant differences.

**Methods** An electronic database (from 2007–2015) of all patients who had endoscopic resections (EMR or ESD) for

Barrett's neoplasia followed by RFA was analysed. Data was collected on patient demographics, Barrett's length, lesion size, number of ablations required and follow up period. The clearance of neoplasia (high grade dysplasia/intramucosal cancer) was also recorded (CE-N) along with procedural complications including bleeding, perforation and strictures.

**Results** There were 30 patients in the EMR + RFA group (average age 73.1 years) compared to 19 in the ESD + RFA group (average age 74.6 years).

Patients received circumferential ablation (HALO 360) or focal ablation (HALO 90/60/Ultra) depending on the extent of residual Barrett's oesophagus post endoscopic resection. The table below shows the outcome of RFA following EMR or ESD. ESD was started in our institution later than EMR and that is reflected in lower numbers and shorter follow up in the ESD cohort but it is otherwise a well matched population.

**Abstract PTU-036 Table 1**

| | EMR + RFA | ESD + RFA |
|---|---|---|
| Number of patients | 30 | 19 |
| Mean follow up (years) | 4.1 | 1.6 |
| Mean Barrett's length (cm) | 7.4 | 7.1 |
| Mean lesion size (mm) | 20.4 | 26.7 |
| Mean number of ablations | 1.9 | 1.7 |
| CE-Neoplasia | 93.3% | 94.7% |
| Bleeding (n,%) | 0 | 1 (5.3%) |
| Perforation (n,%) | 0 | 0 |
| Stricture (n,%) | 2 (6.7%) | 0 |

**Conclusion** This is the first UK series reporting on the safety and efficacy of RFA after ESD.

RFA following ESD or EMR is equally safe and effective and the endoscopic resection method is not a significant factor when planning ablation therapy.

**Disclosure of Interest** None Declared

## PTU-037 ENDOSCOPY IN THE CENTENARIANS: IS IT WORTH THE TROUBLE?

[1]S Budihal*, [2]D Budihal. [1]*Digestive Diseases Centre, University Hospitals Leicester, Leicester*; [2]*Directorate of Clinical Gerontology, University Hospital Wales, Cardiff, UK*

10.1136/gutjnl-2016-312388.124

**Introduction** Gastrointestinal Endoscopy in the very elderly is generally considered risk prone and there is a degree of reluctance to perform procedures in this age group. Centenarians are people who live to or beyond 100 years of age. According to the Office of National Statistics, in 2014 there were 14,450 centenarians living in the U.K, having risen by 72% over the last decade.[1]It is estimated that the number of people over the age of 100 years will approximately double by 2020.[2] Little is known about digestive endoscopy in the centenarians. This retrospective study aimed to explore endoscopic practice in this group of patients.

**Methods** A retrospective study was undertaken, analysing endoscopic practice in the centenarians in a University Hospital over a period of ten years (01/01/2005 to 01/01/2015). Endoscopy reports were retrieved using the Hospital's Endoscopy Reporting tool (Unisoft) and patients' Date of birth and demographic details were confirmed using the Trust's patient database.

**Results** A total of 11 procedures (7 Gastroscopies, 3 sigmoidoscopies and 1 Colonoscopy) were undertaken in 10 patients (4 male and 6 female). Oldest patient was 119 years of age and the youngest 101 years. Mean age was 105.2 years. 7 patients were Caucasians, 2 Indian and 1 Afro Caribbean of ethnicity. 72% of the procedures were undertaken on an urgent basis. 70% of patients were inpatients and majority of the procedures were undertaken by Consultants (82%). Indications included Dysphagia (36.3%), Melena (27.2%), Rectal Bleeding (27.2%) and previous Cancer (9%). The procedural yield was high (81.8%) with endoscopic intervention undertaken in 2 cases (Duodenal ulcer bleeding which was treated with adrenaline injections and haemorrhoids which were banded). Only 2 of the procedures (18%) were undertaken under sedation (midazolam). All procedures were completed and no immediate complications were noted.

**Conclusion** To the best of the authors' knowledge this is the only study analysing endoscopic practice in the centenarians. While we acknowledge that sample size is small it demonstrates that endoscopic procedures can be performed safely and that the diagnostic yield is high. Majority of the patients tend to be inpatients and undergo the procedure on an urgent basis by consultants.A patients' age should not be the sole factor when deciding suitability for endoscopic procedures, bearing in mind the increasing number of centenarians requiring this service. Larger studies are required to gain a better understanding of endoscopic suitability for patients in this age group.

### REFERENCES

1 http://www.ons.gov.uk/ons/dcp171778_418037.pdf
2 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223229/Centenarians.pdf

**Disclosure of Interest** None Declared

## PTU-038 MEDICAL MALPRACTICE IN ENDOSCOPY: WHAT ARE WE GETTING WRONG?

S Budihal*, JF Mayberry. *Digestive Diseases Centre, University Hospitals Leicester, Leicester, UK*

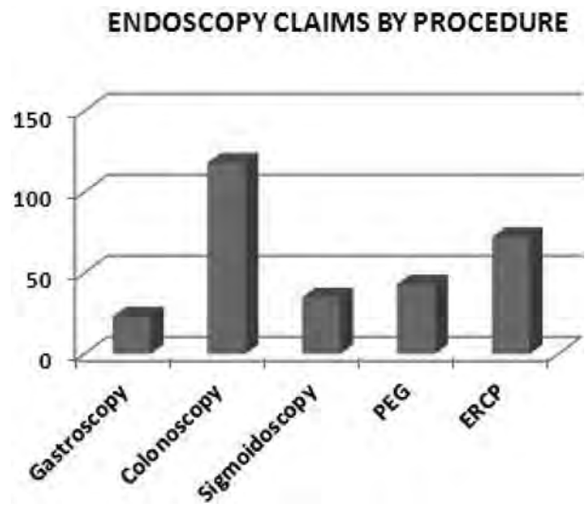
10.1136/gutjnl-2016-312388.125

**Introduction** Adverse clinical events can lead to patients seeking compensation citing medical negligence. Endoscopy is not risk free and complications are well documented. Information regarding claims in endoscopy is scarce and little is known about the causes for legal redress. This study aimed to investigate the nature of medico-legal claims in relation to endoscopy in the National Health Service.

**Methods** The National Health Service Litigation Authority's (NHSLA) database was searched for Endoscopy claims between the year of 2010/11 to 2014/2015 using the terms "Endoscopy", "Gastroscopy", "Colonoscopy", "Sigmoidoscopy", "ERCP" and "Capsule Endoscopy" through a Freedom of Information Request (F/2405). Causes for the claims and nature of the procedures were then analysed.

**Results** A total of 151,23, 118, 35, 43 and 72 claims were recorded with the terms Endoscopy, Gastroscopy, Colonoscopy, Sigmoidoscopy, PEG and ERCP in the incident descriptions. Only one case involving Capsule Endoscopy was noted.

Claims relating to Infection control and Hospital hygiene topped the list, followed by a failure or delay in diagnosing a condition. Claims also centred on incidents during endoscopy, along with a failure to adequately take an informed consent. Inadequate nursing care was a significant factor in claims relating to PEG procedures.




**Abstract PTU-038 Figure 1**

**Conclusion** This study shows that the majority of claims pertain to Colonoscopy or ERCP. Infection Control and Failure to diagnose and treat conditions are important causes for litigation.Capsule Endoscopy appears to be relatively risk free. Endoscopist should bear these factors in mind when obtaining consent and undertaking procedures.Further studies are required for a more detailed analysis of litigation in endoscopy to ensure safer medical practice and patient care.
**Disclosure of Interest** None Declared

## PTU-039 ENDOSCOPIC MANAGEMENT OF COMPLEX NON PEDUNCULATED RECTAL POLYPS

A Kurup, S Sen, S Hebbar*. *Gastroenterology, Royal Stoke University Hospital, Newcastle under Lyme, UK*

10.1136/gutjnl-2016-312388.126

**Introduction** Complex NPRP (non pedunculated rectal polyp) is defined as the polyp which has an increased risk of malignancy, increased risk of incomplete resection/recurrence, increased risk of adverse event or SMSA level 4 polyp.[1]

Complex rectal polyps are managed by endoscopic (EMR, ESD, hybrid ESD) techniques or by various surgical techniques (TEMS, TAMIS, TART, TASER), depending on the endoscopic lesion assessment and the local expertise.
**Methods** The aim of this study was to describe the outcomes of the endoscopic management of complex rectal polyps in a large tertiary hospital (single operator).
**Results** Over a period of 33 months (May 2013 to Jan 2016), 77 complex rectal polyps including 10 rectosigmoid polyps were encountered. The size of the polyp varied from 1 cm to 14 cms (median - 3.5 cm). The age of the patient varied from 50 to 92 (median age - 60).

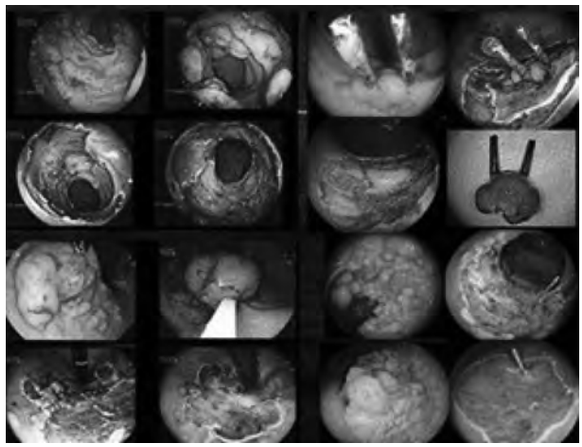
29 polyps (37.6%) was confirmed to have cancer. The pre resection endoscopic accuracy of malignancy was 94%. Frank malignancy was suspected and confirmed in 7 cases and deemed not suitable for endoscopic resection. A small subpedunculated pT1 polyp cancer was resected enbloc, but was not suspected to be a cancer prior to resection.21 polyps were noted to have features suggestive of high risk of malignancy. All had attempted endoscopic resection, including EMR and/or hybrid ESD. Of these, 7 polyps was confirmed to have cancer.

The surgery rate for complex rectal polyps (including lesions with endoscopic resections for cancer) is 4.2%. None of the benign polyps (including polyps with EMR/Hybrid ESD for recurrence at previous TEMS/EMR site, post surgery anastomosis site) had surgery. Of the data available for 54 polyps with post endoscopic resection, 46 polyps (85%) did not have any residual lesion at 3 months. Of the available data for 26 polyps at 12 months, no recurrence/residual lesion was noted.

None of the resection had perforation. 2 polyp cancers had significant bleeding during attempted hybrid ESD and had surgical resection of the polyp cancer. Another benign polyp with hybrid ESD had significant bleeding controlled with haemospray.

The average time of combined EMR/hybrid ESD procedures is 11.4 mins for every cm of polyp resected.

Considering the age, co-morbidity, size, location and final histology, ESD or alternative micro surgical techniques would have made a difference to the final outcome in only one patient.



**Abstract PTU-039 Figure 1**

**Conclusion** The pre resection endoscopic accuracy rate for malignancy is significantly high in a high volume centre. EMR and Hybrid ESD in experienced hands is an effective technique in managing complex rectal polyps.

### REFERENCE

1 British Society of Gastroenterology/Association of Coloproctologists of Great Britain and Ireland guidelines for the management of large non-pedunculated colorectal polyps.

**Disclosure of Interest** None Declared

## PTU-040 HOW SHOULD MISS RATES FOR CANCER AND LARGE POLYPS BE MONITORED AT A LOCAL LEVEL? RETROSPECTIVE ANALYSIS OF REPEAT COLONOSCOPIES AT A DISTRICT GENERAL HOSPITAL

S Meade*, A Mcnair. *Gastroenterology, Queen Elizabeth Hospital, London, UK*

10.1136/gutjnl-2016-312388.127

**Introduction** Caecal intubation and adenoma detection rates are key performance indicators (KPI) used to assess the quality of colonoscopy. Post-colonoscopy colorectal cancer (PCCRC) rates have recently been suggested as an additional KPI. Most studies estimate PCCRC rates by identifying the proportion of patients with diagnosed colorectal cancer (CRC) who have had a colonoscopy within 3 years of their diagnosis. This is labour intensive requiring evaluation of ≥2 databases. We describe a simplified method for estimating PCCRC rates.
**Aim** To estimate the PCCRC rate using data from the endoscopy database alone. To identify all patients who had ≥2 colonoscopies over a 3 year period and those with CRC at the latest colonoscopy. To estimate the miss rate for larger (>20 mm) polyps.
**Methods** We identified all patients on our endoscopy database (Adam, Fujifilm) who had a colonoscopy from 2010–12 and had a repeat colonoscopy within the next 3 years. We merged initial colonoscopy data with data of those patients found to have CRC and used conditional formatting to flag up duplicate procedures. Patients found to have CRCs or polyps >20 mm in the repeat procedure, not noted at their initial endoscopy, were identified. This data was used to calculate a 'miss rate' for these lesions.
**Results** Between 2010 and 2012, 4961 colonoscopies were performed. In total 192 cancers were identified during this period. 237, 150, 225 and 128 repeat colonoscopies were performed within the same year and at 1, 2 and 3 years respectively. Of the 150 repeat procedures performed the following calendar year, indications included polyp surveillance (78), post-operative cancer surveillance (20), HNPCC or FAP (15), family history of CRC (8), anaemia (7), altered bowel habit (6) and other (16). In this group, 42 had polyps >20 mm and 6 had cancers. 3 of the cancers were in the ascending colon and the remaining three were missed at sites reported to have been examined in the previous study. This resulted in a missed polyp rate of 38.6%, a 'missed cancer rate' at one year of 6/150 patients (4%) and an overall 'missed cancer rate' of 0.12% or 1 in 827 colonoscopies. 2 cancers were found in patients who had a repeat colonoscopy after 2 years, both in the ascending colon. There were no missed cancers on repeat colonoscopy within the same calendar year or at three years.
**Conclusion** Data readily obtainable from the endoscopy reporting system can be used to determine the rate of missed cancers. Our results are similar to that reported in other studies employing more complex and time-consuming methodology. This alternative approach can be used by units to confirm their local PCCRC rate, large polyp miss rates and potentially identify endoscopists whose miss rates are unacceptably high.
**Disclosure of Interest** None Declared

## PTU-041 IMPACT OF TIME TO ENDOSCOPY ON MORTALITY IN PATIENTS WITH NON VARICEAL UPPER GI BLEED

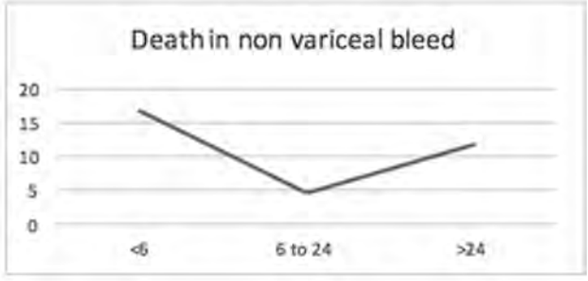
[1]SAA Gardezi*, [1]C Tibbatts, [2]A Foliaki, [1]L Chase, [1]H Javaid. *[1]Gastroenterology; [2]Upper GI surgery, Cardiff & Vale University health board, Cardiff, UK*

10.1136/gutjnl-2016-312388.128

**Introduction** Acute upper GI Bleed (AUGIB) is one of the most common presentations in UK hospitals and is associated with significant morbidity and mortality. Current guidelines recommend early endoscopic intervention (i.e. Within 24 hours) for patients presenting with UGIB.[1] Early endoscopy can be beneficial in achieving hemostasis more quickly & decreasing need for transfusions.[2] However aggressive resuscitation before rushing towards an endoscopy has its own importance as Inadequate early resuscitation is believed to be a major factor in the persistently high mortality rate in patients with UGIB.[3]
**Methods** We conducted a retrospective study of 696 patients who were admitted to Cardiff and Vale university health board & subsequently treated in endoscopy unit for non variceal upper GI bleed between September 2010 and September 2013. Patients were divided into 3 groups depending upon the time to scope from admission (Within 6 hours, 6–24 hours and more than 24 hours).
**Results** Our study found that very early endoscopy (i.e. <6 hours) compared to rapid endoscopy (6–24 hours), did not improve outcome and in fact had a significantly worse mortality rate of 16.67% vs 4.62% . Though it can be argued that patients who had a very early endoscopy were more unwell comparatively. When we compared patients in high risk group only i.e. GBS (Glasgow Blatchford >10); results were identical.

**Time to scope vs outcome in patients with non variceal bleed.**

| Hours to OGD | Total Number | Died |
|---|---|---|
| <6 Hours | 18 | 3(16.67%) |
| 6-24 Hours | 173 | 8(4.62%) |
| >24 Hours | 505 | 59(11.68%) |




**Abstract PTU-041 Figure 1**

**Conclusion** Our study reinforced the importance of access to rapid endoscopic intervention within 24 hours, but did not demonstrate the need for very early gastroscopy. This was likely due to the fact that organising very early endoscopy within 6 h would slow intensive resuscitative efforts leading to worse outcome.

**REFERENCES**
1 https://www.nice.org.uk/Guidance/CG141
2 Cooper GS, *et al*. Early endoscopy in upper gastrointestinal haemorrhage. *Gastrointest Endosc* 1999;**49**:145–52.
3 Baradarian R, Ramdhaney S, Chapalamadugu R, *et al*. Early intensive resuscitation of patients with upper gastrointestinal bleeding decreases mortality. *Am J Gastroenterol* 2004;**99**:619–22.

**Disclosure of Interest** None Declared

## PTU-042 THE INCREMENTAL BENEFIT OF VIDEO CAPSULE ENDOSCOPY AFTER MAGNETIC RESONANCE ENTEROGRAPHY (MRE) IN PATIENTS WITH SUSPECTED SMALL BOWEL CROHN'S DISEASE

T Archer*, S Samuel, L Simmonds, R Sikafi, P Plichta. *Gastroenterology, Nottingham University Trust, Nottingham, UK*

10.1136/gutjnl-2016-312388.129

**Introduction** Video Capsule Endoscopy (VCE) has the unique ability to visualise the small intestinal mucosa, which traditionally is difficult to reach with a standard endoscope. The indications for this test are primarily to investigate the small bowel (SB) in patients with Crohn's Disease (CD) and to evaluate the SB for causes of Iron Deficiency Anaemia (IDA). Despite the high diagnostic yield with VCE, one of its main drawbacks is its low specificity in patients with inflammatory bowel disease (IBD). In a prospective blinded 4 way comparison study, capsule endoscopy had a sensitivity of 83% and a specificity of 53%.[1] We intended to evaluate the additional benefit of VCE in our patient cohort with particular emphasis on those patients who had MRE prior to their VCE as part of their work up for IBD.
**Methods** Patients who had VCE in Nottingham University Hospitals NHS Trust between January 1st 2014 and January 1st 2016 were included. Patient data including demographics, previous investigations and the treating physician's interpretation of results and resultant change in management, from these investigations, were abstracted on to an excel spreadsheet.
**Results** 171 patients were included, of whom 148 were adults and 87 were female. The commonest indication was IDA [n = 70 (41%)]. Diarrhoea and IBD were the second most common indication with 63 patients (37%). SB abnormalities were detected in 96 patients, of which 48 had not previously been visualised on alternative investigations. This changed management in 28 patients (16%) based on the abnormalities detected. There was one complication observed; the capsule remained in the stomach stuck within rugal folds and requiring endoscopic retrieval.

44 patients with suspected CD had MRE prior to capsule endoscopy. Abnormalities were seen in 20 of these capsule endoscopies, of which 14 had not been seen in previous investigations. However, only in 5 patients (10%) did these positive capsule findings facilitate a change in their disease management.

Of the 63 patients who were investigated for IBD or diarrhoea, 15 patients were diagnosed with CD in light of the VCE findings. However, of these, only 4 patients had had a change in management, of whom 3 had had findings consistent with CD already demonstrated on MRE.
**Conclusion** VCE is a useful and safe diagnostic test to detect SB pathology. This modality assisted management in 16% of our patient cohort. However, in the setting of IBD it appears that VCE rarely has findings that lead to a change in management over and above MRE.

**REFERENCE**
1 Solem CA, Loftus EV, Jr, Fletcher JG, Baron TH, Gostout CJ, Petersen BT, *et al*. Small-bowel imaging in Crohn's disease: a prospective, blinded, 4-way comparison trial. *Gastrointest Endosc* 2008;**68**(2):255–66.

**Disclosure of Interest** None Declared

## PTU-043 PROSPECTIVE STUDY OF THE DIAGNOSTIC YIELD FROM HISTOLOGICAL VERSUS CYTOLOGICAL PREPARATION OF SPECIMENS ACQUIRED USING STANDARD EUS FNA NEEDLES

[1]V Mahesh*, [1]A Banerjee, [1]C Walsh, [2]K Davies, [3]S Shaktawat. *[1]Gastroenterology; [2]Blackpool Victoria Teaching Hospitals NHS Trust, Blackpool, UK; [3]Cytopathology, Blackpool Victoria Teaching Hospitals NHS Trust, Blackpool, UK*

10.1136/gutjnl-2016-312388.130

**Introduction** Improvements in the EUS FNA needle design and optimisation of tissue acquisition techniques have resulted in better diagnostic yield (DY). Recently there has been considerable interest in histological processing of tissue acquired using newer 'core' FNA needles, which are often more expensive than standard needles.

We hereby provide preliminary data on DY of tissue acquired using standard FNA needles.
**Aim** To compare the diagnostic yield of histological versus cytological preparation of tissue acquired using standard EUS FNA needle and to compare overall diagnostic yield.
**Methods** Prospective non-blinded randomised study .

All patients undergoing EUS guided FNA from November 2015 to February 2016, for solid lesions were included. FNA was performed using Cook Echotip Ultra™ or Boston Scientific Expect™ 19, 22 or 25 G needles based on stock availability and location of the lesion, Olympus EU-ME2™ processor and linear echoendoscopes was used.

All patients had 4 passes done with the same needle, specimens from each pass were randomly collected in BD Cytorich™ or Formalin. Each preservative had 2 passes of material. EUS FNA was performed by one endosonographer and two trainees employing standard FNA technique and suction, pathology reported by 5 different cytopathologists. All cytology specimens were processed by the biomedical scientists for cell block ± smear preperation. Cellularity of the sample were simply graded as adequate or inadequate. Histology processing was performed as standard.
**Results** In total 21 patients had EUS FNA performed, mean age 65.5±12.1 years, 14 M:7 F. Final diagnoses include 5 pancreatic malignancies, 5 GIST/NET, 2 malignant nodes, 1 lymphoma, 6 benign, 2 non-diagnostic. 19 G needle was used in 15 patients, 22 G in 4 patients and 25 G in 2 patients.

Diagnosis was made in 15/21 (71.4%) from cytology specimens and 19/21 (90.4%) from combined cytology and histologically processed specimens. An incremental diagnostic gain in 4/21 specimens, i.e. 19% by processing samples as histology in addition to standard cytology. No statistical significance was seen on univariate or multivariate logistic regression analysis for tumour size (≥2 cm), route of FNA or size of needle.

Limitations of the study include small sample size, no blinding being used for randomisation of the FNA specimen.

**Conclusion** Our 'proof of concept' study with preliminary results show that adequate samples can be obtained for histological processing even with standard FNA needles and incremental gain in DY by additionally processing specimens as histology. Data from our randomised blinded trial would shed further light into this important area.
**Disclosure of Interest** None Declared

## PTU-044 IMPROVED DIAGNOSTIC YIELD WITH CELL BLOCK ONLY PREPARATION OF EUS GUIDED FNA SPECIMENS

[1]V Mahesh*, [1]J Kizhakkepatt, [2]S Shaktawat. [1]*Gastroenterology*; [2]*Cytopathology, Blackpool Victoria Teaching Hospitals NHS Trust, Blackpool, UK*

10.1136/gutjnl-2016-312388.131

**Introduction** Recently increased attention has been paid to the post FNA processing of specimen including on site smear preparation or extruding the entire specimen into preservative for cytotechnician assisted cell block or smear preparation, to improve diagnostic yield (DY). Due to logistical and cost issues, many centres like ours, do not have rapid onsite smear evaluation facilities.
**Aim** Comparative analysis of cell block only versus cell block and smear preparation of specimens acquired via standard EUS guided FNA technique. Secondary outcomes include assessment of cellularity of the specimens.
**Methods** Retrospective case-note review study. Consecutive samples were evaluated from January 2010 to October 2015 at our institution. All FNA procedures involving solid lesions were included. Choice of needle was up to the discretion of the endosonographer. All specimens were fully extruded with saline/stylet into 'Cytorich'$^{TM}$ containers, cytotechnician randomly decided regarding smear and cell block or cell block only preparation. Cellularity was graded simply as adequate or inadequate.
**Results** 118 samples were collected from 112 patients, 69 male/43 female patients, and mean age of 64.1 ±9.6 years. Initial 49 FNAs were performed using Aloka alpha5 Olympus$^{TM}$ processor, rest with EU-ME2 Olympus$^{TM}$ processor. All the procedures were done by 4 experienced endosonographers and two trainees, following stadard technique. Average 3.89 ±0.47 passes, 5–20 mls of suction, stylet used only in the first pass. 40 samples were obtained with 19 G needles, 46 samples with 22 G, 7 samples with 25 G and 23 obtained using combination/core needles. 59 Solid pancreatic lesions, rest of them included lesions in the wall, lymph nodes, liver, pericardial, retroperitoneal etc. 33 cell block only (CB) and 85 smear plus cell block (SCB) were done. Greater number of CB samples (29/33, 87.8%) had adequate cellularity compared to SCB (68/85, 75.2%), 'p' value =0.059, cytological diagnosis was made more often with CB (29/33, 87.8%) compared to SCB (64/85), p = 0.071.

No statistical significance was seen in univariate or multivariate logistic regression analysis for tumour size(≥2 cm), route of FNA (transoesophageal, transgastric or transduodenal) or size of needle (19 G, 22 G or 25 G).
**Conclusion** Our study shows better diagnostic yield when the entire specimen was processed exclusively as cell block only rather than split into smear initially and remnant tissue for cell block preparation. Cell block alone preparation also preserves more material for immunohistochemistry and more advanced DNA analysis techniques. Limitations include the retrospective nature of study, variable operator and cytopathologist experience and ever improving FNA techniques (use of elastography, newer EUS processor).
**Disclosure of Interest** None Declared

## PTU-045 DEVICE ASSISTED ENTEROSCOPY IN THE UNITED KINGDOM: DESCRIPTION OF A LARGE TERTIARY CASE SERIES UNDER CONSCIOUS SEDATION

V Pattni*, D Tate, A Terlevich, S Hughes, P Marden. *Gastroenterology, North Bristol NHS Trust, Bristol, UK*

10.1136/gutjnl-2016-312388.132

**Introduction** Device assisted enteroscopy (DAE) has developed rapidly over the past decade, particularly with the advent of double balloon enteroscopy (DBE). The present study reports a case series from a tertiary centre for enteroscopy in the Southwest of the UK serving approximately 1 million people. Data was collected across three modalities of enteroscopy - DBE, Spiral enteroscopy (SE) and push enteroscopy (PE) - under conscious sedation.
**Methods** Observational study of 343 enteroscopy procedures in 271 patients referred for enteroscopy from 2008 to 2014. Data were collected on patient demographics, procedure indications, diagnosis, sedation requirements, extent, duration, complications, tolerance and types of therapy performed. Completion rate was defined as a DAE procedure that changed patient management via therapy, diagnosis or normal finding. All patients who had procedures during the study period were included in the analysis. Ethical review was obtained from North Bristol NHS Trust local ethics committee. Comparison of numerical data was performed using t-test or one-way ANOVA analysis for comparison of multiple means. Comparison of categorical data was performed using chi-squared testing or correlation testing.
**Results** Obscure GI bleeding (OGIB) was the commonest indication for DAE (n = 205, 59.7%). The overall yield of DAE was low (48.5%), with greater likelihood of positive findings if the indication was OGIB (55% vs 37.6%, $p < 0.001$) and in older patients (mean age normal exam 60.0 vs. abnormal exam 66.5 years, $p < 0.001$). Higher mean doses of midazolam were used for DBE from above (DBEa) (5.4 mg) and SE (5.6 mg) with lower doses for DBE from below (DBEb) (4.4 mg) and PE (3.8 mg). No serious complications were reported over the study period. SE was associated with shorter procedure time and shorter depth of insertion when compared to DBEa. Tolerance of DAE under conscious sedation was good with the majority (313/343, 91.2%) of procedures tolerated with comfort score 0 or 1 (out of 3). PE was significantly better tolerated whilst DBEb and SE were significantly worse tolerated than DBEa ($p < 0.001$). Therapy was performed in 154/343 (44.9%) of procedures. Indications of OGIB ($p = 0.021$) and prior abnormal capsule endoscopy ($p = 0.026$) predicted performing therapy at DAE. Completion rates were more likely with DBEb (92.2% vs 69.9%, $p < 0.001$) and less likely with PE (63% vs 77.8%, $p = 0.006$).
**Conclusion** Small bowel enteroscopy under conscious sedation is safe and generally well tolerated. The procedure is of low yield; however this is a complex and extensively investigated cohort of patients. Nonetheless, small bowel enteroscopy should be used primarily for therapy once a diagnosis has

been made by other modalities such as wireless capsule endoscopy.

**Disclosure of Interest** None Declared

## PTU-046 THE USE OF ENTONOX AS AN ANALGESIC DURING COLONOSCOPY – NINEWELLS ENDOSCOPY UNIT EXPERIENCE

W Dowdles*. *Endoscopy Unit, Ninewells Hospital, Dundee, UK*

10.1136/gutjnl-2016-312388.133

**Introduction** Entonox is a safe and effective method of analgesia used for patients undergoing colonoscopy. It has a number of advantages over sedo-analgesia and is available for use in a large number of Endoscopy Units in the UK.

The aim of the study was to assess the effectiveness of Entonox as an analgesic during colonoscopy in our unit, and to evaluate the experience of patients, nurses and endoscopists involved.

**Methods** This study was carried out over a two month period between 1st June 2014 and 31st July 2014. All patients undergoing out-patient colonoscopy and all trained endoscopy nurses and endoscopists who worked in the unit were invited to take part. A questionnaire, focussing on discomfort, anxiety and discharge planning was completed by patients choosing to have Entonox before leaving the department. Nurses and endoscopists were questioned on their experience of Entonox as an analgesic and the effect on flow within the unit, at the end of the study period.

**Results** 489 patients had a colonoscopy during the study period, 89 (18%) chose to have Entonox. Of these patients 56% were male. 71% were aged between 40 and 69 years. 89% of procedures were diagnostic and 11% therapeutic. Colonoscopy was complete to caecum in 99% of procedures.

15% of patients experienced mild side effects such as dry mouth, light headedness and sweating.

84% of patients who used Entonox were fit for discharge less than 30 minutes after the procedure: 23% drove home and 89% went home without an escort.

Patients reported a mean satisfaction score of 8.4 and 70% said they would use Entonox again.

Of the 21 endoscopy nurses and 17 endoscopists who completed the end of study questionnaire, 95% of nurses and 94% of endoscopists were satisfied with Entonox as an effective method of pain control for colonoscopy.

All nurses felt Entonox should continue to be offered to patients and 88% of Endoscopists said it should be implemented in NHS Tayside's other two endoscopy units.

There was a cost saving of £75.05 over the two month study period: This would make a predicted annual saving of £772.35.

**Conclusion** Our study has shown that Entonox is a suitable analgesic option for our patients having a colonoscopy. It is safe and simple to use, does not impact on colonoscopy completion rate and is cost effective. Patients have a shorter recovery period and are discharged quickly after the procedure. Patients are able to drive after the procedure and go home without an escort. Patients, nurses and endoscopists all reported high satisfaction scores.

Entonox will continue to be offered to patients within Ninewells Hospital Endoscopy Unit and is currently being introduced in the other NHS Tayside Endoscopy Units.

**Disclosure of Interest** None Declared

## PTU-047 ANTI-CD3 ANTIBODY INDUCES T-CELL MEDIATED APOPTOSIS AND SHEDDING OF MURINE SMALL INTESTINAL EPITHELIAL CELLS

AH Elramli*, CA Duckworth, BJ Campbell, DM Pritchard. *Gastroenterology, Institute of Translational medicine, Liverpool, UK*

10.1136/gutjnl-2016-312388.134

**Introduction** Anti-CD3 antibody binds to the CD3/TCR complex on the wall of T lymphocytes and results in their activation. This leads to the release of various cytokines including tumour necrosis factor (TNF). TNF has previously been shown to bind to the TNFR1 receptor on the basolateral wall of small intestinal epithelial cells (IECs), triggering their apoptosis and shedding (Williams JM *et al*, DMM, 2013). We aimed to determine the time course and dose response of anti-CD3 antibody-induced apoptosis in murine small IECs and investigate whether this is regulated by the expression of members of the NFκB family of proteins.

**Methods** Groups of 3 wild-type female C57BL/6 J mice were injected intraperitoneally (i.p.) with 1 mg/kg anti-CD3 antibody and were euthanased at different time-points from 1–6 hours. Groups of 3 wild-type female C57BL/6 J were subsequently injected i.p. with 0.5–4 mg/kg anti-CD3 antibody and were killed after 1.5 hours. The responses of 6 NFκB1$^{-/-}$,6 NFκB2$^{-/-}$ and 6 c-Rel$^{-/-}$ female mice were compared with 6 C57BL/6 mice 1.5 hours after i.p. administration of 2 mg/kg anti-CD3 antibody. After euthanasia, the small intestine was dissected, fixed in formalin and paraffin embedded to produce histological slides. Immunohistochemistry was performed using a rabbit anti-mouse active caspase 3 primary antibody. Positively stained cells reflecting the percentage of shedding and apoptotic cells were scored on 20 villi per mouse on a cell positional basis. Data are expressed as mean ± SEM. Statistical analysis was performed using one-way ANOVA (with Tukey post-hoc test for multiple comparisons). $p < 0.05$ was considered significant.

**Results** 1 mg/kg anti-CD3 antibody caused a significant increase in the percentage of IECs undergoing apoptosis and shedding from 1±0.1% in untreated mice to a peak of 2.3±0.1% at 1.5 hours then started to decline to reach 1.3±0.1% at 6 hours. The percentage of IECs undergoing apoptosis and shedding increased with increasing doses of anti-CD3 antibody with a maximum of 5.6±0.2% observed 1.5 hours after administration of 4 mg/kg anti-CD3 antibody. Although NFκB1$^{-/-}$ mice (5.1±0.3%) and c-Rel$^{-/-}$ mice (4.8±0.6%) showed more IEC apoptosis and shedding than wild-type (3.6±0.2%) these differences were not significant. However NFκB2$^{-/-}$ mice were much more resistant (0.8±0.1%) ($p < 0.001$). In all cases the effects of anti-CD3 antibody were most pronounced in the apical portion of small intestinal villi.

**Conclusion** Systemic administration of anti-CD3 antibody induces apoptosis and shedding of murine IECs. The time course and cell positional distribution of apoptotic cells are very similar to those observed following administration of either lipopolysaccharide or TNF. The responses to anti-CD3 antibody are significantly affected by the expression of NFκB2.

**Disclosure of Interest** None Declared

## PTU-048 THE TRUE COST OF ULCERATIVE COLITIS (UC) IN THE UK – 24 MONTHS PRIOR TO THE FIRST NON-ELECTIVE ADMISSION

AA Soubieres*, A Poullis. *Gastroenterology, St George's Hospital, London, UK*

10.1136/gutjnl-2016-312388.135

**Introduction** Inflammatory Bowel Disease (IBD) has a prevalence of around 400 in 100,000 in the UK, with the prevalence of UC specifically of around 243 per 100,000. This gives a figure of 146,000 people in the UK living with UC. Around 30% of IBD patients are under regular hospital follow-up. 20–30% of patients with UC will undergo surgery at some point. Healthcare costs associated with Ulcerative Colitis remain poorly researched. Our objective was to calculate the costs associated with both in and outpatient attendances and endoscopies in the 24 months prior to the first non-elective admission for ulcerative colitis in a UK population.

**Methods** Hospital Episode Statistics data for 2011/2 for all clinical commissioning groups in England were analysed to calculate the cost of UC. The data used in this study were obtained from the AXON Database. AXON is a health data warehouse that provides interrogative analysis and health intelligence on Hospital Episode Statistics (HES). Each HES record has a Healthcare Resource Group (HRG) code that is linked to the national tariff. International Classification of Diseases – 10 (ICD-10) diagnosis codes related to UC were used to identify patients.

**Results** In the 24 months leading up to the first non-elective admission for UC, the total number of spells in an inpatient setting was 11840. The total cost of spells in the inpatient setting was £16,684,754.40, with a significant proportion due to non-elective inpatient spells (£11,260,032.35). Total cost of scopes in this inpatient group was £1,625,924.36.There were 58647 outpatient attendances, with a total attributable cost of £5,723,692.72. The cost of outpatient scopes came to £27,984.98. In comparison there were 8910 outpatient gastro attendances with a total cost of £2,340,088.18. Outpatient gastro scopes totalled £7,937.86.There were 8839 general A&E attendances with 908 emergency gastro attendances, costing £841,806.03 and £94,756.97 respectively.

**Abstract PTU-048 Table 1** Total costs of all events in 24 months prior to 1st NE admission for UC

| Event | Total cost |
|---|---|
| **Inpatient attendances** | £17,953,383.20 |
| **Inpatient scopes** | £2,221,677.47 |
| **Outpatient attendances** | £8,063,780.90 |
| **Outpatient scopes** | £35,922.84 |
| **A&E attendances** | £936, 563 |
| **Total** | **£28,275,701** |

**Conclusion** The cost associated with non-elective inpatient spells makes up a significant proportion of the total cost of inpatient spells. The lifetime risk of acute severe colitis, requiring admission in a person with UC is between 15–25%.[1,2] Non elective inpatient spells and A&E attendances may reflect poor access to specialist care, long wait times for consultation, referral for diagnostic endoscopies and appropriate treatment.There is potential for significant cost savings by way of rapid access specialist clinics and 7 day a week advice helplines run by IBD specialist nurses to enable timely review and management of patients, preventing non-elective admissions.

## REFERENCES


1 Dinesen LC, Walsh AJ, Protic MN, Heap G, Cummings F, Warren BF, George B, Mortensen NJ, Travis SP. The pattern and outcome of acute severe colitis. *J Crohns Colitis* 2010 Oct;**4**(4):431–7.

2 Edwards FC, Truelove SC. The course and prognosis of Ulcerative Colitis. *Gut* 1963 Dec;**4**:299–315.


**Disclosure of Interest** None Declared

## PTU-049 CONCURRENT IMMUNOMODULATOR THERAPY DOES NOT INFLUENCE INFLIXIMAB OR ADALIMUMAB TROUGH LEVELS DURING MAINTENANCE THERAPY


A Bond*, G Fisher, T Skouras, S Subramanian. *Gastroenterology, Royal Liverpool and Broadgreen University Hospital Trust, Liverpool, UK*



10.1136/gutjnl-2016-312388.136


**Introduction** Combination therapy with infliximab (IFX) and immunomodulators (IM) is superior to monotherapy showing better outcomes at 1 year for Crohn's disease[1] and UC.[2] Withdrawal of IM after 6 months of combination therapy has been shown not to adversely affect clinical outcomes though patients on concurrent thiopurine have higher trough levels and lower CRP.[3] The role of concomitant IM therapy is unclear for patients treated with adalimumab (ADA). We aimed to evaluate the impact of concomitant IM therapy on trough levels of IFX and ADA.

**Methods** We conducted a retrospective observational study of all IBD patients on maintenance therapy who had had IFX and ADA trough levels measured between Jan13-Jan16. Testing was undertaken at the discretion of the treating clinician. Clinical information including duration of disease, site of disease, duration of anti-TNF therapy, IM therapy, smoking status, prior anti-TNF exposure, and disease activity was recorded. Drug level and anti-drug antibody measurements were performed on sera using the Lisa-Tracker IFX and ADA ELISA kit (Theradiag, France). Pairwise comparison of means was used to compare trough levels in patients with and without concomitant IM therapy. A multivariate logistic regression was used to correct for confounders and the impact on antibody formation assessed with Fishers exact test.

**Results** 200 patients (120 IFX and 80 ADA) were included. 65.8% of IFX and 55% of ADA patients were on concurrent IM therapy. Mean ADA trough levels among patients on concurrent IM was 6.72±1.91μg/ml whilst patients not on concurrent IM had levels of 5.16±2.88 μg/ml($p = 0.005$). This difference was not significant after adjustment for dose escalation. 23 patients (28.7%) were on weekly dosing whereas 57 (71.2%) were on alternate weeks. The mean trough level in patients on IM was 4.01±3.52 and not on IM was 3.96±2.83($p = 0.9$). Thirty patients had positive antibodies and trough levels were 1.25 ±2.1μg/ml compared to 4.91±3.1μg/ml($p < 0.001$). The likelihood of developing antibodies was 26.8% without concurrent IM and 24% with concurrent IM ($p = 0.82$).

**Conclusion** Trough levels of IFX and ADA were not significantly different among maintenance patients with and without concomitant IM therapy. Surprisingly, the immunogenicity of IFX was not impacted by concurrent IM.

## REFERENCES


1 Ruffolo C, *et al*. Infliximab, azathioprine, or combination therapy for Crohn's disease. *N Engl J Med* 2010;**363**:1086–8.

2 Panaccione R, *et al*. Combination therapy with infliximab and azathioprine is superior to monotherapy with either agent in ulcerative colitis. *Gastroenterology* 2014;**146**:392–400.

3 Drobne D, *et al*. Withdrawal of immunomodulators after co-treatment does not reduce trough level of infliximab in patients with crohn's disease. *Clin Gastroenterol Hepatol* 2015;**13**:514–21.


**Disclosure of Interest** None Declared

## PTU-050 ADDRESSING THE ISSUE OF INDETERMINATE INTERFERON GAMMA RELEASE ASSAYS PRIOR TO BIOLOGIC THERAPY IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE PATIENTS

[1]AA Thi*, [1]S Bouri, [1]P Wolfson, [1]L Owen, [2]A Abbara, [2]L John, [2]RN Davidson, [1]AL Hart. *[1]Department of Inflammatory Bowel Disease, St Mark's Hospital; [2]Department of Infectious Diseases, Northwick Park Hospital, London, UK*

10.1136/gutjnl-2016-312388.137

**Introduction** Biologic treatment has improved outcomes of patients with complex inflammatory bowel disease (IBD). Anti-TNF therapy is associated with a fivefold increased risk of reactivation of tuberculosis (TB). When TB occurs, it is commonly extra-pulmonary and disseminated with an atypical presentation and can be diagnostically challenging. An indeterminate interferon gamma release assay (IGRA) result occurs in <2% of the healthy population, however this is higher in immunosuppressed patients. Given the increased risk of TB, screening for latent TB infection (LTBI) remains vital before commencing biologics.

**Methods** All IBD patients who had an IGRA test between July 2013 and November 2015 before commencing biologic therapy were identified from the high cost funding database held in the Pharmacy Department at St Mark's Hospital. Clinical and electronic case records were reviewed.

**Results** 247 patients were screened for TB with an IGRA test during the study period. The mean age was 36.9 years (range 8–85), 54% were male and 70% had Crohn's disease.

78 patients (32%) had an indeterminate IGRA result and 35/78 (45%) patients had a repeat test; 17/35 (49%) had a second indeterminate results and the remaining 18 /35 (51%) had a negative test. 8/78 with an indeterminate test had a Mantoux as per our algorithm; 3 were positive, 4 were anergic and 1 was negative.

Of the 247 patients, 210 patients received biologic treatment. Thirty-two patients (15%) delayed receiving their biologic treatment for various reasons, including receiving LTBI treatment. Of 210 patients, 158 patients (75%) had Infliximab,38 patients (18%) had Adalimumab, 13 had Vedolizumab and 1 had Golimumab.

30 patients were referred for an infectious diseases opinion; 7 with a positive IGRA and 7 with a negative IGRA but abnormalities on their chest X-ray and a high epidemiological risk for TB.

One patient who had an indeterminate IGRA result developed active TB during the study period.

**Conclusion** Almost one third of IBD patients had an indeterminate IGRA with half of those having a second indeterminate result. Sampling and processing factors also influence the prevalence of indeterminate results in this population. This supports risk stratification with more weight added to the risk than IGRA alone. Reactivation of LTBI may lead to delays in starting treatment hence it is vital to take into account the patient's pre-test probability of LTBI before using an IGRA to avoid such delays.

### REFERENCE

1 Wong H, Ip M, Tang W, *et al*. Performance of the interferon-gamma release assay for Tuberculosis screening in inflammatory Bowel disease patients. *IBD* 2014;**20** (11):2067–2072.

**Disclosure of Interest** None Declared

## PTU-051 IATROGENIC HYPOKALAEMIA IN ACUTE SEVERE COLITIS

C Harrington*, L Smith, J Munro, S Laird, A Cahill, D Gaya, A Morris, J Winter. *Department of Gastroenterology, Glasgow Royal Infirmary, Glasgow, UK*

10.1136/gutjnl-2016-312388.138

**Introduction** Intravenous corticosteroids have been established as the mainstay treatment of acute severe colitis since 1974.[1] BSG and ECCO guidelines advise either IV hydrocortisone 100 mg qds or IV methylprednisolone 30 mg bd in this setting.[2,3] The potent mineralocorticoid effect of hydrocortisone however is well known.[4] This could predispose to hypokalaemia in this susceptible patient cohort. For this reason, we have recently changed our practice at Glasgow Royal Infirmary (GRI) to treat these patients with methylprednisolone.

**Methods** We performed a retrospective review of electronically held records of patients who presented to GRI with acute severe colitis treated with IV hydrocortisone or methylprednisolone. We collected data on the duration of treatment, potassium level on presentation, nadir potassium level, fall in potassium level and potassium replacement per patient.

**Results** 20 patients were treated with IV hydrocortisone for a median of 6 days, and 16 patients were treated with IV methylprednisolone for a median of 5.5 days (ns). Median serum potassium concentration on admission was 3.8 mol/l (IQR 3.4–4.1 mmol/l) in the cohort receiving hydrocortisone which was not significantly different from 4.1 mmol/l (IQR 3.7–4.1 mol/l) in the cohort receiving methylprednisolone. Following IV steroids, median nadir potassium concentration in the group receiving methylprednisolone was 3.75 mmol/l (IQR 3.5–4.1 mmol/l), not significantly different to pre-treatment values. In those receiving hydrocortisone however, potassium concentration fell by a median of 0.85 mol/l (IQR 0.2–1.1 mol/l) to a nadir of 3.1 mol/l (IQR 2.8–3.3 mol/l), significantly lower than the group receiving methylprednisolone ($p < 0.0001$). Only 3/16 (19%) patients receiving methylprednisolone needed potassium supplementation (2 oral and one IV). In contrast only 2/20 patients receiving hydrocortisone did not require potassium supplementation, with 10/20 (50%) requiring a median of 80 mmoles of IV potassium chloride (IQR 55–196 mmoles) and 8/20 (40%) requiring oral supplementation. 2 patients receiving hydrocortisone experienced severe hypokalaemia with ECG changes requiring management in the coronary care unit.

**Conclusion** Hypokalaemia is a common occurrence in patients with acute severe colitis treated with IV hydrocortisone but is rare when methylprednisolone is used. Given that both drugs are considered to be equally effective, methylprednisolone appears to be a safer choice of corticosteroid.

### REFERENCES

1 Truelove SC, Jewell DP. Intensive intravenous regimen for severe attacks of ulcerative colitis. *Lancet* 1974;**1**:1067–1070.
2 BSG Guidelines for management IBD 2011.
3 ECCO consensus guidelines for UC 2012.
4 Ramsahoye BH, Davies SV, *et al*. The mineralocorticoid effects of high dose hydrocortisone. *BMJ* 1995;**310**:656.

**Disclosure of Interest** None Declared

## PTU-052 THE IMPACT OF THIOPURINES ON RISK OF INTESTINAL SURGERY IN ELDERLY-ONSET IBD

[1]C Alexakis*, [2]S Saxena, [3]V Chhaya, [2]E Cecil, [1]R Pollok. [1]*Gastroenterology, St George's NHS Trust*; [2]*Department of Primary Care and Public Health, Imperial College, London*; [3]*Gastroenterology, Epsom and St Helier's NHS Trust, Surrey, UK*

10.1136/gutjnl-2016-312388.139

**Introduction** Thiopurines (TP) have an established role in the maintenance of steroid-free remission in IBD. Their role in reducing the need for surgery in younger populations has been recently highlighed.[1] TPs are associated with an increased risk of lymphoma in the elderly but their role in reducing the risk of surgery in patients with elderly-onset IBD (EO-IBD) is not established. We therefore aimed to evaluate the impact of TPs on the risk of surgery in EO-IBD, using a nationally representative research database.

**Methods** This was a retrospective descriptive study using data from the Clinical Practice Research Datalink (CPRD). Incident cases of IBD were isolated using previously validated Read codes. Patients were included if they had codes for ulcerative colitis (UC) or Crohn's disease (CD), and their date of diagnosis was on/after their 60 th birthday. Information extracted included sex, age at diagnosis, smoking status, and prescription data for IBD medications. Finally, we obtained data on our main outcomes: colectomy in UC and first intestinal surgery in CD. A multivariate Cox proportional hazard model was generated to deduce the risk of surgery according to TP use. The model was adjusted for potential confounders including sex, smoking, 5 ASA use and early steroid use (corticosteroid within 3 months of diagnosis). In a subgroup of TP users, a second proportional hazard model was used to define the impact of duration of TP treatment on the risk of surgery.

**Results** 2758 and 1349 were identified with EO-UC and EO-CD respectively, with a mean follow up of 4.9 years. Mean age at diagnosis was 71.8 years. Table 1 demonstrates the summary demographic and prescription data for both groups.

**Abstract PTU-052 Table 1**

| | Elderly-onset UC | Elderly-onset CD |
|---|---|---|
| **Male** | 50% | 40% |
| **Smoking at diagnosis** | 9% | 22% |
| **5 ASA use** | 80% | 63% |
| **Steroid use** | 56% | 52% |
| **Thiopurine use** | 13% | 16% |
| **Surgery** | 4% | 13% |

TP use was associated with an increased risk of colectomy in EO-UC (HR 3.5, CI 2.28–5.35, p < 0.0001), but not an increased risk of first intestinal surgery in EO-CD. In subgroup analysis restricted to TP users only, TP use for greater than 12 months in EO-UC was associated with a 64% reduction in risk of colectomy (HR 0.36, CI 0.18–0.7, p = 0.003). Similar findings were not seen in EO-CD.

**Conclusion** TP use for longer than 12 months is associated with a reduced risk of colectomy in EO-UC but in contrast does not appear appear to impact on the risk of first intestinal surgery in EO-CD. This is an important observation since the risk of TP-associated lymphoma is substantially increased in this age group. Further work is needed to evaluate the role of TPs in EO-IBD.

### REFERENCE

1 Chhaya V, *et al*. Impact of early thiopurines in 2770 children and young people diagnosed with IBD: a national population-based study. *Aliment Pharmacol Ther*. 2015 Oct;**42**(8).

**Disclosure of Interest** C. Alexakis: None Declared, S. Saxena Grant/research support from: SS is funded by a National Institute for Health Research Career Development Fellowship (NIHR CDF-2011-04-048). The views expressed are not necessarily those of the NHS, NIHR, or Department of Health. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript, V. Chhaya: None Declared, E. Cecil Grant/research support from: EC is funded by a National Institute for Health Research Career Development Fellowship (NIHR CDF-2011-04-048). The views expressed are not necessarily those of the NHS, NIHR, or Department of Health. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript, R. Pollok: None Declared

## PTU-053 METACHRONOUS EXTRA-COLONIC MALIGNANCY IN COLLAGENOUS COLITIS

[1]KJ Dabos, [1]DE Yung*, [2]A Giannakou, [3]M MacNeill, [3]P Fineron, [1]J Plevris, [1]A Koulaouzidis. [1]*Centre of Liver & Digestive Disorders, Royal Infirmary of Edinburgh, Edinburgh, UK*; [2]*Faculty of Economics and Management, Open University of Cyprus, Nicosia, Cyprus*; [3]*Department of Pathology, Western General Hospital, Edinburgh, UK*

10.1136/gutjnl-2016-312388.140

**Introduction** Collagenous colitis (CC) is a syndrome of chronic, watery, non-bloody diarrhoea.[1] Its worldwide incidence is increasing; emerging evidence suggests a possible association between CC and malignancy.[2] However, studies thus far have been inconclusive and data on the incidence of metachronous extra-colonic malignancy (MEcM) in CC is scarce.[3] This study aimed to determine the occurrence of MEcM in patients with CC.

**Methods** Retrospective study; data on MEcM in patients previously diagnosed with CC was collected within NHS Lothian (Scotland) over a 14 year period (Jan 2000 – Nov 2013). Person-years at risk were calculated according to age-specific categories. The standard error (*Se*) was calculated using the *Poisson* approximation. Relative risk (*RR*) and confidence interval (*CI*) of the age-standardised rate (*ASR*) were compared to publicly available population data for Lothian, Scotland.[4] Results are reported as average ± standard deviation or *RR* with confidence interval (CI). *P* values <0.05 were considered statistically significant.

**Results** In the aforementioned period, 394 patients were diagnosed with CC and included for analysis. Thirty-three (21 F/12 M) developed MEcM, ***Table 1***. The average age of the group with MEcM was 71.6 ±7.4 years compared to 65.9 ±13.6 years for the remainder of the patients ($P < 0.05$). The average duration of follow-up from CC diagnosis to MEcM was 2 ±2.23 years and for the group as a whole was 4 ±3.45 years. The *RR* for lung cancer (4.63, 1.30;16.49) and total cancers (2.34, 1.38;3.95) in patients with CC was higher compared to population data from Lothian ($P < 0.05$ for both).

**Abstract PTU-053 Table 1**

| Type of malignancy | Female | Male |
|---|---|---|
| Lung | 6 | 4 |
| Breast | 2 | 2 |
| Bladder | 3 | 0 |
| Cervical | 2 | n/a |
| Oesophageal | 2 | 0 |
| Ovarian | 2 | n/a |
| Prostate | n/a | 2 |
| Skin | 0 | 1 |
| Others | 4 | 3 |
| Total (n = 33) | 21 | 12 |
| Controls (n = 361) | 246 | 115 |

**Conclusion** The RR of MEcM, including lung cancer, is higher in patients with CC.The increased RR for lung cancer may be explained by the association between CC and smoking.[5]

Further collective data will be useful to clarify other associations.


**REFERENCES**

1 Münch A, *et al*. Microscopic colitis: current status, present and future challenges: statements of the European Microscopic Colitis Group. *J Crohn's Colitis* 2012;**6**:932–945.
2 Freeman HJ. Complications of collagenous colitis. *World J gastroenterol* 2008;**14**:1643.
3 Chan JL, *et al*. Cancer risk in collagenous colitis. *Inflamm Bowel Dis* 1999;**5**:40–43.
4 http://www.ncin.org.uk/cancer_information_tools/eatlas/guide
5 Vigren L, *et al*. Is smoking a risk factor for collagenous colitis? *Scand J Gastroenterol* 2011;**46**:1334–1339.


**Disclosure of Interest** None Declared

## PTU-054 THERAPEUTIC MONITORING OF TNF-ALPHA INHIBITORS IN CROHN'S DISEASE; IMPACT OF NICE 2016 GUIDELINES IN A UK DISTRICT GENERAL HOSPITAL


E Harrison, H Padmanabhan, A Shah, A Murugananthan, H Steed*, M Brookes. *Gastroenterology Department, New Cross Hospital, Wolverhampton, UK*



10.1136/gutjnl-2016-312388.141


**Introduction** Therapeutic anti-TNFα monitoring enables optimisation of anti-TNFα therapy. Recently, NICE supported therapeutic monitoring of TNFα inhibitors in patients with Crohn's disease who fail to respond. However, NICE found the evidence for routine monitoring in patients responding adequately to be insufficient. Small studies show high Infliximab (INF) trough levels and low antibody levels to be associated with successful maintenance of remission.

**Methods** A retrospective review of drug level monitoring in patients with Crohn's disease taking anti-TNFα drugs was conducted. Patient demographics, IBD type, duration and distribution were recorded. Data were collected to compare against the NICE guidance (DG22). Trough levels, antibody presence and the use of concomitant immunosuppression (thiopurine and/or methotrexate) were noted. Any clinical impact of monitoring was recorded.

**Results** Over 26 months monitoring was performed 93 times in 80 patients. 60% of all monitoring was clinically indicated in patients suspected to be non-responders. The remaining 40% were part of routine care.

Of the 80 patients, 53% were male. Median age at first monitoring was 36 years (range 17–79). Median time from diagnosis of Crohn's was 86 months (range 5–528). 26% had ileal, 30% had colonic and 44% had ileocolonic disease. 30% had stricturing and 8% had penetrating disease phenotypes. 39% had perianal disease. At diagnosis, 19% were aged 16 or below, 56% were aged 17 to 40 and 24% were aged over 40. Onset was unknown in 1%.

For all drug monitoring, the median time from anti-TNFα initiation (59% INF; 41% Adalimumab (ADA)) was 60 weeks (range 6–470). 31% had concomitant immunosuppression. Antibodies were detected in 16% (22% INF; 8% ADA).

Overall, as a result of monitoring, 49% continued their current anti-TNFα, 37% dose-escalated, 1% de-escalated, 8% stopped, 3% switched to ADA, 1% switched to INF and 1% changed to Vedulizumab. 13% started or increased thiopurine or methotrexate and 8% proceeded to surgery.

Of those patients monitored as a part of routine care, 24% dose-escalated, 11% stopped anti-TNFα drugs and 5% switched to ADA. Doses were unchanged in 60%.

**Conclusion** A large proportion of monitoring in our population was for the routine evaluation in patients on anti-TNFα drugs. These patients are now considered outside of NICE practice guidelines. Thus, adhering to NICE guidelines will lead to a substantial reduction in the number of our patients tested. However, in this group, the evaluation of drug levels influenced care in 40% of cases. Thus, further studies are needed to determine the benefits of routine drug level monitoring in stable patients on anti-TNFα drugs.

**Disclosure of Interest** None Declared

## PTU-055 ANTI-TNF PATIENT TREATMENT PREFERENCES: DATA FROM THE PANTS STUDY


[1]G Walker*, [1]G Heap, [2]C Bewshea, [1]T Ahmad, [3]P Irving, [1]J Goodhand. *[1]Gastroenterology; [2]IBD Pharmacogenetics, Royal Devon and Exeter Foundation Trust, Exeter; [3]Gastroenterology, Guy's and St. Thomas' NHS Foundation Trust, London, UK*



10.1136/gutjnl-2016-312388.142


**Introduction** **P**ersonalised **AN**ti-**T**NF **S**tudy (PANTS) is a prospective observational study of anti-TNF (aTNF) use in patients with Crohn's disease. Patients receive either 8 weekly intravenous infliximab (IFX) or fortnightly adalimumab (ADA) subcutaneously. Whether patients are given a choice of aTNF agent by their clinician and what factors influence patient's decision making, is unknown.

**Methods** A voluntary anonymous questionnaire was given to all adult patients upon enrolment into PANTS. 9 point Lickert scales and unprompted free-text entries were used to evaluate 3 domains: a) patient perceptions of aTNF choice, b) the methods used by healthcare teams to impart information regarding aTNF therapies, c) how drug-related factors influenced aTNF choice. Ethics approval ref:12/SW/0323.

**Results** The questionnaire response rate was 40% (534/1339). 57% (305/534) of patients were given a choice of aTNF.

**A: Patient perception(n = 283).** For 73% (206) the ability to choose aTNF treatment was important, and choosing between ADA and IFX was easy (195;69%). About a third (106;37%), however, were either ambivalent, or would rather their

healthcare team made the choice for them. 15% (42) of patients felt their healthcare team tried to influence their choice.

**B: Imparting information(n = 266).** Information on aTNF therapies was delivered equally by consultants (221;83%) and IBD nurses (209;79%). Of patients who saw both (n = 123), it was nurses (76;62%) rather than doctors (47;38%) who had the greatest influence over the final decision (p = 0.0089). 53% of all patients (n = 140) conducted their own research; most commonly using patient organisation(45%) and drug company websites (23%).

**C: Drug factors(n = 287).** The most important drug factor which influenced choice of aTNF was place of administration (154; 54%) with 79% (121/154) favouring home rather than hospital treatment. In the free text comments (n = 90), 30% (27) patients stated they preferred ADA as it required them to take "*less time off work*" and "*avoided hospitals*".

**Conclusion** Physicians and nurses need to ascertain if their patients feel strongly about which aTNF treatment they receive, and try to facilitate these preferences where appropriate. Clearly some patients would rather their team made this decision for them. IBD nurses play a crucial role in this process and have significant influence over patient decisions. Patients value the ability to receive their treatment at home, although home IFX infusions may provide a cost effective alternative.[1]Online resources are commonly used by patients - healthcare teams need to be aware of their content and guide patients towards reliable sources.

## REFERENCE

1 Kuin S, *et al*. Remicade infusions at home: an alternative setting of infliximab therapy for patients with Crohn's. *Eur J Gastroenterol Hepatol* 2016;**28**(2);222–5. doi:10.1097/MEG.0000000000000530

**Disclosure of Interest** G. Walker Consultant for: AbbVie SpR advisory board, Speaker bureau with: Dr Falk Pharma, Conflict with: Educational meeting,travel, accommodation MSD, G. Heap Grant/research support from: AbbVie, Dr Falk Pharma, and Tillotts Pharma UK, Consultant for: AbbVie SpR advisory board, C. Bewshea Grant/research support from: AbbVie, MSD, T. Ahmad Grant/research support from: Unrestricted educational grant/consultancy fees for AbbVie, Merck, Takeda, NAPP, and Celltrion, P. Irving Grant/research support from: AbbVie, MSD., Consultant for: AbbVie, MSD, Vifor, Genentech Inc., Takeda, Warner Chilcott, Falk and Pharmacosmos, Speaker bureau with: AbbVie, MSD, Ferring, Warner Chilcott, Shire and Johnson and Johnson, J. Goodhand: None Declared

## PTU-056 OUTCOMES OF EMERGENCY ADMISSIONS WITH CROHN'S DISEASE IN ADULTS IN ENGLAND BETWEEN 2004 AND 2014

[1]JG Rees*, [2]J Mytton, [2]F Evison, [2]P Patel, [1]N Trudgill. *[1]Gastroenterology, Sandwell General Hospital*; *[2]Informatics, Queen Elizabeth Hospital, Birmingham, UK*

10.1136/gutjnl-2016-312388.143

**Introduction** Between 2006 and 2010, the UK national audit of adult inflammatory bowel disease admissions revealed a small but non-significant fall in mortality in Crohn's disease (CD) from 1.3 to 0.8%, an increase in the rate of prescription of anti-TNF therapy on admission from 3.9 to 8% and a fall in surgery from 23 to 18%.

**Methods** Using Hospital Episode Statistics, patients aged between 18 and 60 years coded with a first emergency admission with CD were identified. The influence of demographic factors, comorbidity and infused anti-TNF therapy on mortality, surgery and emergency readmissions was examined using multivariate logistic regression.

**Results** Between 2004 and 2014, 24,830 patients (55% female, mean age of 35 (IQR 25–44)). Mortality was 0.22% at 30 days, 0.29% in hospital and 0.81% within 1 year. During admission, 19.2% of patients underwent surgery (median time to surgery 2 days (IQR 1–6)) and 1.9% received infused anti-TNF therapy. Surgery during admission rose from 16.1 to 22.9% (OR 1.52 (95% CI 1.32–1.75) $p < 0.001$) between 2004 and 2014, and infused anti-TNF therapy rose from 1.8 to 2.8% between 2006 and 2014. In-hospital and 1 year mortality fell from 0.51 and 1.03% in 2004 to 0.10 and 0.57% in 2013 (0.18 (95% CI 0.04–0.77) $p = 0.021$ and 0.46 (0.23–0.91) $p = 0.026$ respectively). Patients aged 35–60 had a higher 30 day (3.99 (1.97–8.05) $p < 0.001$) and 1 year mortality (4.57 (3.14–6.65) $p < 0.001$) than those aged 18–34. Increasing comorbidity (15.38 (7.33–32.23) $p < 0.001$) and deprivation (3.14 (1.06–9.31) $p = 0.039$) was associated with a higher 30 day and 1 year mortality, but not gender. Females were less likely to have surgery during their admission (0.71 (0.67–0.76) $p < 0.001$) or within 1 year (0.82 (0.77–0.97) $p < 0.001$) and surgery within 1 year was more common in younger (35–60 years 0.87 (0.81–0.93) $p < 0.001$) and non-white patients (1.18 (1.08–1.28) $p < 0.001$). Anti-TNF therapy during admission was associated with less surgery immediately (0.39 (0.28–0.54) $p < 0.001$) and within 1 year (0.55 (0.41–0.73) $p < 0.001$). Emergency readmissions within 30 days were associated with male gender (females 0.74 (0.55–0.98) p 0.039), younger age (35–60 years 0.85 (0.79–0.91) $p < 0.001$), non-white ethnicity (1.25 (1.13–1.38) $p < 0.001$) and not having anti-TNF therapy during admission (0.74 (0.55–0.98) p0.039).

**Conclusion** For patients with a first emergency admission for CD, in-hospital and 1 year mortality fell considerably over the study period. Surgery and anti-TNF therapy during admission has increased between 2004 and 2014. Surgery during admission was associated with men and at 1 year with men, younger age and non-white ethnicity.

**Disclosure of Interest** J. Rees Grant/research support from: £10,000 from Merck Sharp and Dome (MSD) to contribute to costs of HES access, J. Mytton: None Declared, F. Evison: None Declared, P. Patel: None Declared, N. Trudgill: None Declared

## PTU-058 COLON CAPSULE ENDOSCOPY: A USEFUL TOOL IN THE DIAGNOSIS AND MANAGEMENT OF INFLAMMATORY BOWEL DISEASE

JL Cook*, MF Hale, K Drew, R Sidhu, ME McAlindon. *Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.144

**Introduction** Colon capsule endoscopy (CCE) is a novel non-invasive means of directly imaging the colonic mucosal surface. Limited data is available regarding the utility of CCE in the diagnosis and re-assessment of inflammatory bowel disease (IBD), but it is attractive to patients due to its non-invasive nature and ability to obtain small bowel and pan-colonic images. We present a large series of patients with known or suspected IBD undergoing CCE.

**Abstract PTU-058 Table 1**

| Indication | Diagnosis | | | | | | |
|---|---|---|---|---|---|---|---|
| | Normal | Polyps | Vascular lesions | Diverticular disease | Small bowel inflammation | Colitis | Haemorrhoids |
| KNOWN IBD | 21 | 0 | 0 | 0 | 27 | 18 | 0 |
| SUSPECTED IBD | 65 | 53 (33 patients) | 3 | 14 | 6 | 3 | 3 |

**Methods** Retrospective, single-centre, including 193 patients with known or suspected IBD attending for CCE using PillCam Colon (Given Imaging, Israel). All patients known to have IBD successfully passed a PillCam Patency device prior. Demographical and procedural data was collated together with final diagnosis and management outcome.

**Results** Mean age 38.8 years (range 17–82), 129 female, median follow-up 43 months (range 3–99). 71 chose CCE over colonoscopy, 66 refused colonoscopy, 49 had an incomplete colonoscopy, and 7 were unfit for colonoscopy. Indication for the procedure: known IBD (n = 66, 5 with ulcerative colitis, 61 with Crohn's disease) of which 30 patients were undergoing CCE for disease re-assessment after 12 months of anti-TNF therapy and 36 due to a relapse in symptoms. The remaining 127 had suspected IBD. Procedure completion rate 75.5%, bowel preparation was good or adequate in 64.3%. There were no adverse events.

In the known IBD group, 45 patients were diagnosed with active disease based on the CCE findings. This lead to changes in management in 44 patients (67%); mainly in the form of medication alteration (40 patients), but also by further investigation (4 patients).

In the suspected IBD group, CCE diagnostic yield for IBD was 6%, 5 patients were diagnosed with Crohn's disease and 2 patients were diagnosed with ulcerative colitis. In the group with small bowel inflammation 1 patient was diagnosed with NSAID related enteropathy and 1 had non-specific histology and is undergoing further investigation. Other clinically relevant alternative findings are outlined in *Table 1*.

Overall CCE made 37 clinically significant diagnoses in the small bowel rather than the colon; 27 in the known IBD group and 10 in the suspected IBD group.

Abbreviations: IBD=inflammatory bowel disease

**Conclusion** CCE is a useful patient friendly alternative for the diagnosis and re-assessment of patients with known or suspected IBD and impacts management. The distal small bowel is visualised with excellent clarity making CCE particularly useful for those with suspected or known ileocolonic disease.

**Disclosure of Interest** None Declared

## PTU-059 EARLY EXPERIENCE WITH BIOSIMILAR INFLIXIMAB AT A DISTRICT GENERAL HOSPITAL FOR AN ENTIRE CROHNS DISEASE PATIENT COHORT SWITCH FROM REMICADE TO INFLECTRA

[1]K Ala[*], [1]P Avery, [1]R Wilson, [2]A Prowse, [1]J Shutt, [1]J Jupp, [1]S Bridger. *[1]Gastroenterology; [2]Pharmacy, Dorset County Hospital, Dorchester, UK*

10.1136/gutjnl-2016-312388.145

**Introduction** Switching from an established biologic to a biosimilar to save costs was considered likely to be 'inappropriate and ineffective' by ECCO.[1]

**Methods** With Area Prescribing Committee approval, all Crohns disease (CD) patients established on Remicade were provided with written and verbal information regarding the proposed switch, and all patients infused after April 2015 received Inflectra. Baseline calprotectin and Infliximab antibody and trough levels were undertaken. Harvey Bradshaw Indices (HBI) were assessed at every 8 week infusion.

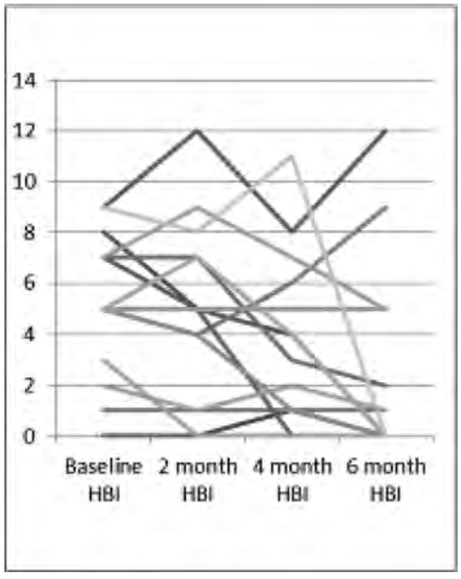
**Results** 21 CD patients were already established on Remicade treatment. 1 patient did not receive Inflectra as he was relapsing with high antibody and low trough levels. 4 other patients with high antibody levels (>10iU/L) did receive Inflectra, but increasing symptoms led to alternative immunosuppression in 3 of these patients (2 with Adalumimab, 1 with Allopurinol/Azathioprine). A decision was made just to stop infliximab in the 4'th pt as they were in full clinical remission. The results of the remaining 16 patients are illustrated below.

**Conclusion** Although this is a small dataset, early results are encouraging. Patients understood the rationale behind the switch. There were no significant adverse events as a consequence of the switch. The majority of patients either remained in clinical remission or improved during the follow up period. The annual confirmed cost savings of £220,000 permitted investment in further IBD nurse monitoring (0.5 WTE) and allowed the introduction of infliximab trough and antibody testing which has certainly optimised and rationalised treatment decisions in these complex patients.

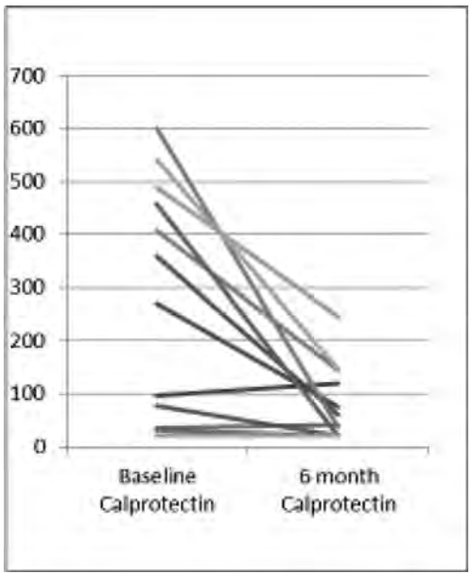
### REFERENCE

1 Danese S, *et al*. ECCO position statement: the use of biosimilar medicines in the treatment of IBD. J Crohns Colitis 2013;**7**(7): 586–9.

**Disclosure of Interest** None Declared




**Abstract PTU-059 Figure 1** Changes in HBI




**Abstract PTU-059 Figure 2** Calprotection

## PTU-061 HUMAN INTESTINAL TRANSCRIPTOME ANALYSIS IN INFLAMMATORY BOWEL DISEASE

[1]L Demandt*, [1]A Onoufriadis, [2]F Gracio, [1]A Amar, [2]E de Rinaldis, [1,3]CG Mathew, [4]P Irving, [1]NJ Prescott. *[1]Medical and Molecular Genetics, King's College London; [2]BRC Translational Bioinformatics, Guy's and St Thomas' NHS Trust and King's College London, London, UK; [3]Sydney Brenner Institute for Molecular Bioscience, University of Witwatersrand, Johannesburg, South Africa; [4]Gastroenterology, Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.146

**Introduction** Inflammatory Bowel Disease (IBD) is a complex genetic disease characterised by chronic inflammation of the gastro-intestinal tract. Genome-wide association study (GWAS) meta-analysis and replication has identified over 200 genomic regions involved in IBD susceptibility although only a few of the associated single nucleotide polymorphisms (SNPs) directly alter the coding sequence of a gene. In addition, >92 of the IBD-susceptibility loci are known to co-localise with active regulatory elements, suggesting the majority of IBD associated SNPs alter gene expression in some way. Here we employ whole transcriptome sequencing to investigate the role of altered gene expression in intestinal tissue.

**Methods** Patients and non-IBD control individuals were recruited after informed consent through endoscopy clinics at Guy's and St Thomas' Hospital, London. Whole RNA was extracted from 2–4 colonic biopsies from 104 IBD patients (76 CD, 28 UC) and 24 non-IBD controls and ribo-depleted (Ribo-zero, Illumina). We performed whole RNA sequencing using Illumina TruSeq and HiSeq2500 on pools of 4 indexed RNA libraries across 1–2 lanes. Quality control of sequence reads was performed via FastQC. Subsequent alignment and assembly, quantification and differential expression (DE) analysis of each transcript was performed using Tophat2, Cufflinks, Cuffmerge and EdgeR.

**Results** So far a detailed bioinformatics analysis has been carried out on the first 32 whole RNA-seq libraries. We have observed expression above background (FPKM > 1) for approximately 46% of all known transcripts located within known IBD susceptibility loci. DE analysis identified 249 transcripts with significant difference in expression ($q < 0.06$) between IBD cases and controls, 23 of which were located within 500 Kbp of a known IBD susceptibility locus including *HLA-DRB5*, *MUC19*, *LRRC7* and 4 long non-coding RNAs (lncRNAs). Gene set enrichment analysis (GSEA) on the differentially expressed genes identified 19 functional sets with significant enrichment (FDR < 0.25), of which, 13 were immune response related. Most notably, enrichment was seen in gene sets related to Th1, Th2 immune response pathways, known to be relevant in IBD.

**Conclusion** We have generated high coverage whole RNAseq data on intestinal biopsy samples from 128 individuals. We have shown <50% of genes mapping to IBD-associated loci are expressed in these intestinal samples and DE analysis have identified genes of potential interest in IBD pathogenesis. Further bioinformatics analysis of the remaining 96 colonic RNA libraries is ongoing.

**Disclosure of Interest** None Declared

## PTU-062 VEDOLIZUMAB: EARLY EXPERIENCE AND MEDIUM-TERM FOLLOW UP DATA FROM TWO UK TERTIARY IBD CENTRES

[1]MA Samaan, [2]P Pavlidis, [1]E Johnston, [1]B Warner*, [1]J Digby-Bell, [1]I Koumoutsos, [1]S Fong, [1]R Goldberg, [2]S Gulati, [2]L Medcalf, [1]M Sastrillo, [1]T Bedwell, [1]C Brown-Clarke, [1]J Bidwell-Sullivan, [1]K Forsyth, [1]E Lee, [1]A Stanton, [1]J Duncan, [2]G Chung- Faye, [2]P Dubois, [1]N Powell, [1]S Anderson, [1]J Sanderson, [2]B Hayee, [1]P Irving. *[1]Gastroenterology, Guy's & St. Thomas' NHS Trust; [2]Gastroenterology, King's College Hospital, London, UK*

10.1136/gutjnl-2016-312388.147

**Introduction** Vedolizumab was recently granted NICE approval for moderate-to-severe Crohn's disease (CD) and ulcerative colitis (UC). Novel pathways agreed by our CCG meant that patients at Guy's & St. Thomas' and King's College Hospitals had early access to vedolizumab.

**Methods** Records of patients commencing vedolizumab between Nov 2014–15 were screened. Those completing at least 14 weeks of treatment were included. Clinical activity was assessed using Harvey-Bradshaw Index (HBI) or Simple Clinical Colitis Activity Index (SCCAI) at baseline, 14 and 30 weeks. Response: HBI/SCCAI reduction ≥3. Remission: HBI < 5 or SCCAI <3. Continuous data are summarised as medians (range). Pre- and post-induction values were compared using Wilcoxon signed-rank test.

**Results** 60 patients (CD: 32, 53%, UC 25, 42%, IBD-U 3, 5%) commenced vedolizumab (m:f 29:31, age: 39 (18–74), follow-up: 5 months (1–13)). 19 were excluded from our analysis (3 IBD-U, 5 stomas, 11 treated for <14 weeks). Clinical data from the remaining 41 was analysed.

Of 32 patients with active disease at baseline, 17 (53%) responded and 11 (34%) achieved remission by week 14. The response and remission rates for CD were 8/15 (53%) and 6/15 (40%). In UC they were 9/17 (53%) and 5/17 (29%).

Response and remission rates in anti-TNF experienced patients were 12/26 (46%) and 6/36 (35%) compared to 5/6 (83%) and 5/6 (83%) in anti-TNF naïve patients, respectively. 7/11 (64%) with active disease at baseline who completed 30 weeks of treatment responded and achieved remission.

Faecal calprotectin fell significantly (pre-induction: 1076 (90–4800), post-induction: 478 (10–3184), $p = 0.029$ for $n = 14$) and CRP remained stable (pre-induction: 4 (1–70), post-induction: 4 (1–72), $p = 0.28$ for $n = 40$).

Rates of steroid use at each time point: 19/41 (46%) at baseline, 11/41 (21%) at week 14 and 3/15 (20%) at week 30. Surgery was required in 4/41 (10%, CD:3 and UC:1).

**Conclusion** Our experience mirrors a previously reported real-world cohort[1] and demonstrates similar efficacy to the GEMINI trials. This data demonstrates a meaningful reduction in clinical and biochemical disease activity as well as a steroid-sparing effect in patients with complex and previously refractory disease. We did not see a significant difference in efficacy between patients with UC and CD.


**REFERENCE**

1 Christensen B. *et al*. *Post-marketing experience of vedolizumab for IBD: The University of Chicago experience*. ECCO; Barcelona, 2015.


**Disclosure of Interest** None Declared

## PTU-063 BONE PROTECTION THERAPY IN PATIENTS RECEIVING GLUCOCORTICOID THERAPY FOR INFLAMMATORY BOWEL DISEASE – A NEED TO REVISIT GUIDELINES?


M Everson*, R Sheth, S Bloom. *Gastroenterology, University College London Hospital, London, UK*



10.1136/gutjnl-2016-312388.148


**Introduction** Patients with inflammatory bowel disease (IBD) have a higher risk of developing reduced bone mineral density (BMD).[1] We aimed to assess our compliance with 2007 BSG guidance[2] on the use of bone protection and DEXA scanning in patients with IBD receiving steroids. Furthermore, we attempted to identify risk factors for the development of low BMD in patients with IBD.

**Methods** Data was pooled retrospectively on 368 patients with Crohns (CD), ulcerative (UC), indeterminate (IDC) or microscopic (MC) colitis who received steroids as inpatients or outpatients at a tertiary IBD centre from April 2014-October 2015. Patient notes and imaging records were screened to determine if Calcium, Vitamin D supplementation, bone protection therapy and DEXA scans were given in accordance with 2007 BSG guidelines. Data from patients with DEXA-confirmed low BMD (age at diagnosis, sex, disease location, disease duration, vitamin D deficiency) was analysed by logistic regression analysis to determine an association between these characteristics and the development of low BMD.

**Results** 368 patients *(m:190, f: 178, median age 31 yrs [13–91 yrs])* received steroids for IBD *(217 CD, 137 UC, 10 IDC, 4 MC)* from Apr 2014 to Oct 2015. Of 314 patients, 145 (46%) received calcium-vitamin D supplementation when indicated. No patients over 65 yrs (n = 27) received bisphosphonate therapy with steroids. DEXA scanning was performed in 62 of 314 eligible patients (16.5%), with 31 (50%) demonstrating low BMD - 18 (29%) osteoporosis, 13 (21%) osteopaenia. 3 patients with low BMD had evidence of fractures, compared with none with normal BMD. Logistic regression analysis showed no statistically significant associations between any of the proposed risk factors and the development of low BMD.

**Conclusion** As a tertiary centre we demonstrate poor compliance with BSG guidelines for the prevention of low BMD in IBD – we infer that other centres may have even lower compliance. The prevalence of low BMD in this patient group is as high as 50%. Current guidelines on the use of DEXA and bone protection in this subset of patients are vague and lack an evidence base – they suggest that the majority of patients on steroids with IBD undergo DEXA scanning. Larger studies are needed to identify risk factors for low BMD in IBD patients on steroids. The development of more evidence based guidelines would allow these patients to be prioritised for DEXA scanning and bone protective therapies – improving cost efficiency and reducing radiation doses to patients.


**REFERENCES**

1 Bjarnason I, Macpherson A, Mackintosh C, *et al*. Reduced bone density in patients with inflammatory bowel disease. *Gut* 1997;**40**(2):228–233.

2 Guidelines for osteoporosis in inflammatory bowel disease and coeliac disease NR Lewis, BB Scott – BSG guidelines 2007.


**Disclosure of Interest** None Declared

## PTU-064 TRENDS IN MORTALITY FOR IBD PATIENTS ADMITTED AS AN EMERGENCY TO ENGLISH HOSPITALS: A 10-YEAR ANALYSIS OF ROUTINE ADMINISTRATIVE DATA


[1]M Shawihdi*, [2]R Driscoll, [3]M Pearson, [4]F Cummings, [5]S Bloom, [3]P Williamson, [3]K Bodger. *[1]Gastroenterology, University of Liverpool, Liverpool; [2]UK IBD Registry, British Society of Gastroenterology, London; [3]Department of Biostatistics, Institute of Translational Medicine, University of Liverpool, Liverpool; [4]Gastroenterology, Univ. Hospital Southampton, Southampton; [5]Gastroenterology, University College London Hospital, London, UK*



10.1136/gutjnl-2016-312388.149


**Introduction** To support the development of metrics for the UK IBD Registry, techniques are being developed to analyse Hospital Episode Statistics (HES) for England. This report is focused on in-hospital deaths (In-HD) recorded for all-cause and cause-specific emergency admissions (Em-Ad) among a nationwide cohort of IBD patients over ten years. Consecutive rounds of UK IBD Audit have suggested declining inpatient mortality in the UK, albeit limited by incomplete case capture and ascertainment bias.

**Methods** COHORT: Any patient with a coded diagnosis of ulcerative colitis or Crohn's disease, identified between 04/05 to 13/14. DATA EXTRACT: All-cause hospital episodes belonging to the cohort during this period (Source: Health & Social Care Information Centre). ANALYSIS: Datasets were interrogated using algorithms in IBM-SPSS, SAS and Excel, with admission and patient-level analyses. We applied a range of definitions to extract IBD-associated Em-Ad based on coded diagnoses and procedures, ranging from a narrow focus (primary diagnosis of IBD-specific codes) to broader categories (flagging of specific GI symptoms [R-codes] or selected conditions, complications or procedures suggestive of an IBD-related Em-Ad). Coding lists were informed by steering group review. Numbers and crude population-based rates of Em-Ad and In-HD were examined for each category of Em-Ad. Risk-adjusted odds ratio of death (OR) for each year were compared (covariates: age, gender, Charlson index, Cancer codes), relative to baseline (04/05), in logistic regression models at individual patient level (first admission). Mid-year populations for England (18+) were obtained from ONS.

**Results** 352,614 IBD patients had 887,837 all-cause Em-Ad (aged 18+). Focusing only on admissions with a primary diagnosis of IBD, there were 141,063 Em-Ad (UC = 60,278; CD = 80,785); 1,701 in-hospital deaths; a year-on-year decline in crude admission death rate (2.0% to 0.7%) and

population-based rate (0.60 to 0.28 I-HD per 100,000 population). Relative to baseline year, the risk-adjusted odds ratio (OR) for death during Em-Ad (first admission with primary diagnosis; n = 82,248 patients) declined steadily over the decade (2013/14 vs 2004/5, OR: 0.43 [0.33 to 0.56]). Further modelling and sensitivity analyses will be reported.

**Conclusion** Over the last decade there has been a significant reduction in hospital mortality for IBD patients admitted as an emergency to English hospitals. Although many factors may contribute to these improved statistics, the time period included 4 rounds of UK wide audit focusing on raising standards for in-patient care.

**Disclosure of Interest** M. Shawihdi Grant/research support from: Crohn's & Coliitis UK, R. Driscoll Consultant for: AbbVie, M. Pearson: None Declared, F. Cummings: None Declared, S. Bloom: None Declared, P. Williamson: None Declared, K. Bodger Grant/research support from: Crohn's & Colitis UK, Speaker bureau with: AbbVie

## PTU-065 FOUR-WAY COMPARISON OF ELISA METHODS AVAILABLE FOR THE MEASUREMENT OF INFLIXIMAB AND ANTI-INFLIXIMAB ANTIBODY IN IBD PATIENTS

[1]N Unsworth*, [2]MA Samaan, [2]B Warner, [1]Z Arkir, [2]PM Irving. *[1]Biochemical Sciences, Viapath, St Thomas' Hospital; [2]Gastroenterology, Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.150

**Introduction** Commercial assays are now widely available and in routine use for the therapeutic drug monitoring of Infliximab (IFX) and anti-Infliximab antibody (ADAb). Although results generated using these assays are used to guide clinical decision making, there is no standardisation and data assessing the comparability between these assays is lacking.

**Methods** A prospective evaluation of IFX drug levels and ADAb was performed using our standard ELISA assay; LISA TRACKER (Theradiag) and also Promonitor (Proteomika), IDKmonitor (Immundiagnostik) and RIDASCREEN IFX (R-Biopharm AG / KU Leuven) ELISA assays. 105 samples from 102 IBD patients were analysed for IFX, free ADAb (LT/PRO) and total ADAb (ID) automated on eRobot and Grifols Triturus analysers. LT, PRO and RS kits were provided at no cost. Method comparisons were performed using difference plots and Passing Bablok analysis.

**Results** A summary of IFX drug level comparison data is shown in the image below. The distribution of bias between methods was variable (-6.7% to +87.8%) with PRO and ID showing scattered, bimodal distributions of %bias. A consistent, proportional relationship was observed between LT and RS results. Free ADAb were detected in 4/105 (3.8%) samples using LT and 3/105 using PRO. All patients with detectable free ADAb had undetectable IFX drug levels. Conversely, total ADAb were detected in 23/105 (21.9%) samples but IFX drug levels were sub-therapeutic (<1.0 ug/mL) in only 6/23 (26.1%) of these and therapeutic (>2.0 ug/mL) in the majority of cases (13/23).

**Conclusion** These results show that there is significant variation in IFX drug levels obtained when using different CE marked ELISA assays and as such, results are not directly comparable. Although the clinical utility of measuring total ADAb is yet to be established, a significant proportion of patients tested will be positive for total ADAb irrespective of therapeutic IFX drug levels. In the absence of assay standardisation and external quality assurance, laboratory providers and clinicians should ensure that assays currently in routine use are fit for purpose.

**Disclosure of Interest** None Declared

**Infliximab Drug Level Comparison**

| x \ y | PRO | ID | RS |
|---|---|---|---|
| LT | y = 1.43x – 0.92<br>Mean bias = +11.0% | y = 1.03x -0.50<br>Mean bias = -5.6% | y = 1.59x – 0.38<br>Mean bias = +50.4% |
| PRO | | y = 0.83x + 0.34<br>Mean bias = -6.7% | y = 1.17x + 0.45<br>Mean bias = +53.2% |
| ID | | | y = 1.64x = 0.52<br>Mean bias = +87.8% |

**Median IFX Drug Levels**

| Assay | Median (ug/mL) | 1st Quartile | 3rd Quartile |
|---|---|---|---|
| LT | 4.7 | 2.3 | 6.4 |
| PRO | 4.0 | 1.9 | 8.7 |
| ID | 3.7 | 1.9 | 6.5 |
| RS | 6.0 | 3.4 | 9.6 |

LT = LISA TRACKER, PRO = Promonitor, ID = IDKmonitor, RS = RIDASCREEN IFX

**Abstract PTU-065 Figure 1**

## PTU-066 LIPID BIOMARKER AS A DIAGNOSTIC TOOL IN CROHN'S DISEASE USING METABONOMIC PROFILING IN SERUM AND FAECES

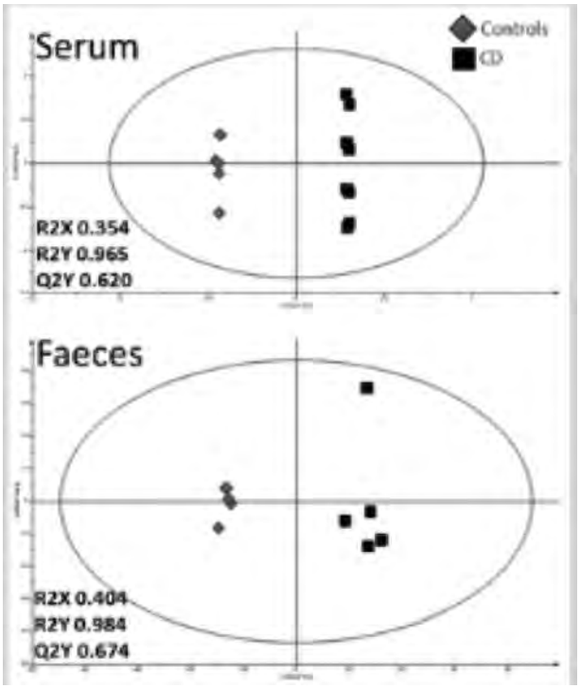
[1]NS Ding*, [1]M Sarafian, [1]R Misra, [1]PA Hendy, [1]L Penez, [2]E Holmes, [1]AL Hart. *[1]IBD, St Mark's Hospital, Harrow; [2]Surgery and Cancer, Imperial College, London, UK*

10.1136/gutjnl-2016-312388.151

**Introduction** Inflammatory bowel disease (IBD) is influenced by environmental and genetic factors which alters the gut microbiota. The human gut microbiota is involved in the maintenance of its host physiological functions and imbalance in the microbial population and its metabolic signatures may lead to disease activity and phenotype. We aimed to investigate the variations occurring in lipid metabolism between Crohn's disease (CD) *vs*. controls in serum and faeces by profiling using a metabonomic approach.

**Methods** Serum and faeces were collected from moderate to severe Crohn's disease patients prior to commencement of anti- TNF. Sample preparation: Protein precipitation with isopropanol was implemented on serum and faeces samples and prepared by biphasic extraction.Lipid profiling: The method was performed on Waters Acquity UPLCTM combined with Waters Q-Tof PremierTM mass spectrometerData processing: OPLS-DA was carried out on the XCMS extracted intensities using SIMCA P+ v13 and Matlab.Lipids annotation was derived by searching m/z against online databases (METLIN, Lipidmaps and HMDB).

**Results** Multivariate analyses between healthy and CD patients were performed to characterise lipid profile differences.Significant separation was observed in both serum and faeces between the two groups (Figure1). Lipid metabolism is affected in CD patients compared to healthy controls. Correlation analysis showed that several triglyceride (TG) species were significantly associated with CD. TGs with medium to long chain fatty acid length and with saturations were identified at increased levels in CD patients (Figure2). TGs with saturated fatty acids were prominent in faeces compare to serum. Moreover, TGs found in faeces were in higher concentration than in serum.




**Abstract PTU-066 Figure 1**

**Conclusion** The metabonomic study showed profound variations in both serum and faeces of CD patients. These results highlight the association between the gut microbiota and mucosal barrier function which has downstream effect on lipid metabolism and inflammation in IBD. This metabonomic approach offers potential application in diagnosing CD.

**Disclosure of Interest** None Declared

## PTU-067 BODY COMPOSITION PROFILING IS A PREDICTOR OF THERAPEUTIC OUTCOME IN PATIENTS WITH MODERATE TO SEVERE CROHN'S DISEASE

NS Ding*, G Malietzis, PF Lung, WM Yip, L Penez, T Ganeshanathan, SM Gabe, JT Jenkins, AL Hart. *IBD, St Mark's Hospital, Harrow, UK*

10.1136/gutjnl-2016-312388.152

**Introduction** Anti-tumour necrosis factor (TNF)s form a major part of therapy in Crohn's disease and has a primary non-response rate of 10–30% and a secondary loss of response rate of 5% per patient-year. Myopenia is prevalent in patients with Crohn's disease who are in clinical remission and can be measured using body composition analysis tools. We hypothesise that body composition can predict for outcomes of anti-TNF primary non-response and secondary loss of response.

**Methods** Between January 2007 to June 2012, 650 anti-TNF naïve patients underwent anti-TNF therapy for Crohn's disease in a single centre. CT images were analysed for body composition parameters and used to estimate body fat-free mass. The outcome measures were primary non-response and secondary loss of response. COX-regression analysis was used to predict for outcomes with three-year follow-up data. A hypothetical dose of 5 mg/kg was delivered with estimated tissue levels.

**Results** Of the 650 patients with anti-TNF therapy, 106 were included. 26 (24.5%) were primary non-responders and 29 (27.4%) had secondary loss of response. 13 patients were obese (BMI > 30). Sex-specific cut-offs that defined a significant association between low muscle, high visceral fat and myosteatosis with outcomes were ascertained by stratification analysis. On multivariate analysis, myopenia predicted for primary non-response (HR 4.74;1.81-12.39,p =0.002) (Figure 1). Large anti-TNF dose variations resulted due to different body compositions. (Figure 2)

**Conclusion** In this cohort study with three-year follow-up data, body composition profiles varied widely and did not correlate well with BMI. Myopenia was a predictor of primary non-response with potential implications for dosing and serves as an explanation for pharmacokinetic failure.

**Disclosure of Interest** None Declared

## PTU-068 DOSE OPTIMISATION USING DRUG AND ANTIBODY LEVELS CAN BENEFIT 50% PATIENTS PRESCRIBED ANTI TNF THERAPY COMPARED TO EMPIRIC DOSE ADJUSTMENT

P Harrow*, C Skinner, T Hoque, A Ibarra, J Lindsay. *Gastroenterology, The Royal London Hospital, Barts Health NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.153

**Introduction** In 2014 therapeutic drug monitoring (TDM) for antiTNF was introduced to the Royal London Hospital. Approximately 170 IBD patients per month receive infliximab or adalimumab. Previous data have shown TDM and optimised antiTNF prescribing improves clinical outcomes.[1] We audited the impact of TDM on cost-effectiveness and clinical outcome after 9 months compared to predictions we made prior to the introduction of this service.[2]

**Methods** All IBD patients on antiTNF who had TDM between November 2014 and July 2015 were identified retrospectively using pathology records. Ideal standards of care were defined prospectively for different drug and antibody results. Actual clinical actions and outcomes 3 months after TDM were recorded and compared with the defined ideal standards of care.

**Results** 160 tests on 133 patients were identified in the study period including 74 patients on infliximab and 59 patients on adalimumab. 88% patients had Crohn's disease and 10% had ulcerative colitis. Escalated dosing regimens (increased dose or frequency) were prescribed in 48% patients.

**Abstract PTU-068 Table 1** AntiTNF trough levels

| Trough drug level (μg/ml) | Infliximab | Adalimumab |
|---|---|---|
| Low (<2 IFX, <5 ADA) | 34% | 41% |
| Therapeutic (2–8 IFX, 5–8 ADA) | 54% | 44% |
| High (>8) | 12% | 15% |

46% patients on IFX and 56% patients on ADA had drug levels outside the ideal therapeutic window (Table 1).

In patients on escalated doses, 13% IFX and 33% ADA had unrecordably high drug levels. A further 8% IFX patients on escalated doses were in deep clinical remission (CRP < 5 and HBI or Mayo score 0–1). Reducing these prescriptions to standard dosing alone could have saved £166800 over 12 months. However, only 3/19 patients had dose reductions within 3 months, saving £27980. Neutralising antibodies were identified in 12% IFX and 9% ADA patients.

Appropriate cessation of antiTNF took place in 75% IFX and 20% ADA patients. Appropriate dose escalation only took place in 36% IFX and 6% ADA patients with low levels and no antibodies.

**Conclusion** Empiric prescribing based on clinical assessment alone leads to sub-optimal drug levels in around 50% patients. The introduction of antiTNF TDM has allowed rational dose optimisation with immediate savings and clinical benefits. In routine practice, delays in interpreting TDM impacted on dose optimisation and wasted resources. These data have led to local changes in practice to ensure all results are acted on promptly.

## REFERENCES


1 Vaughn BP, Sandborn WJ, Cheifetz AS. Biologic concentration testing in IBD. *Inflamm Bowel Dis* 2015;**21**(6):1435–1442.

2 Tandiari T, *et al*. PTH-083 Selective monitoring of antiTNF drug levels and antibodies will reduce short-term prescribing costs and provide early personalised tailoring of antiTNF therapy in routine IBD practice. *Gut* 2015;**64**(Suppl 1): A443.


**Disclosure of Interest** P. Harrow: None Declared, C. Skinner: None Declared, T. Hoque: None Declared, A. Ibarra: None Declared, J. Lindsay Grant/research support from: MSD, Takeda and Hospira, Consultant for: MSD, Takeda, Abbvie, Napp, Hospira and Celltrion

## PTU-069 EFFECT OF ADALIMUMAB ON PATIENTS WITH MODERATE TO SEVERE ULCERATIVE COLITIS IN UK CLINICAL PRACTICE SETTING: RESULTS FROM INSPIRADA


[1]P Irving*, [2]F Cummings, [3]SL Bloom, [4]A Lazar, [5]AM Robinson, [5]BL Pappalardo, [4]M Bereswill, [5]M Skup, [5]N Chen, [6]T Finney-Hayward, [5]S Wang, [5]RB Thakkar, [7]S Travis. *[1]Guy's and St. Thomas' Hospitals, London; [2]University Hospital Southampton, Southampton; [3]University College London Hospitals, London, UK; [4]AbbVie Deutschland GmbH & Co. KG, Ludwigshafen, Germany; [5]AbbVie Inc., North Chicago, United States; [6]AbbVie Ltd., Berkshire; [7]Oxford University Hospitals, Oxford, UK*


10.1136/gutjnl-2016-312388.154

**Introduction** Limited real world data are available regarding the effects of adalimumab (ADA) on UK patients with moderate to severe ulcerative colitis (UC).

**Methods** INSPIRADA was a single-arm, multi-country, open-label study that evaluated the effect of ADA on patients with UC treated according to usual clinical practice. Adults with active moderate to severe UC who failed immunosuppressive therapies and experienced rectal bleeding within 7 days of baseline (BL) were enrolled. Prior use of anti-TNF was allowed. Clinical outcomes included Simple Clinical Colitis Activity Index (SCCAI) response (a decrease ≥2 points compared to BL) and remission (SCCAI ≤2). HRQoL (EQ-5D-5L and SIBDQ), treatment satisfaction with medication (TSQM), and work productivity and activity impairment (WPAI) were measured from BL to week 26. Direct medical costs (excluding ADA costs) were estimated using 2014 UK National Health Service reference costs. Indirect costs were based on the WPAI using average weekly earnings from the 2014 UK Annual Salary Survey of Hours and Earnings. Change (defined as 6 mo after start of ADA vs 6 mo before) in resource use and costs were calculated. Data for the intent-to-treat population in UK were analysed. Missing data were imputed using last observation carried forward.

**Results** Data from 90 UK patients (58% male, mean age 39 yrs) were analysed. Mean SCCAI at BL was 8.2. At week 2, 74% achieved SCCAI response and 21% achieved SCCAI remission. At week 8, 73% achieved SCCAI response, 40% in remission and 49% had no blood in stool. At week 26, 66% achieved SCCAI response, 42% in remission and 51% had no blood in stool. Significant improvements, as early as within 2 weeks, in SIBDQ (19.5 points, $p < 0.001$), EQ-5D-5L (0.12 index score and 20.5 VAS points, both $p < 0.001$), 3 of 4 WPAI domains (−31%, −32%, −32%, all $p < 0.001$), and 3 of 4 TSQM domains (18%, 23%, 29%, all $p < 0.001$) occurred from BL to week 26. Significant decreases in UC-related medical costs (−£1857, $p < 0.001$), all-cause direct costs (−£1613, $p < 0.001$), and UC-related direct + indirect costs (−£6001, $p < 0.001$) occurred 6 mo after starting ADA compared to 6 mo before starting ADA.

**Conclusion** Real world rates of response, remission and improvements in HRQoL with ADA for UK patients with moderate to severe UC were clinically meaningful. ADA improved work productivity, increased patient satisfaction with therapy and reduced health care associated costs for these patients in the UK.

**Disclosure of Interest** P. Irving Grant/research support from: AbbVie; Falk; Ferring; Genentech/Roche; Hospira; Merck; Pharmacosmos; Shire; Takeda; Tillotts; Topivert; Vifor and Warner Chilcott, Conflict with: Advisor/invited lecturer for: AbbVie; Falk; Ferring; Genentech/Roche; Hospira; Merck; Pharmacosmos; Shire; Takeda; Tillotts; Topivert; Vifor and

Warner Chilcott, F. Cummings Conflict with: Advisor/lectures for: Takeda, Abbvie, MSD, Biogen, Napp, Hospira, Janssen, S. Bloom Conflict with: Advisor/lectures for: Takeda, Tillotts, Abbvie, MSD, Pharmacosmos, Vifor, Johnson and Johnson, A. Lazar Shareholder of: AbbVie, Employee of: AbbVie, A. Robinson Shareholder of: AbbVie, Employee of: AbbVie, B. Pappalardo Shareholder of: AbbVie, Employee of: AbbVie, M. Bereswill Shareholder of: AbbVie, Employee of: AbbVie, M. Skup Shareholder of: AbbVie, Employee of: AbbVie, N. Chen Shareholder of: AbbVie, Employee of: AbbVie, T. Finney-Hayward Shareholder of: AbbVie, Employee of: AbbVie, S. Wang Shareholder of: AbbVie, Employee of: AbbVie, R. Thakkar Shareholder of: AbbVie, Employee of: AbbVie, S. Travis Grant/research support from: AbbVie; Asahi; Boehringer Ingelheim; BMS; Cosmo; Elan; Ferring; FPRT Bio; Genentech/Roche; Genzyme; Glenmark; GW Pharmaceuticals; Lilly; Merck; Novartis; Novo Nordisk; Ocera; Pfizer; Shire; Santarus; SigmoidPharma; Synthon; Takeda; Tillotts; Topivert; Trino Therapeutics with Wellcome Trust; UCB Pharma; Vertex; VHsquared; Vifor; Warner Chilcott and Zeria, Conflict with: Advisor or paid instructor for: AbbVie; Asahi; Boehringer Ingelheim; BMS; Cosmo; Elan; Ferring; FPRT Bio; Genentech/Roche; Genzyme; Glenmark; GW Pharmaceuticals; Lilly; Merck; Novartis; Novo Nordisk; Ocera; Pfizer; Shire; Santarus; SigmoidPharma; Synthon; Takeda; Tillotts; Topivert; Trino Therapeutics with Wellcome Trust; UCB Pharma; Vertex; VHsquared; Vifor; Warner Chilcott and Zeria. All advisory boards were suspended Q1 2012–14 while President of ECCO

## PTU-070 PATIENT-REPORTED QUALITY OF LIFE DURING GOLIMUMAB INDUCTION FOR MODERATE TO SEVERE ULCERATIVE COLITIS IN THE UNITED KINGDOM: RESULTS FROM THE GO-COLITIS STUDY

[1]P Irving, [2]C Probert, [3]D Gaya, [4]PJ Hamlin, [5]S Sebastian, [6]G Gillespie*, [6]H Tate, [6]C Wheeler. *[1]Guy's and St. Thomas' Hospitals, London; [2]University of Liverpool, Liverpool; [3]Glasgow Royal Infirmary, Glasgow; [4]Leeds Teaching Hospitals Trust, Leeds; [5]Hull & East Yorkshire NHS Trust, Hull; [6]MSD UK, Hoddesdon, UK*

10.1136/gutjnl-2016-312388.155

**Introduction** Consistent relief of symptoms is among the most important attributes considered by patients with ulcerative colitis (UC) when selecting a therapy.[1] GO-COLITIS (NCT02092285; 2013–004583-56) is a UK phase 4, multicentre, open-label, single-arm trial of golimumab (GLM) for the treatment of moderate to severe UC. Here, we report the results of an analysis of patient-reported quality of life (QoL) at the end of the GLM induction phase.

**Methods** Anti-TNF naive patients (≥18 y) with UC ≥ 3 months and with moderate to severe disease (partial Mayo score 4–9 or full Mayo score 6–12) at baseline, Mayo rectal bleeding subscore ≥1, and endoscopy subscore ≥2 (if full Mayo was used) were included. Patients received subcutaneous GLM on day 0 (200 mg) and day 14 (100 mg) during the 6 week induction phase, followed by GLM 50 or 100 mg every 4 weeks during the 48 week maintenance phase with 12 week follow-up, in line with the Summary of Product Characteristics. Patients completed the Inflammatory Bowel Disease Questionnaire (IBDQ) and EuroQoL Group 5 Dimensions Health Questionnaire (EQ-5D) at baseline and at week 6 during GLM induction. Data were summarised descriptively.

**Results** 205 patients were enrolled (mean [range] age, 39.3 [18–79] years; male, n = 123 [60%]). All patients received one or two doses of induction GLM. Statistically significant improvements from baseline to induction week 6 (mean [SD]) were observed for IBDQ total score (Baseline: 115.9 (32.4); week 6: 161.9 (38.2); change from baseline of 45.2 [37.4] ($p < 0.0001$), as well as the individual IBDQ domains of bowel symptoms, emotional function, systemic symptoms, and social function (all $p < 0.0001$). In addition, significant improvements in the EQ-5D index score (0.1 [0.2]; $p < 0.0001$) and health state visual analogue scale (VAS) (15.6 [26.6]; $p < 0.0001$) were observed

**Conclusion** During the GLM induction phase of the GO-COLITIS study, patients with moderate to severe UC experienced significant improvements from baseline in disease-specific QoL, including bowel symptoms, emotional function, systemic symptoms, and social function, as well as generic QoL.

### REFERENCE

1 GreyGray JR, *et al*. *Aliment Pharmacol Ther* 2009;**29**:1114–1120.

**Disclosure of Interest** P. Irving Grant/research support from: MSD, Takeda, Consultant for: Abbvie, Warner Chilcott, Takeda, MSD, Vifor Pharma, Pharmacosmos, Topivert, Genentech, Hospira, Speaker bureau with: Abbvie, Falk Pharma, Ferring, MSD, Shire, Takeda, Warner Chilcott, Johnson and Johnson, C. Probert Consultant for: Abbvie, MSD, Napp, Takeda, Speaker bureau with: Abbvie, Ferring, Falk Pharma, MSD, Shire, Takeda, Conflict with: Abbvie, Falk Pharma, MSD, Shire, Takeda, D. Gaya Speaker bureau with: Abbvie, Falk Pharma, Ferring, MSD, Shire, Takeda, Vifor, Conflict with: Abbvie, Falk Pharma, MSD, Shire, Takeda, Vifor, P. Hamlin Speaker bureau with: Abbvie, Ferring, MSD, Takeda, Warner Chilcott, Tillots, Conflict with: Abbvie, Falk Pharma, MSD, Tillotts, S. Sebastian Grant/research support from: Abbvie, Ferring, Warner Chilcott, Johnson and Johnson, Consultant for: Falk Pharma, Ferring, MSD, Takeda, Vifor, Warner Chilcott, Speaker bureau with: Abbvie, Takeda, Warner Chilcott, G. Gillespie Shareholder of: MSD UK, Conflict with: Employment: MSD UK, H. Tate Consultant for: MSD UK, C. Wheeler Shareholder of: MSD UK, Conflict with: Employment: MSD UK

## PTU-071 THE LONG TERM SAFETY AND EFFICACY OF CO-THERAPY ALLOPURINOL WITH LOW DOSE AZATHIOPRINE OR MERCAPTOPURINE WITHOUT METABOLIC PROFILING IN INFLAMMATORY BOWEL DISEASE

[1]P Pavlidis*, [2]P Stamoulos, [3]A Taylor Gonzalez, [4]R Reynolds, [4]C Bull, [4]K Street, [3,4]A Ansari. *[1]Gastroentertology, King's College Hospital; [2]Gastroentertology, Mayday Hospital, London; [3]Gastroentertology, Surrey and Sussex Healthcare Trust; [4]Gastroentertology, Surrey and Sussex Healthcare Trus, Surrey, UK*

10.1136/gutjnl-2016-312388.156

**Introduction** The effectiveness of full dose azathioprine (FDA) for inflammatory bowel disease (IBD) is increasingly recognised as poor and often requires the use of anti-TNF therapies.

Current strategies to optimise azathioprine (AZA) includes the use low dose azathioprine with allopurinol (LDAA). However, many groups restrict LDAA to patients classed as shunters/hypermethylators (15% of non-responders) based on thiopurine metabolite (TM) assay profiles. This approach inadvertently denies i) 85% of non-responders ii) those without access to TM iii) those with poor understanding of these complex recommendations to benefit from LDAA.

**Methods** Records of IBD patients treated with LDAA were retrospectively analysed. AZA dose was reduced to 25–33% of the thiopurine methyl transferase (TPMT) adjusted dose. The response was determined after 6 months and assessed for steroid free clinical remission. A cohort of patients had thiopurine metabolite measurements: i) Non Response (NR) to FDA (n 30) then repeated on LDAA (n 20). ii) Further 70 on LDAA NR (n 20) and full response (FR) (n 50).

**Results** Four hundred patients received LDAA between 2009 and August 2015. Group 1 (G1)- 1st line (n190); Group 2 (G2)-switched from FDA to LDAA (n210).

Overall 280 (70%) had a FR (G1 and G2), the rest non-responders (NR): In G1 FR was 79% and G2 65%.

Myelotoxicity occurred in 8 patients; 8 patients on LDAA had hepatotoxicity which resolved by increasing allopurinol to 200 mg (all FR).

The median length of therapy was 38 months.

Metabolites: i) For FDA: 20 complete responders (TGN mean 280) and 30 non responders (TGN mean 260): 6 non adherent (TGN < 150 and low MMP) and 4 shunters tendency (MMP > 5,000 and low TGN). In 20 switched to LDAA (TGN mean for Complete Response 420 and Non Response 440). ii) In Complete Response to LDAA (TGN mean 476), and FDA (TGNs mean 306). In LDAA Non Response (TGN mean 400).

Analysis: Mann-Whitney test. For commercial RBC TGNs: CR vs NR in FDA and LDAA p-value = 0.3132 and 0.9386 respectively. The TGNs increased significantly in both CR and NR switched from FDA to LDAA ($p < 0.05$).

**Conclusion** Appropriately dosed LDAA therapy is therapeutically effective, well tolerated and relatively safe compared to FDA. Giving LDAA to patients who are not shunters does not diminish the benefit of LDAA. Avoiding metabolite determined use of LDAA increases the number of patients who can benefit from AZA. The observed Increase in TGNs seen in patients switched to LDAA occurs in both NR and CR.

**Disclosure of Interest** None Declared

## PTU-072 DISCONTINUATION OF INFLIXIMAB IN PATIENTS WITH ULCERATIVE COLITIS IS ASSOCIATED WITH INCREASED RISK OF RELAPSE: A MULTINATIONAL RETROSPECTIVE COHORT STUDY

[1]G Fiorino, [2]PN Cortes, [3]P Ellul, [4]C Felice, [5]P Karatzas, [6]M Silva, [7]PL Lakatos, [8]F Bossa, [9]S Sebastian*, [10]B Ungar, [11]F Furfaro, [12]K Karmiris, [13]KH Katsanos, [3]M Muscat, [13]D Christodoulou, [14]G Maconi, [10]U Kopylov, [6]F Magro, [5]GJ Mantzaris, [4]A Armuzzi, [2]MM Boscà-Watts, [10]S Ben-Horin, [11]S Bonovas, [11]S Danese. *[1]IBD Centre, Humanitas Research Hospital, Milan, Italy; [2]IBD Unit, Valencia University Hospital, Valencia, Spain; [3]Division of Gastroenterology, Mater Dei Hospital, Malta, Malta; [4]IBD Unit, Gemelli Hospital Catholic University, Rome, Italy; [5]Department of Gastroenterology, Evangelismos Hospital, Athens, Greece; [6]Department of Gastroenterology, Hospital de São João, Porto, Portugal; [7]1st Department of Internal Medicine, Semmelweiss University, Budapest, Hungary; [8]Unità di Gastroenterologia ed Endoscopia Digestiva, Ospedale Casa Sollievo della Sofferenza, M, Italy; [9]IBD Unit, Department of Gastroenterology, Hull 7 East Yorkshire NHS Trust, Hull, UK; [10]Department of Gastroenterology, Sheba Medical Centre, Tel Hashomer, Sackler School of Medicine, Tel-Aviv, Israel; [11]IBD Centre, Department of Gastroenterology, Humanitas Research Hospital, Milan, Italy; [12]Department of Gastroenterology, Venizeleio General Hospital, Heraklion, Crete; [13]Division of Gastroenterology, School of Health Sciences, University of Ioannina, Ioannina, Greece; [14]Division of Gastroenterology, Luigi Sacco University Hospital, Milan, Italy*

10.1136/gutjnl-2016-312388.157

**Introduction** Efficacy and safety of infliximab in ulcerative colitis (UC) is well-established. We conducted a multicenter retrospective cohort study across 7 European countries, and Israel, to examine whether infliximab discontinuation can be considered for patients who achieve sustained remission.

**Methods** The disease course of patients who discontinued infliximab was compared against that of patients who continued scheduled treatment (control group). We examined the incidence rates of relapse, hospitalisation and colectomy, the comparative effectiveness of different therapeutic strategies after discontinuation, and assessed the rates of response, remission and adverse effects after infliximab re-initiation. Statistical analyses employed time-to-event methods

**Results** In total, 193 patients were included, 111 discontinued infliximab. The incidence rate of relapse was significantly higher after discontinuation (23.3 per 100 person-years) as compared to the control group (7.2 per 100 person-years) both in univariable (log-rank $p < 0.001$; hazard ratio [HR]: 3.41, 95% CI: 1.88–6.20) and multivariable analysis (HR: 3.70, 95% CI: 2.02–6.77). Rates of hospitalisation and colectomy were not different between the groups. Thiopurines appeared to be the best treatment option after infliximab discontinuation (incidence of relapse: 15.0 per 100 person-years for thiopurines, 27.4 per 100 person-years for thiopurines plus aminosalicylates, and 31.2 per 100 person-years for aminosalicylates alone, log-rank $p = 0.032$). Response was regained in 77.1% and remission in 51.4% of patients who re-initiated infliximab. However, 17.1% suffered infusion reactions, and 17.1% reported other adverse events

**Conclusion** Infliximab discontinuation in UC patients with sustained clinical remission is associated with increased risk of relapse. Treatment re-initiation is effective and safe.

**Disclosure of Interest** G. Fiorino Consultant for: MSD, AbbVie, Takeda, Janssen, Mundipharma, Sandoz, Pfizer, P. Cortes: None Declared, P. Ellul Grant/research support from: MSD, AbbVie, C. Felice Consultant for: MSD, AbbVie, P. Karatzas: None Declared, M. Silva: None Declared, P. Lakatos Grant/research support from: MSD, AbbVie, Hospira, Consultant for: MSD, AbbVie,Celltrion, EGIS, Falk Pharma GmbH, Ferring, Genentech, Hospira, F. Bossa Consultant for: MSD, Abbvie, Mundipharma, and Takeda, S. Sebastian Grant/research support from: MSD, AbbVie, Speaker bureau with: MSD, B. Ungar: None Declared, F. Furfaro: None Declared, K. Karmiris Consultant for: MSD, AbbVie, Takeda, K. Katsanos: None Declared, M. Muscat: None Declared, D. Christodoulou: None Declared, G. Maconi: None Declared, U. Kopylov Consultant for: Janssen, Abbvie, Takeda and CTS, F. Magro: None Declared, G. Mantzaris: None Declared, A. Armuzzi Grant/research support from: MSD, Consultant for: Abbvie, Celltrion, Ferring, Hospira, Janssen, Lilly, MSD, Mundipharma, Pfizer, Sofar, Takeda, M. M. Boscà-Watts: None Declared, S. Ben-Horin Grant/research support from: AbbVie and Celltrion, Consultant for: AbbVie, Celltrion, Janssen, Takeda and Schering-Plough, S. Bonovas: None Declared, S. Danese Consultant for: Schering-Plough, Abbott Laboratories, Merck, UCB-pharma, Ferring, Cellerix, Millenium Takeda, Nycomed, Pharmacosmos, Actelion, Danone, Alpha Wasserman, Genentech, Grunenthal, Pfizer, Astra Zeneca, Novo Nordisk, Cosmo Pharmaceuticals, Vifor, and Johnson & Johnson, Speaker bureau with: Schering-Plough, Abbott Laboratories, Merck, UCB-pharma, Ferring, Cellerix, Millenium Takeda, Nycomed, Pharmacosmos, Actelion, Danone, Alpha

Wasserman, Genentech, Grunenthal, Pfizer, Astra Zeneca, Novo Nordisk, Cosmo Pharmaceuticals, Vifor, and Johnson & Johnson

## PTU-073 IN PATIENTS WITH IBD SWITCHING FROM ORIGINATOR INFLIXIMAB (REMICADE) TO BIOSIMILAR INFLIXIMAB (CT-P13) IS SAFE AND EFFECTIVE

[1]S Rahmany*, [1]S Cotton, [1]S Garnish, [2]M Brown, [2]R Saich, [1]D Lloyd, [1]JN Gordon. *[1]Hampshire Hospitals Foundation Trust, Winchester; [2]Hampshire Hospitals Foundation Trust, Basingstoke, UK*

10.1136/gutjnl-2016-312388.158

**Introduction** Biosimilar infliximab (CT-P13) has been licensed for the treatment of IBD in Europe for over a year with the potential for significant cost savings. However, uptake in the UK has been slow primarily due to concerns over the lack of safety and efficacy data particularly with regard to switching patients from the originator product. We present the preliminary data from a controlled switch programme in a cohort of adult IBD patients.

**Methods** A prospective study was undertaken to assess the safety and efficacy of switching patients receiving originator infliximab (Remicade) to its biosimilar (CT-P13). Patient demographic data was collected along with disease severity scores (HBI and SCCAI), biological markers of disease activity, drug and antibody levels and PROM data (IBD-Control questionnaire) prior to the switch and at each subsequent infusion visit. Evaluation of the efficacy of biosimilar infliximab at the time of the last infusion was compared with the originator at switch over. Means, medians, and ranges were calculated. Adverse events were prospectively collected.

**Results** 78 IBD patients were included in the cohort (63 CD and 15 UC). The average age for the CD and UC patients was 43 and 42 years respectively. The average length of therapy on Remicade prior to the switch was 46 months for CD and 25 months for UC. 66/78 (85%) patients were receiving the standard dosage of 5 mg/kg 8 weekly with 12/78 (15%) either on a shortened interval or a 10 mg/kg dose. 42/63 (67%) of CD patients were in remission at switch over compared to 43/60 (72%) at the most recent infusion (4–6 months). The number of patients with mild, moderate and severe disease remained stable throughout the study period (Mild 10/63 (16%) v 11/60 (18%): Moderate 10/63 (16%) v 5/60 (8%): Severe 1/63 (2%) v 1/60 (2%)). 9/15 (60%) of UC patients were in remission at switch over compared with 11/13 (85%) at the most recent infusion. There was no difference in the mean CRP before and after the switch in either CD patients (5.4 vs 5.6 p=0.32) or UC patients (3.1 vs 3.0 p=0.73). The mean patient questionnaire score data also remained unchanged before and after the switch (CD 4.4 vs 4.0 p=0.56, UC 4.9 vs 3.1 p=0.61). Five patients (3 CD, 2 UC) discontinued infliximab during the study period (3 switched biological class, 1 infusion reaction, 1 deep remission). There were no adverse safety signals with one infusion reaction (1/283 infusions) and the rate of mild adverse events unchanged from before and after the switch.

**Conclusion** Switching patients with IBD from originator infliximab to biosimilar infliximab appears both safe and effective. Wider uptake in the UK would result in considerable cost savings to the NHS.

**Disclosure of Interest** None Declared

## PTU-074 VEDOLIZUMAB IN PRIMARY AND AUTOIMMUNE SCLEROSING CHOLANGITIS ASSOCIATED INFLAMMATORY BOWEL DISEASE PRE AND POST LIVER TRANSPLANTATION: A CASE SERIES

[1]TY Lim*, [1]P Pavlidis, [1]T Pirani, [1]S Gulati, [2]M Samaan, [1]G Chung-Faye, [1]P Dubois, [2]P Irving, [1]B Hayee. *[1]Gastroenterology, King's College Hospital NHS Trust; [2]Gastroenterology, Guy's & St Thomas' Hospitals NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.159

**Introduction** Vedolizumab has been recently licensed by NICE for the management of moderate to severe inflammatory bowel disease (IBD). Currently, no data is available on the efficacy or safety of this treatment in the context of autoimmune liver disease (AILD) associated IBD, especially in those post-liver transplantation (LT).

**Methods** Case series from two UK, tertiary IBD centres. Patients with primary and autoimmune sclerosing cholangitis (PSC and AISC) associated IBD were identified from a prospectively kept database. Clinical activity was assessed using Harvey-Bradshaw Index (HBI) or Simple Clinical Colitis Activity Index (SCCAI) at baseline and end of follow up (response: drop in HBI/SCCAI >3, remission: HBI < 5, SCCAI <3). Quality of life (QoL) was assessed by the IBD-control-8 questionnaire. Continuous data are summarised as medians followed by range. Pre- and post-induction values were compared using the Wilcoxon test.

**Results** We identified 10 patients with ulcerative colitis (UC) and AILD. The median age was 33 years (19, 57), with a follow up of 6 months (3, 13). There were 6 patients with PSC and 4 with AISC [5 (50%) postLT)]. Clinical and/or endoscopically [Mayo score: 2 (2,3)] active disease was the indication for vedolizumab initiation in all patients with 7 (70%) having failed antiTNFα therapy before. Concomitant medication included: Tacrolimus: 4 (40%), Prednisolone: 7 (70%), MMF: 2 (20%), Azathioprine: 2 (20%) and Mercaptopurine: 1 (10%).

A clinical response was seen in 4/10 (40%) and one patient achieved clinical remission. Surgery was required for one patient during induction due to severe colitis. A drop in faecal calprotectin [667 (60, 1080) vs. 182 (20, 349), p = 0.06] and improvement in QoL were observed [5 (0, 13) vs. 13 (8, 16), p = 0.03]. There were no infectious or other identified adverse events associated to vedolizumab.

**Conclusion** Vedolizumab appears to be a safe treatment in IBD patients with AILD pre- and post-LT and appears to have reasonable efficacy even for difficult-to-treat luminal disease.

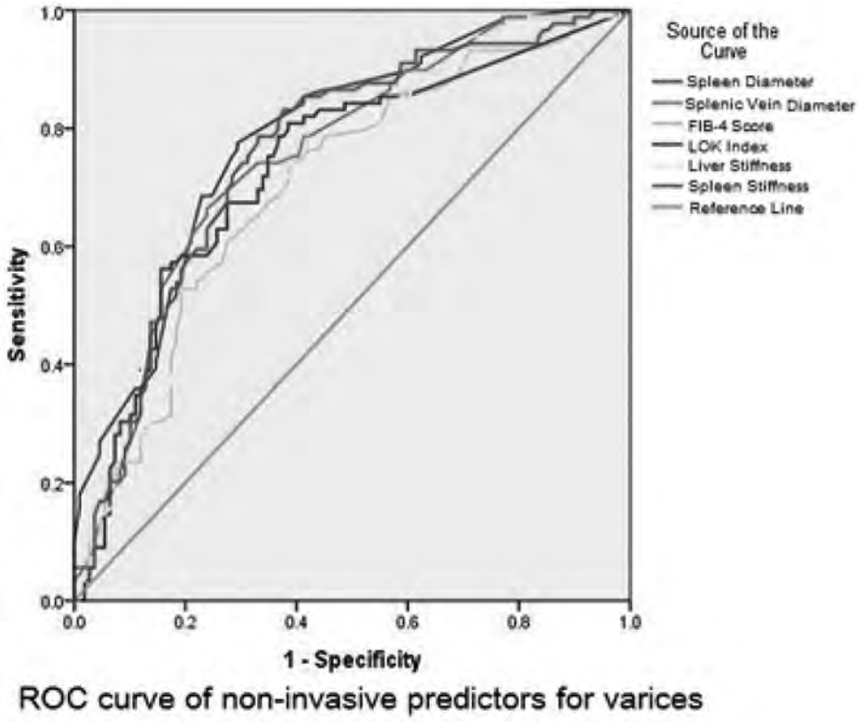
**Disclosure of Interest** None Declared

## PTU-075 LIVER AND SPLEEN STIFFNESS MEASUREMENTS BASED ON ACOUSTIC RADIATION FORCE IMPULSE ELASTOGRAPHY FOR NONINVASIVE ASSESSMENT OF ESOPHAGEAL VARICES IN HCV-RELATED ADVANCED FIBROSIS

MS Abdelbary, S Kamal, A Albuhairi, A Khairy*, N Zayed, A Yosry. *Endemic Medicine and Hepatplogy, Faculty of Medicine, Cairo University, Cairo, Egypt*

10.1136/gutjnl-2016-312388.160

**Introduction** Acoustic radiation force impulse elastography (ARFI) and Transient elastography (TE) are noninvasive methods of measuring liver stiffness (LS) and spleen stiffness (SS). They were proposed as non-invasive predictors of portal




**Abstract PTU-075 Figure 1**

hypertension in patients with HCV-related cirrhosis, a highly prevalent disease in Egypt. This is the first egyptian study aimed to validate the reliability of liver and spleen stiffness measured by ARFI and other non-invasive methods as non-invasive predictors for presence of esophageal varices (EV).

**Methods** This cross-sectional study included 200 patients (mean age was 54.9±8 years) with HCV-related advanced fibrosis (METAVIR score ≥F3) diagnosed by FibroScan® (≥ 9.5 kilopascal) including Child Turcotte Pugh class A/B liver cirrhosis; 82/18%. Demographic, clinical, biochemical, endoscopic and ultrasonographic data were collected. LOK index and FIB-4 score were calculated. Liver and spleen stiffness were assessed by 10 ARFI measurements, both in the liver and in the spleen; median values were calculated, expressed in m/sec. The accuracy of these diagnostic methods in diagnosing EV was evaluated on the basis of area under receiver operating characteristic (AUROC) curves.

**Results** Liver stiffness measurement by FibroScan® revealed F4 in 95.5% and esophageal varices were present in 90 patients (39 Grade I, 30 Grade II, 18 Grade III, 3 Grade IV). Spleen longitudinal diameter (cutoff value 14.85 cm), splenic vein diameter(cutoff value 7.9 mm); platelets to spleen diameter ratio (cutoff value 960), LOK index (cutoff value 0.62)and FIB-4 score (cutoff value 2.81) were the best parameters among all the ultrasonographic and biochemical parameters for prediction of esophageal varices; AUROC 0.79, 0.76, 0.76, 0.74 and 0.71, respectively. Using ARFI, SS had better diagnostic performance than LS with cutoff value of 3.25 m/sec and 2.61 m/sec; AUROC =0.76 and 0.70, respectively. Moreover, the calculation of simple prediction models including LS and/or SS improved the reliability of ARFI for the prediction of esophageal varices; (Spleen longitudinal diameter × Splenic vein diameter × SS) and (LS× SS / Platelets/Spleen diameter ratio) with AUROC = 0.85 and 0.83 respectively.

**Conclusion** Liver stiffness and spleen stiffness represent a non-invasive reliable tool for the prediction of clinically significant portal hypertension as evident by the presence of esophageal varices in chronic liver disease patients.

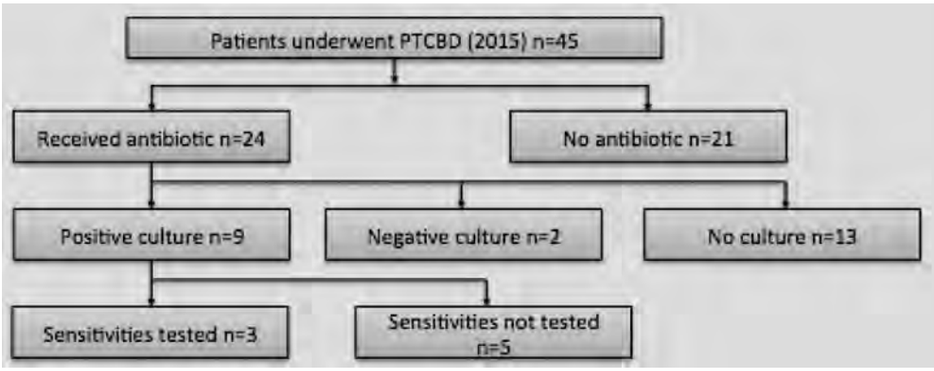
**Disclosure of Interest** M. Abdelbary: None Declared, S. Kamal, None Declared, A. Albuhairi: None Declared, A. Khairy Grant/research support from: ABBVIE, Speaker bureau with: Astra Zeneca, N. Zayed Grant/research support from: ABBVIE, A. Yosry Consultant for: Roche, Janssen, Gilead, MSD, Speaker bureau with: Roche, Janssen, Gilead, MSD

## PTU-076 BILE SAMPLING TO ENSURE APPROPRIATE ANTIBIOTIC TREATMENT OF INFECTION IN PATIENTS UNDERGOING PERCUTANEOUS TRANSHEPATIC CHOLANGIOGRAPHY AND BILIARY DRAINAGE

[1]A Thind*, [2]A Allouni, [2]R Uberoi. [1]*Oxford University*; [2]*John Radcliffe Hospital, Oxford, UK*

10.1136/gutjnl-2016-312388.161

**Introduction** Biliary sepsis and cholangitis are frequent complications of percutaneous transhepatic cholangiography and biliary drainage (PTCBD). Due to bacterial resistance, biliary infection is often difficult to eradicate. The aims of this audit were to evaluate the frequency of bile sample collection during PTCBD for culture and antibiotic sensitivity tests. Further, whether antibiotic management of biliary infections post-procedure are appropriate.




**Abstract PTU-076 Figure 1** Breakdown of the number of samples cultured and sensitivities tested in patients that received antibiotics for infection following PTCBD in 2015

**Methods** A retrospective review of electronic patient records were conducted for 138 patients that underwent PTCBD for management of malignant biliary obstruction from 2012–2015 in the Interventional Radiology departments of the Oxford University Hospitals NHS Trust. Due to limitations of the electronic system, drug histories were only accessible from the 45 patients that underwent PTCBD in 2015.

**Results** Of the 138 patients, 36% had samples cultured during the procedure. Of the positive bile samples, 61% had antibiotic sensitivities reported. Organisms identified included mixed faecal flora (33%), anaerobes (12%), aerobic gram-positive cocci (23%), aerobic gram-negative (14%), Pseudomonas (7%) and Candida (7%). In 2015, 53% that underwent PTCBD received antibiotics for biliary infection, of these, 46% had bile cultures and of the positive samples, 33% were tested for antibiotic sensitivity. Antibiotics administered included: amoxicillin/clavulanic acid (30%), metronidazole (33%), gentamycin (14%), piperacillin/tazobactam (9%), ceftriaxone (9%), ciprofloxacin (5%).

**Conclusion** Thus, antibiotics to treat biliary infection following PTCBD are often prescribed without knowledge of the infective organism or its resistance and therefore may not be appropriate. Additionally, many of the treatments administered do not provide complete coverage of organisms identified in bile, notably Pseudomonas and Candida. Bile sample collection during PTCBD should become a standard procedure to delineate infective organisms and drug susceptibilities, hence driving a more targeted treatment in the event of biliary infection post-procedure, which may reduce mortality and costs associated with bacterial resistance.

**Disclosure of Interest** None Declared

## PTU-077 INCREASED LONG-TERM CANCER RISK IN AUTOIMMUNE HEPATITIS (AIH): RELATION TO IMMUNOSUPPRESSIVE DRUG TREATMENT

[1,2]BS Hoeroldt*, [1]D Gleeson, [1]K Shephard, [1]N Farquarson, [1]E MacFarlane, [1]M Karajeh, [2]J Poole. *[1]Hepatology, Sheffield Teaching Hospitals; [2]Cancer Registry for Yorkshire and the Humber, Cancer Registry, Sheffield, UK*

10.1136/gutjnl-2016-312388.162

### Introduction

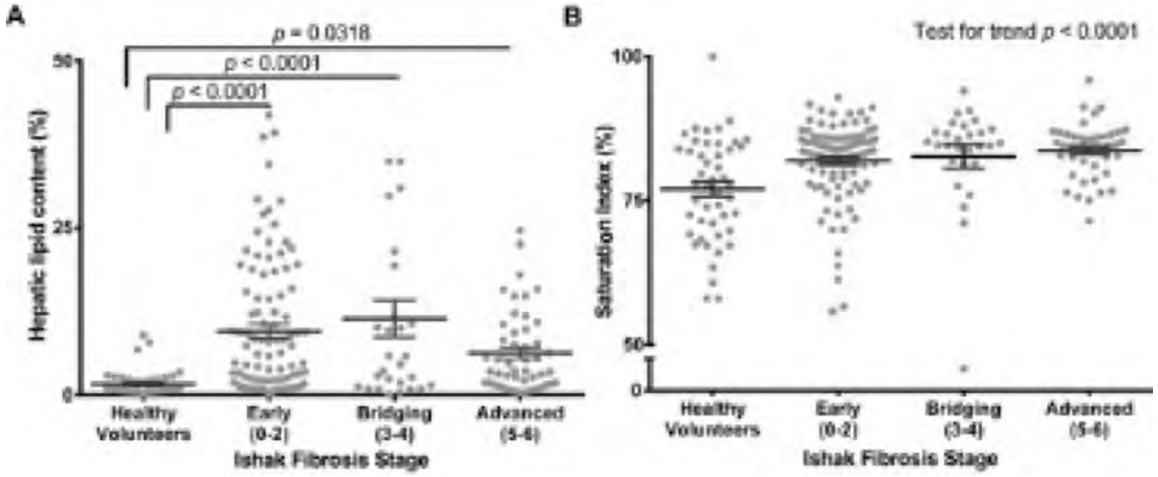
**Background** Increased rates of hepatocellular (HCC) and recently, of extra-hepatic cancer have been reported in Autoimmune Hepatitis (AIH). Increased cancer rates in inflammatory bowel disease and following organ transplant have been linked to immunosuppressive (IS) drug therapy; this association has not been assessed in AIH. **Aim**. Evaluation relationship of cancer risk to non-steroid IS therapy in AIH

**Methods** 241 patients (197 F, age at diagnosis (median (range) 56 (2.5–87 yr), presenting 1971–2007 with AIH (1999 International Group criteria) and followed for $\geq$6 months. Cancers (ICD-10 code starting with C) were captured by clinical record review and individually linked to data from the English National Cancer Registry. In cases of discrepancy, records were re-checked and a consensus decision made. Patients were censored at death, liver transplant, changed diagnosis to PBC, cessation of follow up, or on 1/1/2014. We excluded cancers diagnosed before or within 6 months of AIH diagnosis or >30 days after follow-up ceased. Standardised incidence ratios (SIR; first cancer only) were calculated, relative to age-gender adjusted UK population rates. For non-melanoma skin cancer (NMSC), we considered only the years 2000–13, as there was under-reporting of NMSC to the registry prior to this. We estimated (pre-cancer) duration and cumulative dose of azathioprine (received by 208 patients) and total duration of all (non-steroid only) IS drug therapy.

**Results** Follow up was 12 (0.5–43 yr): total 3134 patient-years. There was development of (a) HCC in 10 patients (all with cirrhosis): SIR (95% CI) 41 (20–75); (b) lympho-proliferative cancer in 6 patients: SIR 2.94 (1.08–6.4: (c) $\geq$1 NMSC in 15 patients (2000–13): SIR 2.95 (1.65–4.87). SIR for all other extra-hepatic cancers remained above unity: 1.51 (1.07–2.07). Using a competing risks regression model, age-adjusted all-cancer risk was associated with duration (Hazard ratio (HR) 1.10 (1.01–1.20) and with cumulative dose (HR 1.07 (1.00–1.15) of azathioprine and with total duration of non-steroid IS therapy (HR 1.07 (1.01–1.14). Compared to those receiving non-steroid IS for <0.25 yr, age-adjusted all-cancer HR was 2.54 (1.13–5.72) and 8.71 (3.55–21.4) in those receiving IS for 0.25–10 yr and for >10 yr respectively.

**Conclusion** Patients with AIH have increased risk of hepatic and extra-hepatic cancer, including lymphoproliferative and NMSC. This risk is associated with duration of non-steroid IS drug therapy.

**Disclosure of Interest** None Declared




**Abstract PTU-0078 Figure 1**

## PTU-078 LIVER FIBROSIS SEVERITY IS ASSOCIATED WITH HEPATIC LIPID COMPOSITION AS ASSESSED BY PROTON MAGNETIC RESONANCE SPECTROSCOPY

[1]C-M Tang*, [2]R Banerjee, [3]J Collier, [4]J Booth, [5]LM Wang, [5]K Fleming, [1]S Neubauer, [3,6]E Barnes, [3]J Cobbold, [1,3]M Pavlides. *[1]Oxford Centre for Clinical Magnetic Resonance Research, University of Oxford; [2]Perspectum Diagnostics; [3]Transational Gastroenterology Unit, University of Oxford, Oxford; [4]Royal Berkshire Hospital, Reading; [5]Histopathology, Oxford University Hospitals NHS Trust; [6]Peter Medawar Building, University of Oxford, Oxford, UK*

10.1136/gutjnl-2016-312388.163

**Introduction** Hepatic steatosis is an important co-factor of liver fibrosis progression and is becoming increasingly prevalent. The aim of this study was to evaluate the relationship of liver fibrosis with hepatic lipid composition assessed using proton magnetic resonance spectroscopy ($^1$ H MRS).

**Methods** Patients (n = 168) were recruited to have $^1$ H-MRS prior to clinically indicated liver biopsy. A control group of healthy volunteers (n = 49) was also included. MR spectra were analysed for hepatic lipid content (HLC; percentage of fat / water signal), and for the saturation index (SI; percentage of saturated / total lipid content). Fibrosis was staged histologically according to the Ishak staging system and categorised as early (F0-2), bridging (F3-4) and advanced (F5-6). Steatosis was quantified as a percentage of hepatocytes containing lipid droplets.

**Results** The mean patient age was 51.9±12.19, and patients had a mean BMI of 29.9±7.40. Most patients were men (n = 104, 61.9%), and the most common liver disease aetiologies were NAFLD (n = 79, 47.0%) and viral hepatitis (n = 50, 29.8%). HLC measured using $^1$ H MRS correlated strongly with the histological fat percentage. ($r^2$=0.73, p < 0.0001). The mean HLC was higher in patients with early (9.6%, $p$ < 0.0001), bridging (11.5%, $p$ < 0.0001), and advanced fibrosis (6.3%, p = 0.0318) as compared to healthy controls (1.7%; **Figure 1 A)**. The mean SI increased progressively from healthy controls (76.9%) to early (81.9%), bridging (82.6%), and advanced (83.7%) fibrosis (test for trend, $p$ < 0.0001) **(Figure 1 B)**. There was no correlation between HLC, SI, and patient body mass index (BMI).

**Conclusion** The study demonstrates that in vivo analysis of hepatic lipid composition is feasible using $^1$ H MRS. The results also suggest that there may be a pathological relationship between saturated fat and fibrosis, as there is a significant trend for higher content of saturated fat in more advanced stages of fibrosis.

**Disclosure of Interest** C.-M. Tang: None Declared, R. Banerjee Shareholder of: Perspectum Diagnostics, Employee of: Perspectum Diagnostics, Conflict with: Patent applications in the field of non-invasive assessment of liver disease using magnetic resonance imaging techniques, J. Collier: None Declared, J. Booth: None Declared, L. M. Wang: None Declared, K. Fleming: None Declared, S. Neubauer Shareholder of: Perspectum Diagnostics, Conflict with: On the board of directors for Perspectum Diagnostics, and has filed patent applications in the field of non-invasive assessment of liver disease using magnetic resonance imaging techniques, E. Barnes Shareholder of: Perspectum Diagnostics, Conflict with: Patent applications in the field of non-invasive assessment of liver disease using magnetic resonance imaging techniques, J. Cobbold: None Declared, M. Pavlides Shareholder of: Perspectum Diagnostics, Conflict with: Patent applications in the field of non-invasive assessment of liver disease using magnetic resonance imaging techniques

## PTU-079 EFFECT OF INFLAMMATION ON LIVER STIFFNESS IN ACTIVE AUTOIMMUNE LIVER DISEASE: A SIMULTANEOUS BIOPSY-CONTROLLED STUDY USING ACOUSTIC RADIATION FORCE IMPULSE (ARFI) ELASTOGRAPHY

[1]DI Sherman*, [1]W Fateen, [2]M Jagtiani Sangwaiya, [3]P Tadrous, [2]P Shorvon. *[1]Gastroenterology; [2]Radiology, Central Middlesex Hospital, London Northwest Healthcare NHS Trust; [3]Cellular Pathology, Northwick Park & St Marks Hospitals, London Northwest Healthcare NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.164

**Introduction** ARFI elastography (virtual touch quantification, VTq™) is a well validated technique for non-invasive assessment of liver fibrosis in viral hepatitis. The interpretation of shear velocity readings in active autoimmune liver disease (AILD) may be affected by a number of factors. However, few studies have specifically examined the effect of inflammation on liver stiffness (LS) in this group. We report the results of a preliminary study in which LS and histology have been

sampled simultaneously from the same region of liver tissue in a large cohort with active AILD.

**Methods** Our local database of 101 patients with AILD (63 autoimmune hepatitis AICH +/- overlap, 38 cholestatic-PBC or PSC) was investigated. LS estimation by ARFI was performed using a standard validated protocol by a single operator. Biopsies were performed from the same region of liver using an 18 G Biopince™ needle, immediately after LS measurement. Clinical, biochemical, ultrasonic and histopathological data were collated retrospectively. ARFI/histological variance (AHV) was defined as a difference of more than 1 Metavir or 2 Ishak stages from that predicted by ARFI, according to standard calibration.[1]

**Results** Sixty one ARFI + liver biopsies performed at the same session were identified out of a total of 164 ARFI and 114 liver biopsies. Patients included group 1: 37 active AICH (diagnosis/flare on therapy); group 2: 7 AICH remission; and group 3: 17 cholestatic liver disease. Co-pathology was seen in 8. Standard ARFI quality measures were validated in 93%. Mean ARFI shear velocities were significantly higher in group 1 compared with 2 and 3–2.41, 1.29 and 1.64 m/sec, respectively ($p = 0.001$). AHV occurred in 44.1, 28.6 and 29.4%, AHV prevalence was 41% overall, with 100% in group 1 and 88% overall reflecting overestimation of fibrosis. Across all groups, Ishak necro-inflammatory grade was strongly correlated with both ARFI shear velocity ($r = 0.58$,$p < 0.0001$) and also AHV ($r = 0.35$, $p = 0.006$) by Spearman analysis. ALT showed a weaker correlation with AHV ($r = 0.25$, $p = 0.06$).

**Conclusion** These data show that variance between ARFI shear velocity and histology is common in active AILD, usually overestimating predicted fibrosis stage. Strong positive correlations were seen between histological inflammatory grade with both shear velocity and AHV, suggesting that inflammation is implicated in the observed increase in LS in this group. Confirmation of this association in further studies would suggest a potential role for ARFI elastography in monitoring resolution of inflammation during treatment of AILD.

## REFERENCE

1 D. Sherman, *et al*. *J Hepatol* 2014;**60**(Suppl 1):S413.

**Disclosure of Interest** None Declared

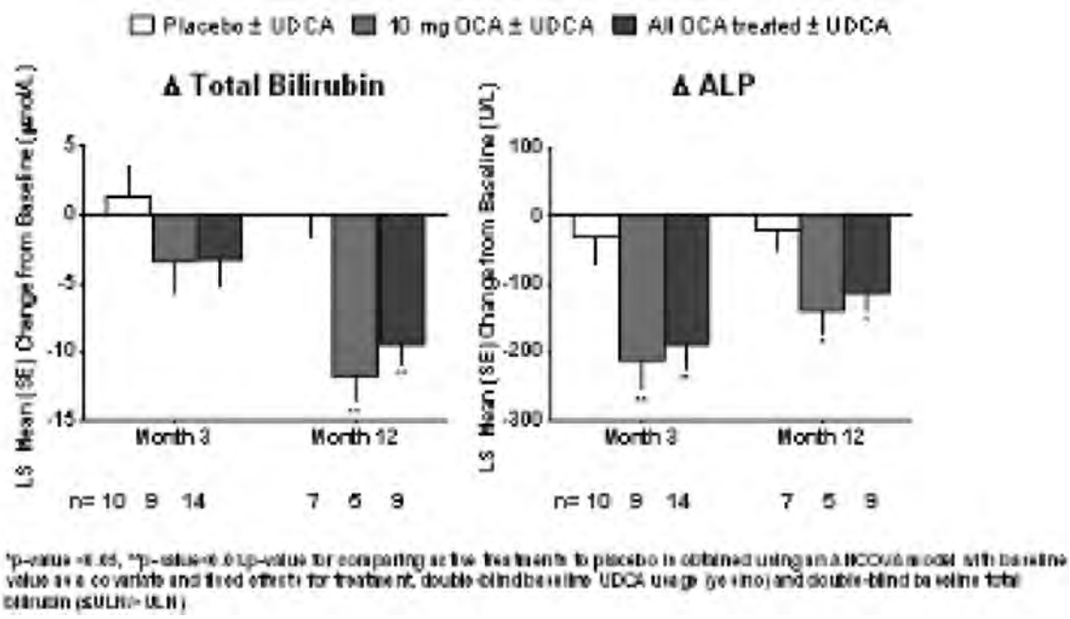
## PTU-080 EFFICACY AND SAFETY OF OBETICHOLIC ACID (OCA) IN PBC PATIENTS WITH ADVANCED DISEASE AS EVIDENCED BY ABNORMAL BILIRUBIN: AN INTEGRATED ANALYSIS

[1]D Jones*, [2]R Chapman, [3]D Thorburn, [4]JF Dillon, [5]SD Ryder, [6]G Hirschfield, [7]G Mells, [8]M Carbone, [9]R Pencek, [9]R Hooshmand-Rad, [9]D Shapiro. [1]*Institute of Cellular Medicine, Newcastle University Medical School, Newcastle Upon Tyne*; [2]*John Radcliffe Hospital, Headington, Oxford*; [3]*Sheila Sherlock Liver Centre and UCL Institute of Liver and Digestive Health, Royal Free NHS Foundation Trust, London*; [4]*Ninewells Hospital and Medical School, University of Dundee, Dundee*; [5]*National Institute for Health Research Nottingham Digestive Diseases Biomedical Research Unit, Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham*; [6]*University of Birmingham, Birmingham*; [7]*Division of Gastroenterology and Hepatology, Department of Medicine, University of Cambridge*; [8]*Division of Gastroenterology and Hepatology, Department of Medicine, Addenbrooke's Hospital, Cambridge, UK*; [9]*Intercept Pharmaceuticals, Inc., San Diego, United States*

10.1136/gutjnl-2016-312388.165

**Introduction** ALP and bilirubin are both strongly associated with need for liver transplant or death in patients with primary biliary cirrhosis (PBC, also known as primary biliary cholangitis). Elevation of ALP precedes elevations in bilirubin, which is of particular concern since bilirubin is the major predictor of adverse disease outcome. Obeticholic acid (OCA, 6 ethyl chenodeoxycholic acid) is a selective potent FXR agonist developed for treatment of PBC. Given the particular concern in patients with abnormal bilirubin, the intent of this analysis was to evaluate the efficacy and safety of OCA in patients with an elevated bilirubin.

**Methods** The clinical development of OCA in PBC has included three randomised, double-blind, placebo-controlled studies (2 Phase 2 trials and 1 Phase 3). Abnormal bilirubin




*p-value <0.05, **p-value<0.01 p-value for comparing active treatments to placebo is obtained using an ANCOVA model with baseline value as a covariate and fixed effects for treatment, double-blind baseline UDCA usage (yes/no) and double-blind baseline total bilirubin (≤ULN/> ULN)

**Abstract PTU-080 Figure 1**

was not a common feature in the individual studies, therefore, data from all three studies was pooled. All studies included key biochemical and clinical assessments at 3 months of OCA therapy; data was also available for a subset of subjects at 12 months.

**Results** ALP was markedly elevated at baseline in patients with abnormal bilirubin and OCA treatment was associated with significant ALP reductions. Bilirubin levels increased in the placebo arm and decreased with OCA, although the difference was not statistically significant over this short 3 month timeframe. At 12 months there was a significant reduction in bilirubin vs. placebo. Consistent with the overall population, pruritus was the most common event in placebo and OCA-treated patients. The safety profile of OCA was consistent with the overall development program. Hepatic disorders (eg, increased bilirubin, PBC, and postal hypertension) and serious adverse events increased in incidence with abnormal bilirubin levels but were likely due to progression of the underlying disease.

**Conclusion** OCA treatment in patients with advancing disease, as evidenced by abnormal bilirubin, was associated with significant improvements in ALP and bilirubin, parameters shown to correlate with improved clinical outcome.

**Disclosure of Interest** None Declared

## PTU-081 CD151 IN CHRONIC LIVER DISEASE AND HCC - A NEW PLAYER IN T CELL RECRUITMENT TO THE LIVER

JCR Wadkin*, DA Patten, SK Kamarajah, C Weston, S Shetty. *Centre for Liver Research, Institute of Immunology and Immunotherapy, University of Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.166

**Introduction** Inflammation of the liver drives the onset and progression of chronic liver diseases whilst fostering an environment where the formation of neoplastic tumours such as hepatocellular carcinomas (HCC) can occur. A key step in this process is leukocyte recruitment via hepatic sinusoidal endothelial cells. CD151, a member of the tetraspanin family, has been shown to regulate heterotypic partner proteins involved in leukocyte recruitment and therefore an understanding of the expression and function of CD151 in the liver could identify new organ-specific anti-inflammatory therapies.

**Methods** We used immunohistochemistry, dual colour immunofluorescence co-localisation studies, qRT-PCR and western blotting to determine the cell specific expression of CD151 in pathological control liver, chronic liver diseases and tissue taken from patients with HCC. Cell-based ELISA, qRT-PCR and western blotting were then used to determine the regulation of CD151 expression by hepatic sinusoidal endothelial cells (HSEC) following growth factor and cytokine treatment to mimic inflammatory and tumourigenic environments. Flow-based adhesion assays were used to study the role of CD151 in the adhesion of Jurkat cells, a human T cell line, to HSEC monolayers with subsequent immunofluorescence analysis.

**Results** Increased CD151 protein expression was associated with areas of fibrosis and neovascularisation, particularly in parenchymal liver disease such as alcoholic and non-alcoholic fatty liver disease as well as in HCC. CD151 was highly expressed by HSEC both within liver tissue and *in vitro*. The expression of CD151 in HSEC was upregulated by stimulation with tumour cell line supernatant or a combination of hepatocyte and vascular endothelial growth factors. We found CD151 molecules clustering around adherent Jurkat cells following capture from flow by HSEC monolayers. Function-blocking antibodies to CD151 significantly reduced adherence of Jurkat under conditions of shear stress.

**Conclusion** We demonstrate for the first time the expression of CD151 on human sinusoidal endothelial cells and that this molecule is expressed in neovessels in chronic liver disease and HCC. We also demonstrate that CD151 is upregulated by pro-tumourigenic factors on HSEC and functionally plays a role in T cell adhesion to HSEC. These findings further our understanding of liver inflammation and lymphocyte recruitment to the organ, in both chronic and malignant disease, and could form the basis of a potential therapeutic target.

**Disclosure of Interest** None Declared

## PTU-082 CLINICAL OUTCOMES AFTER TRANSPLANTATION FOR PARACETAMOL OVERDOSE: EVALUATION OF PREDICTORS OF OUTCOME, ADHERENCE AND PRE-TRANSPLANT PSYCHIATRIC HISTORY

[1]K Arndtz*, [2]J Hodson, [1]A Holt. *[1]Liver Medicine; [2]Statistics, University Hospital Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.167

**Introduction** Paracetamol hepatoxicity is the most common cause of fulminant hepatic failure in the UK [1] and NHSBT criteria for super-urgent liver transplantation in these patients are well described.[2] While potentially life-saving, transplanted patients must live with the consequences of immunosuppression and life-long follow up. Patients transplanted for paracetamol overdose have an increased risk of post-transplant death compared to patients transplanted for other indications, particularly due to suicide, trauma & non-adherence to treatment.[3]Outcome after transplantation may be adversely affected by persisting physical/psychological/psychiatric/social & addiction circumstances that may make adherence unmanageable, even with full social support. Given the shortage of organ donors, rationing is inevitable and not all patients who fulfil the NHSBT criteria are listed for transplantation, despite a predicted poor/fatal outcome without. There is currently no clear way of pre-operatively predicting the risk of poor outcomes after transplant for paracetamol overdose. Our aim was to identify factors in the presenting history that could suggest that these patients might be unlikely to fully benefit from undergoing liver transplantation.

**Methods** We retrospectively analysed all patients transplanted for fulminant liver failure due to paracetamol overdose at University Hospitals Birmingham from 2000–2014, using standard clinical and transplant databases. Survival and graft related outcomes were assessed using Kaplan-Meier survival curves, with log-rank tests used to make comparisons across factors. Patients with DNAs and non-compliance were then compared to compliant patients using Mann-Whitney tests, for continuous variables, and Fisher's exact test, for categorical variables.

**Results** 59 patients were transplanted for POD during this period with median follow up of 6 years, mean age of 35 (range 17–57 years). 59% of patients were female. 57% of patients had a pre-existing psychiatric diagnosis however only 36% had a history of previous overdose. 12 patients died before discharge from hospital (main causes of death were multi-organ failure & sepsis) with a further 6 patients dying after initial discharge (all associated with non-compliance and

33% were due to suicide). Overall 5 year survival was 69%, which rose to 87% if the patient survived to discharge from hospital. Having a history of domestic abuse was associated with a higher risk of death (p = 0.001). Of 36 patients under long-term follow up at our centre, 15 have had at least one episode of biopsy proven rejection (41.7%) with a 5 year rejection rate of 46%. To date this has resulted in two patient deaths and two re-grafts. Patients aged 16–35 were significantly more likely to experience rejection than the older cohort (p = 0.04). 73% of patients with rejection had a history of non-compliance with medication compared to 27% in compliant patients (p = 0.031). In the 2007–2015 patient cohort, both staggered and mixed overdosed were found to give significantly increased risk of rejection (p = 0.027 and 0.011 respectively).

**Conclusion** Patients transplanted for paracetamol overdose have poorer long term survival and graft function than other transplant patients. There remains no clear way of predicting post-operative mortality/graft dysfunction from pre-admission factors. However, domestic abuse may be associated with increased patient mortality and patients under 35, staggered and mixed overdoses are at higher risk of graft rejection. These results are unlikely to change the decision to list for transplantation, but could help identify those at higher risk post-discharge and aid in tailoring follow up.

## REFERENCES


1 Riordan S, Williams R. Cause and prognosis in acute liver failure. *Liver Transpl* 2003;**5**(1):86–89.

2 Mitchell I, Bihari D, Chang R, Wendon J, Williams R. Earlier Identification of patients at risk from acetominophen-induced acute liver failure. *Cri Care Med* 1998;**26**(2):279–284.

3 Germani G, Theocharidou E, Adam R, Karam V, Wendon J, *et al*. Liver transplantation for acute liver failure in Europe: outcomes over 20 years from the ELTR database. *J Hepatol* 2012;**57**:288–296.


**Disclosure of Interest** None Declared

## PTU-083 LONG-TERM FOLLOW-UP OF PATIENTS WITH AUTOIMMUNE HEPATITIS AFTER WITHDRAWAL OF IMMUNOSUPPRESSANT THERAPY


[1]L Harrison*, [2]J Adams-Nye, [2]E Lawrence, [3]E McFarlane, [3]B Hoeroldt, [3]D Gleeson. *[1]Liver Unit, Sheffield Teaching Hospital's NHS Foundation Trust and Division of Infection, Immunity and Cardiovascular Disease, University of Sheffield; [2]Medicine, University of Sheffield; [3]Liver Unit, Sheffield Teaching Hospital's NHS Foundation Trust, Sheffield, UK*


10.1136/gutjnl-2016-312388.168

**Introduction** If immunosuppressant therapy (IST) is withdrawn in patients with autoimmune hepatitis (AIH) when remission is achieved, 50–70% will have a disease relapse within 12 months. Thus, many patients receive long-term maintenance IST. However, IST has potential side effects, including an increased cancer risk. Recent studies suggest a lower AIH relapse rate if IST is withdrawn at a later stage in the disease. Data are lacking in regard to long-term outcome following IST withdrawal.

**Methods** Retrospective audit of long-term outcome of AIH following withdrawal of IST. A total of 282 patients with definite or probable AIH by International AIH Group criteria, had presented to our Unit between 1971–2015 and had achieved normalisation of serum ALT within 12 months of starting IST (prednisolone plus azathioprine, or mycophenolate if azathioprine intolerant). From these, we found 25 patients in whom all IST was subsequently discontinued. We assessed outcome in these patients, in comparison to those who continued IST. Follow-up was until last serum ALT for calculating relapse rate and until death or last known to be alive for calculating survival rates.

**Results** The 25 patients (21 female, age at diagnosis 50 (8–68) years) had been on IST before withdrawal for 3.9 (0.1–22.4) years. Five had cirrhosis at presentation. All patients had normal serum ALT and globulins at time of withdrawal except one patient with acute pancreatitis. Reasons for IS withdrawal were: cancer (6), infections (3), side effects (4), frailty (6) patient choice (6), doubt about diagnosis (subsequently resolved) (1).

Relapses occurred in 7 patients (28%) after 1.6 (0.5–9.6) years. Relapse rates were 15%, 20% and 28% after 2, 5 and 10 years respectively. All patients achieved re-normalisation of serum ALT within 3 months of re-starting therapy (prednisolone 10–40 mg/day) plus (in 5 patients) azathioprine or mycophenolate, subsequently continued as maintenance therapy. Over follow up (from IST withdrawal) of 4.2 (1.2–25.1 years), no patient developed liver decompensation, variceal bleeding or hepatocellular carcinoma. Six patients died after 4 (3.3–15.9) years; none due to liver disease or following AIH relapse. Patients stopping IST (n = 25) had, compared to those who continued IST (n = 257) higher 10- and 20 year survival (99±4% and 79±9% respectively vs 78±3% and 48 ±4% p = 0.021).

**Conclusion** In patients with AIH who achieve remission a trial of withdrawal of IS therapy is associated with (a) a lower disease relapse rate than previously reported, (b) no liver adverse events and (c) no reduction in long-term survival compared with patients who continue on long-term IS therapy.

**Disclosure of Interest** None Declared

## PTU-084 DECOMPENSATED CIRRHOSIS IN THE ACUTE MEDICAL UNIT – A NEGLECTED GROUP?


Y Gao-Du, G Abouda, L Corless*. *Gastroenterology, Hull and East Yorkshire Hospitals NHS Trust, Hull, UK*


10.1136/gutjnl-2016-312388.169

**Introduction** Decompensated chronic liver disease (DCLD) is a medical emergency with high mortality, usually managed by non-specialists in emergency (ED) and acute medical (AMU) departments in critical early stages.

A recently introduced BSG/BASL care bundle[1] (CB) highlights crucial investigations, which can influence outcome if performed early (<6 hr).

We audited performance against CB recommendations and impact on outcome.

**Methods** Data was reviewed retrospectively using electronic records. Adherence to 4 key CB investigations (blood tests/cultures, ultrasound (US) and ascitic tap in <6 hr) was logged, plus arrival/admission time and outcome (length of stay – LOS; readmission rate, mortality).

**Results** All patients admitted over 3 months with DCLD were included (n = 25 patients/33 total AMU admissions). Ascites (51.5%) and jaundice (24.2%) were the commonest presenting complaints. Most (57.6%) had Childs C disease (Childs A 6%; B 36.4%). LOS was variable (mean 11 days; median 7 [1–60]), and 7 people were readmitted within 1 month. In-

patient mortality was 16% (12.1% of admissions) in keeping with national data, and 80% were alive at 3 months.

No-one had all 4 investigations performed within 6 hr of admission. 81.8% had routine blood tests performed (usually by ED), but only 15.1% had blood cultures, despite early identification of sepsis being a critical aspect of DCLD care. All cultures were taken for other reasons (e.g. cellulitis, pyrexia/rigour) suggesting sepsis risk in DCLD is under-appreciated by non-specialists.

39.4% had US requested within 6 hr and there was a lack of awareness of hepatoma/venous thrombosis as DCLD precipitants.

Just 24.1% of those with ascites had a diagnostic tap within 6 hr, with most not performed until under gastroenterology care. Data suggests this was due to inexperience of the admitting doctor, both in understanding importance of excluding/treating sepsis early, and technical capability to perform the test.

Slow patient flow added considerable delay to assessment/investigation, with 35% arriving in AMU > 6 hr post ED arrival (mean 4.5; median 5.5 [0.3–16 hr]), closing the window of opportunity for early intervention. There was a non-significant trend towards long waits in those who subsequently died (mean 7.5 hr; median 5.9 [3.6–14.5]), but no correlation between delay and LOS.

**Conclusion** Patients with DCLD were under-investigated and experienced considerable delay in assessment and investigation, possibly impacting mortality.

CB awareness was limited, and we identified failure of non-specialists to appreciate causes of DCLD and importance of rapid and robust assessment, compounded by delays in patient flow.

We arranged talks for AMU staff on DCLD, and have commenced enhanced gastroenterology in-reach for ED/AMU, to identify and treat patients more rapidly.

## REFERENCE

1 http://www.bsg.org.uk/images/stories/docs/decomp_cirrhosis_care_bundle.doc

**Disclosure of Interest** None Declared

## PTU-085 A NOTCH1-DRIVEN SECRETOME SWITCH MODULATES IMMUNE SURVEILLANCE IN RAS-INDUCED SENESCENCE

[1]M Hoare*, [1]Y Ito, [2]T-W Kang, [1]S Menon, [1]R Salama, [3]L Zender, [1]M Narita. *[1]Cambridge Institute, Cancer Research UK, Cambridge, UK; [2]Division of Translational Gastrointestinal Oncology, Dept. of Internal Medicine I, University Hospital Tuebingen, Tuebingen, Germany; [3]Division of Translational Gastrointestinal Oncology, Dept. of Internal Medicine I, University Hospital Tuebingen, Cambridge, UK*

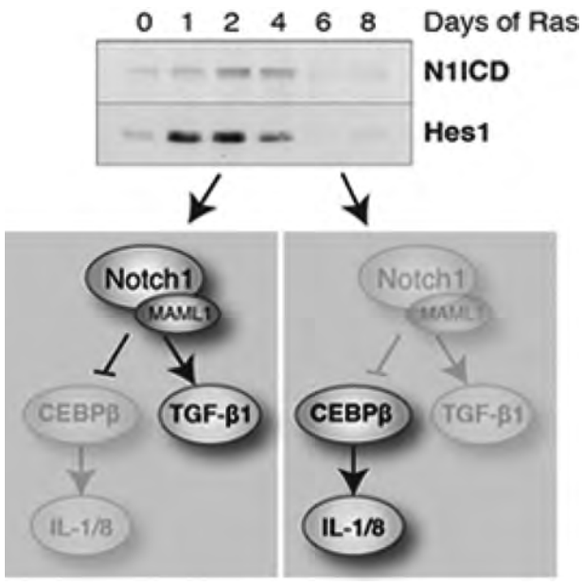
10.1136/gutjnl-2016-312388.170

**Introduction** Oncogene-induced senescence (OIS) is an intrinsic tumour suppressor mechanism, but its impact on tumorigenesis is largely dependent on the nature of the senescence-associated secretory phenotype (SASP). Major components of the SASP include TGFβ1 and pro-inflammatory cytokines, such as IL1, IL6, and IL8, that have pleiotropic context-dependent effects.

**Methods** We utilised the well validated ER:Ras$^{G12V}$ IMR90 HDF in vitro model which undergo Ras-induced senescence (RIS) with 4 OHT. Genetic manipulation was achieved through retroviral gene transfer; transcriptional profiling by mRNA-seq; validation through qPCR and immunoblotting. In vivo hepatocyte senescence was achieved through hydrodynamic tail-vein delivery of NRAS$^{G12V}$-containing transposons.

**Results** We have demonstrated that NOTCH1, a highly conserved receptor is up-regulated in RIS. In contrast to the up-regulation of NOTCH1, downstream signalling is dynamically regulated: the cleaved, active intracellular domain of NOTCH1 (N1ICD) and NOTCH-target genes were transiently up-regulated at an early phase of RIS, but down-regulated at full senescence. The dynamic expression patterns of N1ICD and TGF-β1 expression were nearly identical, and inversely correlated with the cytokines, IL1 and IL8. Inhibition of NOTCH1 signalling, through expression of a dominant-negative form of the NOTCH1 binding partner MAML1, led to a reduction in TGF-β1, but increased IL1 and IL8 expression during RIS. In addition, ectopic restoration of N1ICD in established RIS cells drove reciprocal secretome changes with reduced IL1 and IL8 and increased TGF-β1, suggesting NOTCH1 signalling plays a critical role in secretome switching.

Utilising an NRAS-drive hepatocyte senescence model, NOTCH1 was upregulated during RIS in vivo. Previously it has been shown that the SASP in RIS is critical for the immune-mediated clearance of senescent hepatocytes. Consistent with the enhancement of the pro-inflammatory secretome, co-delivery of the NOTCH inhibitor dnMAML1 with RAS, accelerated the infiltration of CD3+ T-cells into the liver and promoted the clearance of senescent hepatocytes. Restoration of N1ICD in hepatocyte RIS led to senescence bypass and tumour formation.




**Abstract PTU-085 Figure 1**

**Conclusion** The transition to RIS is correlated with a NOTCH1-mediated switch from a TGFβ-rich secretome to a proinflammatory secretome. Promotion of this proinflammatory secretome, through NOTCH inhibition enhances immune surveillance of senescent hepatocytes. This raises the possibility of therapeutically promoting the clearance of senescent cells in vivo.

**Disclosure of Interest** None Declared

## PTU-086 SUBOPTIMAL PERFORMANCE OF SHEARWAVE ELASTOGRAPHY (ELASTPQ) FOR PREDICTING ADVANCED FIBROSIS IN A NAFLD ENRICHED COHORT

[1]R Bevan*, [2]B Stenberg, [1]M Madhra, [2]A McNeill, [1]S McPherson. [1]*Hepatology*; [2]*Radiology, Freeman Hospital, Newcastle, UK*

10.1136/gutjnl-2016-312388.171

**Introduction** It is important to identify those at risk of advanced liver fibrosis in order to stratify care. Histological assessment by liver biopsy (LBx) is the gold standard for staging liver fibrosis, but is impractical for widespread use. Several non-invasive measures of fibrosis, such as transient elastography and simple markers (FIB4 score and AST/ALT ratio (AAR)) have shown promise as alternatives to LBx. Shearwave elastography (SWE), assessed using acoustic radiation force impulses (ARFI), offers a potential alternative technique that can be performed on a conventional ultrasound machine. To date, few studies have evaluated the Phillips ElastPQ system, particularly in patients with non-alcoholic fatty liver disease (NAFLD). Our aim was to evaluate the accuracy of SWE using ElastPQ compared with liver biopsy in a "real world" cohort.

**Methods** Patients undergoing LBx between Sept 2014-Dec 2015 who had SWE conducted at the time of LBx were included. Clinical and demographic data were collected from the time of LBx. The AAR and FIB4 scores were calculated. Liver fibrosis was staged from 0–4; stage 3–4 was considered advanced fibrosis. SWE was conducted by experienced sonographers. SWE values (m/s) were defined as normal (<1.21), fibrotic (1.21–1.55) or advanced fibrosis/cirrhotic (>1.55).

**Results** 92 patients were identified (52% male; median age 51 yrs, range 20–90). LBx diagnoses were: 57 NAFLD, 10 AIH, 9 PBC, 6 HBV/HCV and 10 other. Median biopsy size was 20 mm (IQR 16.2–24). Overall, there was significant correlation between SWE and fibrosis stage ($r = 0.44$ $p < 0.001$) and the FIB4 score ($r = 0.32$ $p = 0.004$). Table 1 shows a Cross-tabulation of SWE fibrosis categories against fibrosis stage. Patients who were correctly classified with SWE are shown in bold. Worryingly, 6 patients (24%) with advanced fibrosis had a "normal" SWE reading. For all patients, the area under the receiver operator curve (AUROC) for a diagnosis of advanced fibrosis was 0.73 for SWE (sensitivity[sen] 46%, specificity[sp] 78% at 1.55 m/s), 0.81 for the FIB4 score (sen 85%, sp 65% at 1.3) and 0.8 for the AAR (sen 76%, sp 73% at 0.8). When the 57 NAFLD patients were analysed separately the AUROCs for advanced fibrosis were 0.72, 0.84 and 0.83 for SWE, FIB4 and AAR respectively.

**Abstract PTU-086 Table 1** SWE categories against fibrosis stage

| | Fibrosis stage | | | | | Total |
|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | |
| Normal (<1.21) | **3** | **12** | 4 | 6 | 0 | 25 |
| Fibrosis (1.21-.155) | 1 | 6 | **10** | 11 | 10 | 38 |
| Adv fibrosis/Cirrhosis (>1.55) | 3 | 3 | 3 | **10** | **10** | 29 |
| Total | 7 | 21 | 17 | 27 | 20 | 92 |

**Conclusion** In this real world cohort, SWE using ElastPq had suboptimal performance and missed clinically significant advanced fibrosis in 24% of cases. It appears that this technique does not perform as well in patients with NAFLD as other liver diseases, such as viral hepatitis.

**Disclosure of Interest** None Declared

## PTU-087 DEVELOPING MODELS OF ENGAGEMENT IN A NEW MIGRANT POPULATION: RESULTS FROM A LARGE SCALE HEPATITIS B & C TESTING STUDY IN THE UK NEPALI COMMUNITY

[1,2]S Mathew*, [3]M Petrova, [2]J Hendy, [2]J Van Vlymen, [4]S Jones, [4]S de Lusignan, [5]J Zamani, [5]A Pilcher, [6]R Tiwari, [7]M Nicholls, [4]A Ala, [8]A Ala. [1]*Hepatology, Frimley Park Hospital, Frimley*; [2]*Health Care Management and Policy, University of Surrey, Guildford*; [3]*Gastroenterology and Hepatology, Frimley Park Hospital, Frimley*; [4]*Faculty of Health and Medical Sciences, University of Surrey, Guildford*; [5]*Research and Development, Frimley Park Hospital*; [6]*Rushmoor Healthy Living, Health Promotion Patient Chariry, Frimley*; [7]*Surrey and Sussex Health Protection Team, Public Health England, Surrey and Sussex*; [8]*Hepatology, Royal Surrey County Hospital, Guildford, UK*

10.1136/gutjnl-2016-312388.172

**Introduction** The UK Nepali community has grown by over 900% since 2004, when settlement rights were introduced for ex-Gurkha servicemen and their dependants. Nepal sits between India and China; two countries with higher rates of hepatitis B & C, but rates in the UK Nepali population is unknown

**Methods** The Nepali community has multiple castes and religious beliefs. Little is known about disease and healthcare perception, and focus group sessions were held before testing. National ethics approval was obtained, and testing sessions were held in community venues centrally located to known population clusters in Surrey, UK. Study advertising was limited to existing Nepali language media and word of mouth, following concerns raised by the activity of far right groups.

Fingerprick testing was used, with community leaders helping to facilitate testing. Questionnaires were used for possible risk associations including: blood transfusions, surgery, and place of origin.

**Results** 1005 Nepali individuals (age > 18 yrs, Male = 45%) were tested over 17 sessions from Mar 2013 - Jan 2015. A total of 973 individuals were included in final analysis (mean age 63 yrs, range 19–86). Median length of stay in the UK was 36 months, with 18 individuals (1.8%) present in the UK for more than 10 years

HBsAg was detected in 3 (0.31%) and HCVAb in 4 (0.41%) separate individuals; showing low rates of infection. HBsAg patients had absent or low level HBV DNA (<300iu/ml), and all HCV patients were RNA negative, with no evidence of cirrhosis in attending patients on follow-up (5/7). Hepatitis B core Ab (HBcAb) was detected in 93 individuals (9.6%), mean age 67 yrs (22–84 yrs)

Regression analysis showed no statistical associations with HBsAg / HCVAb presence; but HBcAb was significantly associated with male gender and fewer years spent at school ($p = 0.002$ and $p = 0.02$ respectively)

**Conclusion** Rates of active CVH were very low in the Nepali community, but with higher rates of previous HBV exposure, which may have implications for ongoing testing programmes.

Given the absence of a common religious or cultural forum to target this new community, we used detailed focus group sessions and developed strong community links to produce a successful community-based approach to engagement, which we hope will act as a model of testing in other communities.

**Disclosure of Interest** None Declared

## PTU-088 DE NOVO CIRRHOSIS IN OLD AGE IS ASSOCIATED WITH SIGNIFICANT DELAYS IN DIAGNOSIS, HIGH INCIDENCE OF DECOMPENSATION AT PRESENTATION AND HIGH MORTALITY

S Ghuman, M Czajkowski, J Hewitt, A Yeoman, A Gardezi*. *Gastroenterology, Royal Gwent Hospital, Newport, UK*

10.1136/gutjnl-2016-312388.173

**Introduction** Mortality related to end-stage liver disease is increasing. Coupled with an ageing population, this will lead to increasing numbers of those aged over 65 with a de novo diagnosis of cirrhosis. However, the incidence and clinical behaviour of cirrhosis in old age is not well understood. Our aim was to evaluate and elucidate the characteristics of cirrhosis in elderly patients.

**Methods** All patients aged over 65 with a diagnosis of cirrhosis at our institution were identified using the health board electronic record. Data on patient demographics, date and method of diagnosis, liver function tests (LFTs), MELD scores, presence of decompensation and outcomes (varices, renal impairment, hepatocellular carcinoma [HCC], death) were collected and analysed.

**Results** 395 cirrhotics aged over 65 were identified. Clinical details were unavailable for 12, 7 had received a liver transplant and 81 were first diagnosed under 65 hence excluded from analysis. Median age was 74 (65–92) and 179/295 (60.7%) were male. The commonest aetiologies of cirrhosis were alcohol (86/295), cryptogenic (81/295) and NASH (62/295).

Mode of diagnosis was a combination of laboratory and imaging features (USS, CT or MRI) in 86.8%, liver biopsy in 8.8% and fibroscan in 4.4%. Abnormal LFTs prior to diagnosis were found in 90.5%. Importantly, median delay in diagnosis of cirrhosis from first abnormal LFT was 72 months (1–168). Consequently, 54.6% were decompensated at first presentation. For the cohort, median MELD score was 9 (6–40) at diagnosis.

In terms of complications, 139/295 (47.1%) developed ascites, 41/295 (13.9%) had atleast one episode of hepatic encephalopathy and 93/295 (31.5%) developed varices of whom, 24.7% bled. Renal impairment was common, occurring in 164/295 (55.6%). This comprised one or more episodes of acute kidney injury (AKI) in 113/164 (68.9%) and pre-existing CKD in the remainder. Importantly, HCC was diagnosed in 61/295 (20.7%); identified at diagnosis of cirrhosis in 72.1%. Active treatment for HCC occurred in 57.5%; the remainder palliated.

Over half the cohort (58.8%) had died at the time of analysis, with median time from diagnosis of cirrhosis to death 13 months (0–116). In the compensated cirrhotics the median was 26 months versus only 9 months in those decompensated at presentation ($p = 0.0027$).

**Conclusion** De novo cirrhosis in the elderly is associated with significant delays in diagnosis from time of first abnormal LFT, high incidence of decompensation, renal impairment and HCC. Consequently short term mortality is high. Abnormal LFTs should therefore not be ignored. Furthermore, in those with established cirrhosis, close attention should be paid to renal function and potential impact of concomitant diseases and polypharmacy on this.

**Disclosure of Interest** None Declared

## PTU-089 PORTAL HYPERTENSIVE COMPLICATIONS AND CLINICAL OUTCOMES IN PAEDIATRIC AND ADOLESCENT PATIENTS PRESENTING WITH PORTAL VEIN THROMBOSIS

[1]S Direkze*, [1]A Bancil, [2]A Dawan, [2]M Samyn, [1]N Heaton, [1]H Velez-Mendes, [2]M Davenport, [3]P Kane, [3]J Karani, [1]D Joshi. *[1]Institute of Liver Studies; [2]Paediatric Liver, GI and Nutrition Centre; [3]Department of Radiology, King's College Hospital NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.174

**Introduction** Portal vein thrombosis (PVT) has multiple aetiologies which can lead to the development of portal hypertension and variceal bleeding. Data on the long term sequelae of PVT in paediatric and adolescent patients is limited.

**Methods** Patients included had a diagnosis of PVT from Jan 2000- Dec 2014. Data collection included patient demographics, aetiologies, presentation and initial treatment of PVT. Data was also collected on further variceal bleeds, shunt surgery, liver transplantation and long term mortality.

**Results** 123 patients (63 male) were identified. Median age at first presentation was 5years 9 months (range 2 days to 25 years). Overall survival was 95.9, 94.3 and 93.5% at 1, 10 and >20 years from PVT diagnosis, respectively. Median age at follow up was 13years 3 months (range 6 months to 33 years 2 months). In the majority of cases (52%) no cause for PVT was identified. 78% of patients had extrahepatic PVT (EHPVT), with no extension in to the superior mesenteric vein. 19 patients (15.4%) were anticoagulated or had received a course of anticoagulation therapy. Initial presentation was usually due to oesophageal variceal bleeding (52.8%) of which 24 patients had further variceal bleeds (18.7%, oesophageal/duodenal/rectal). At follow up, 26% of patients (N = 32) were on a beta blocker. Of these, 10 patients (31.3%) had further variceal bleeds versus 14/77 patients, not on a beta blocker (18.2%, $p = 0.07$). Portal biliopathy was also present in 17.9% (N = 22) as was splenomegaly (82.9%). Ascites and hepatic encephalopathy were uncommon (<7%). 18 patients had shunt surgery, majority of which were meso-caval Rex, of which 7/18 (38.8%) had further variceal bleeds. Two patients underwent transplantation, one of which was for variceal bleeding. Overall mortality in this group of patient with PVT was low (6.5% N = 8) though only 2 of these patients had a previous history of recurrent variceal bleeds.

**Conclusion** Oesophageal variceal bleeding is a common index presentation of PVT in paediatric and adolescent patients. Approximately 20% of patients will go on to have further variceal bleeds despite medical intervention. Beta blocker use is associated with recurrent variceal bleeding which may suggest that it is ineffective in preventing further variceal bleeding in patients with established portal cavernomas. Overall, long term survival is good.

**Disclosure of Interest** None Declared

## PTU-090 CIRCULATING LEVEL OF END PRODUCT OF APOPTOSIS CASPASE-CLEAVED KERATIN 18 REFLECTS CLINICAL SEVERITY IN ACUTE ON CHRONIC LIVER DISEASE AND IS A POTENTIAL BIOMARKER FOR DIAGNOSIS AND THERAPEUTIC MONITORING

S Macdonald, P Bachtiger*, R Sawhney, P Holland-Fischer, J MacNaughtan, R Mookerjee, R Jalan, F Andreola. *Institute for Liver and Digestive Health, UCL, London, UK*

10.1136/gutjnl-2016-312388.175

**Introduction** Acute on Chronic Liver Failure (ACLF) is characterised by progressive multi-organ failure and an unacceptably high mortality. This distinguishes it clinically and prognostically from Acute Decompensation (AD) of cirrhosis. We have previously demonstrated elevated markers of apoptosis in a rat model of ACLF and a small cohort of human ACLF patients. The aim of this study is to measure plasma levels of caspase-cleaved keratin 18 (cK18), a product of apoptosis, in a well-characterised cohort of subjects with progressive degrees of liver injury, with the aim of confirming our observation of elevated apoptosis in decompensated liver disease and establishing the utility of cK18 as a biomarker of severity of liver injury. Additionally, the correlation of cK18 levels with prognostic clinical scores will be assessed.

**Methods** 78 patients with acutely decompensated liver disease were enrolled and divided into AD (n = 25), ACLF1 (n = 25) and ACLF2 (n = 28) using the CLIF-C ACLF and AD scores. Additionally, 27 stable compensated cirrhotic patients (SC) and 12 healthy volunteers were recruited. Plasma cK18 levels were measured by enzyme linked immunosorbent assay (ELISA) using the M30 antibody for detection. Results were analysed using Prism 6 Software (GraphPad). As the data were not normally distributed, a non-parametric test (Mann-Whitney-Wilcoxon test) was used. Spearman rank test was used for correlation studies.

**Results** cK18 levels rose progressively with the severity of liver injury (median values and interquartile range): healthy 100.5 U/L (IR 76.97–144.7), stable cirrhosis 155.5 U/L (IR 102.5–269.8), AD 341.9 U/L (IR 102.5–489.9), ACLF1 603.6 U/L (IR 342.4–1046) and ACLF2 1028 U/L (IR 513.6–2641), respectively). Statistically significant differences were observed between healthy controls vs SC ($p = 0.0232$), SC vs AD ($p = 0.0054$), AD vs ACLF1 and 2 ($p = 0.0054$ and 0.0006 respectively), ACLF1 and 2 (0.068) (Figure 1). Additionally, cK18 values correlated with model for end-stage liver disease (MELD) score, ($r = 0.48$, $p < 0.0001$), MELD Sodium ($r = 0.44$, $p = 0.0001$), sepsis-related organ failure (SOFA) ($r = 0.39$, $p = 0.0021$) and Childs-Pugh ($r = 0.2562$, $p = 0.0323$) scores.

**Conclusion** Our data clearly demonstrates a statistically significant, progressive increase in circulating cK18 and apoptosis with increasing clinical severity of decompensated liver disease. These values also correlated with major prognostic scores used in current practice. cK18 is therefore a promising biomarker of severity of liver injury and further studies are needed to assess its role both as a prognostic tool and in monitoring therapeutic response.

**Disclosure of Interest** None Declared

## PTU-091 UK MULTICENTRE AUDIT OF MANAGEMENT AND OUTCOME OF AUTOIMMUNE HEPATITIS: MEETING THE STANDARDS

VM Gordon* on behalf of UK Autoimmune Hepatitis Audit Group. *Hepatology, UHCW NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.176

**Introduction** Early diagnosis of liver disease is a current UK health priority. (Williams et al., 2015) Autoimmune Hepatitis (AIH), affects 8000–15000 people in the UK and despite effective treatment, still results in excess mortality. At present there are no data reporting current standards of care regarding how AIH is diagnosed and managed in the UK as a whole.

We assessed adherence to pre-defined standards of care via the UK AIH audit and present results from 1267 patients diagnosed and managed with AIH in 28 UK centres (of varying size) between 2000–2015.

**Methods** We collected all prevalent (still-attending) cases diagnosed since 2000 and all incident cases diagnosed since 2007 by searching electronic patient letters, histology databases and hospital coding. Validation was by 1999 IAIHG diagnostic criteria. Information on diagnosis, initial severity, treatment and outcome was entered into a web-based data collection system. There were 1267 patients followed up for 4 (0–14) years. Results are shown in the table:

**Results**

**Abstract PTU-091 Table 1**

| Audit Standard | Pre-defined minimum (%) | Actual % (overall) | % in individual centres (median (range) | Centres meeting pre-defined minimum No. (%) |
|---|---|---|---|---|
| **Diagnosis** | | | | |
| Tested for HBV and HCV | 100 | 96 | 98 (50–100) | 22 (79) |
| Had diagnostic liver biopsy+ | 80 | 96 | 97 (71–100) | 27 (96) 22 (79) |
| Met 1999 IAIHG diagnostic criteria | 90 | 94 | 94 (65–100) | 0 (0) |
| Time from 1st abnormal LFTs to diagnosis is <4 months | 90 | 54 | 55 (12–82) | |
| **Treatment** | | | | |
| Attain normal serum ALT by 1 year after start of treatment* | 90 | 87 | 89 (33–98) | 10 (34) |
| Steroids continued for ≥1 year** | 90 | 75 | 78 (33–92) | 3 (10) |
| Appropriate blood monitoring++ | 80 | 74 | 79 (3–100) | 14 (50) |
| **Follow-up** | | | | |
| Follow-up biopsy | NA | NA | 18 (0–73) | NA |
| Ishak Necroinflammatory Score (NIS) ≤3 | 60 | 38 | 35 (0–70) | 2 (7) |
| Decompensation during follow up¥ (incl MELD > 15/Alb < 30 for 6 wks) | <21 | 14 | 9 (0–72) | 24 (86) |
| Died from liver disease or had liver transplantation | <21 | 3.3 | - | - |

+performed >90 days after the start of treatment in 42 patients
*In those with ≥12 months follow up after treatment started & date of first normal ALT is known
**In those followed up ≥ 1 year
++Bloods documented as checked at 3 months, 6 months & 12 months
¥Decompensation: clinical decompensation (ascites, encephalopathy, variceal bleed), portal vein thrombosis or hepatocellular carcinoma.

**Conclusion** Standards pertaining to diagnosis were achieved but there was a notable delay in diagnosis. Fewer patients than expected received steroid treatment for at least one year. Only 38% achieved histological remission on follow-up biopsy. Fewer patients than expected died or required transplantation, perhaps because of the duration of follow-up.

**REFERENCE**
1 Williams R, *et al*. Implementation of the Lancet standing commission on liver disease in the UK. *The Lancet* 2015;**386**(10008):2098–2111.

**Disclosure of Interest** None Declared

## PTU-092 PLASMA ANGIOPOIETIN 2, A CIRCULATING MARKER OF ENDOTHELIAL CELL ACTIVATION, IS ELEVATED IN ACUTE ALCOHOLIC HEPATITIS

VT Kronsten*, J Ryan, GM Vijay, Y Ma, D Shawcross. *Institute of Liver Studies and Transplantation, King's College London School of Medicine at King's College Hospital, London, UK*

10.1136/gutjnl-2016-312388.177

**Introduction** Acute Alcoholic Hepatitis (AAH) is the most florid form of alcohol-related liver disease (ALD) with a mortality rate in the first 28 days of over 30%. These patients are particularly prone to developing infections with a high risk of developing multiple organ failure including hepatic encephalopathy, renal failure and circulatory collapse. The vascular endothelium becomes activated in severe sepsis allowing the influx of inflammatory cells from the circulation. Angiopoeitin (ANG) 1 and 2 are key to endothelial cell (EC) activation. On activation by stimuli such as pro-inflammatory cytokines, ECs release Wiebel-Palade bodies liberating ANG 2. ANG 2 competitively inhibits ANG 1, renders the endothelium responsive to further cytokine stimulation and disrupts cell-cell adhesion increasing vascular permeability. In sepsis plasma levels of ANG 1 and 2 have been implicated as potential prognostic biomarkers. Considering that patients with severe AAH and ALD have evidence of a systemic pro-inflammatory milieu this study measured plasma levels of ANG 1 and ANG 2 as surrogate biomarkers of EC dysfunction.
**Methods** Thirty patients with severe AAH (Maddrey's discriminant factor >32) and a history of alcohol excess (≥80 g/day for males; ≥60 g/day for females) were studied at presentation prior to any therapy being prescribed and compared to healthy controls (HC) (n = 7). Twenty one patients with ALD (Child Pugh C) were also studied. Exclusion criteria included alcohol abstinence >6 weeks, other causes of liver disease, malignancy, concomitant use of immunosuppression ≤6 months and AST > 500 IU/L. Plasma levels of ANG 1 and ANG 2 were measured by enzyme-linked immunosorbent assay (ELISA).
**Results** Plasma levels of ANG 2 were found to be significantly higher in the AAH group compared to HC ($p < 0.0001$) and in the AAH group compared to ALD ($p < 0.05$). The ANG 2:1 ratio was also significantly higher in the AAH group compared to HC ($p < 0.001$), and in the AAH group compared to ALD ($p < 0.05$). ANG 2 and ANG 2:1 ratio trended towards being higher in culture positive AAH patients ($p = 0.065$). In this study there was no statistically significant difference in any marker level between non-surviving (at 1 month) and surviving AAH patients.
**Conclusion** Plasma levels of ANG 2, a soluble biomarker of endothelial activation, and the ANG 2:1 ratio are increased in AAH and could predict the subsequent development of organ failure.
**Disclosure of Interest** None Declared

## PTU-093 AN EXPLORATION OF ADVERSE REACTIONS TO FOODS IN ADULTS WITH CROHN'S DISEASE

[1]A Morris*, B Leach[2]. [1]*Dietetics, UHCW NHS Trust, Coventry*; [2]*Oxford Health NHS Foundation Trust, Oxford, UK*

10.1136/gutjnl-2016-312388.178

**Introduction** Crohn's Disease (CD) has been associated with an increased risk of food allergies due to damage to the epithelial intercellular junctions and the ensuing immune response. However, since this population has increased micronutrient requirements it is important that dietetic advice is sought in favour of self-imposed dietary restrictions. The aim of this study was to explore individuals with CD's experiences of self-reported adverse reactions to food.
**Methods** A phenomenological design utilised in-depth semi-structured interviews with adults with CD. Convenience sample recruitment via Coventry Ileostomy and Internal Pouch Support Group was employed. A topic guide included the areas of experinces of adverse reactions to foods, ways of coping and impact of adverse reactions to foods. Interviews were recorded and transcribed verbatim. Data was explored and findings interpreted using Interpretive Phenomenological Analysis. NVIVO software was used for data management. Member checking and internal peer review were undertaken. Participants gave written informed consent.
**Results** Ten adults (4 men 6 women) with a mean age of 52.2 (±19) years had a mean experience of 20.2 years living with CD. Four main themes emerged which illustrated the experience of adverse reactions to food (1) Physiological symptoms; pain; swelling; diarrhoea; breathing difficulty (2) Difficulties Identifying and telling the difference between allergy and intolerance; being able to identify an allergic reaction, Hypersensitivity to food items dependent on situation rose, e.g. inside/outside home (3) Psychological reaction to food, questioning their own working diagnosis and reactions to certain foods (4) Dietary self-management; excluding offending foods from diet; taking antihistamine medication; not re-engaging with dietitians due to perceived lack of adverse food reaction knowledge in CD.
**Conclusion** Adults with CD reported common adverse reactions to certain foods. Coping strategies included identifying the symptoms and ascribing them either to an allergic reaction or intolerance, with subsequent exclusion of offending foods or decisions on excluding foods likely to cause intolerance. Health professionals may need to be aware and more supportive around reports of adverse reactions to foods and the potential impact on quality of life in CD. Building working relationships is required to support the patient and ensure the nutritional consequences of food avoidance are minimised.
**Disclosure of Interest** None Declared

## PTU-093a AN AUDIT OF PRIMARY PROPHYLAXIS AGAINST VARICEAL BLEEDING AMONGST PATIENTS WITH CIRRHOSIS

[1]C Johnson*, [1]S Todd, [1,2]S McPherson, [1,2]S Masson. [1]*Liver Unit, Freeman Hospital*; [2]*Institute of Cellular Medicine, Newcastle University, Newcastle, UK*

10.1136/gutjnl-2016-312388.179

**Introduction** Variceal bleeding occurs in 30–50% of patients with portal hypertension with early mortality (within 6 weeks) after a first variceal bleed approaching 20%.[1] In 2015, the updated BSG guidelines recommend that all patients with

cirrhosis should be screened for varices at diagnosis.[1] Primary prophylaxis with non-selective beta-blockers (NSBB) or variceal band ligation (VBL) should be offered to those with grade 2–3 oesophageal varices, or any varices with red signs. Appropriate endoscopic surveillance intervals are recommended for the others. Here, we aim to audit the implementation of these recommendations in our patient cohort.

**Methods** Between January and March 2015, consecutive patients with cirrhosis who attended specialist liver clinics at our institution were included. Clinical, demographic and endoscopic data was collected retrospectively.

**Results** 111 patients (50 alcohol-related liver disease [ARLD], 25 non-alcoholic steatohepatitis [NASH], 25 viral hepatitis and 11 others) were studied. The mean age was 61±12 and 68 (61%) were male. The Child's-Pugh score was A: 93 (84%), B: 15 (14%) and C: 3 (2%). Upon diagnosis of cirrhosis, 64 (58%) patients underwent endoscopic variceal screening; varices were detected in 37 (34%). Variceal screening at diagnosis was higher amongst NASH (80%) and viral hepatitis (64%) than ARLD (43%). Amongst those with varices (n = 37), primary prophylaxis was warranted in 28 and given in 27 (96%). After initiation, NSBB were rarely titrated according to clinical response. Amongst those requiring interval variceal screening or surveillance (n = 70), 40 (57%) underwent correctly-timed endoscopy. This was higher amongst NASH (71%) and viral hepatitis (69%) than ARLD (24%). Variceal haemorrhage occurred in 7 (6%) patients, 3 (43%) of whom had never undergone any endoscopic screening.

**Conclusion** Our results demonstrate room for greater adherence to the guidelines with regards to initial screening and subsequent surveillance endoscopy. Once varices are identified, primary prophylaxis is initiated in the majority of patients, though with little evidence of subsequent titration to clinical response. Varices screening and appropriate primary prophylaxis is a proposed quality indicator in cirrhosis care. In order to improve quality of care, we highlight the need to perform screening endoscopy at diagnosis, and to titrate primary prophylaxis after initiation.

## REFERENCE

1 Tripathi D, *et al*. UK guidelines on the management of variceal haemorrhage in cirrhotic patients. *Gut* 2015;**0**:1–25.

**Disclosure of Interest** None Declared

## PTU-094 THE ASSESSMENT OF RESTING ENERGY EXPENDITURE IN PATIENTS WITH CIRRHOSIS REMAINS PROBLEMATIC

[1]C Fennessy*, [2]N Kimer, [3]L Greenslade, [1]MY Morgan. *[1]UCL Institute for Liver & Digestive Health, Division of Medicine, Royal Free Campus,University College London, Hampstead, London, UK; [2]Gastrounit, Medical Division, Copenhagen University Hospital Hvidovre, Copenhagen, Denmark; [3]The Sheila Sherlock Liver Centre, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.180

**Introduction** Patients with cirrhosis are frequently malnourished and this has a detrimental effect on outcome. Accurate assessment of resting energy expenditure (REE) would facilitate management by providing an objective measure on which to base individualised recommendations for nutritional support. REE can be accurately measured using indirect calorimetry but this technique cannot be used easily in the clinical setting. A number of portable bedside techniques for estimating REE have now been developed although they have not, to date, been validated in this patient population. The aim of the present study was to validate the use of alternative methods for assessing REE against the 'gold standard' of indirect calorimetry.

**Methods** The study population comprised 19 patients (12 men: seven women; mean [range] age, 60.3 [31–83] yr) with cirrhosis; 11 (57.9%) were adequately nourished, three (15.8%) moderately malnourished and five (26.3%) severely malnourished. REE was measured, under standardised conditions, using a precision, indirect calorimeter (Cortex Metamax 3 B). Additional REE measurements were undertaken, at the same sitting, using: (i) the Medgem Handheld indirect calorimeter; (ii) the Sensewear Pro 3 armband direct calorimeter; and, (iii) the Bodystat Quadscan 4000 bioelectric impedance analyzer. REE was also predicted using the *generic* Harris-Benedict, Schofield, Mifflin, and Cunningham equations and the *disease-specific* Müller and Morgan & Madden equations.[1]

**Results** The mean (±1 SD) REE measured using the Metamax indirect calorimeter was 1368±456.4 Kcal/24 hr. REE measurments provided by the alternative methods ranged from 1188.1 kcal/24 hr less to 722.6 Kcal/24 hr more than the Metamax values. The Medgem provided the 'least inaccurate' REE measurements but values still differed by approximately ±700 Kcal/24 hr. The differences in measurement values between the portable devices and the 'gold standard' were inconsistent and bidirectional. Likewise, REE values obtained using the prediction equations ranged from 1018.6 kcal/24 hr less to 1468.3 Kcal/24vhr more than the Metamax values. The *generic* Mifflin equation provided the 'least inaccurate' REE estimates but values still ranged from 887.7 Kcal less to 558.4 Kcal/24 hr more than the Metamax values.

**Conclusion** Measurements of REE provided using these bedside techniques and estimated using the predication equations were not sufficiently accurate to be of value, in the clinical setting, either for the assessment of nutritional requirements nor for monitoring over time to assess disease progression or responses to nutritional therapy.

## REFERENCE

1 Madden AM, Morgan MY. Resting energy expenditure should be measured in patients with cirrhosis, not predicted. *Hepatology* 1999;**30**:655–664.

**Disclosure of Interest** None Declared

## PTU-095 30-DAY MORTALITY FOLLOWING PEG INSERTION: COULD THE SHEFFIELD GASTROSTOMY SCORE REQUIRE MODIFICATION?

D Mansour*, C Page, S Whiteway, N Thompson, JS Leeds. *Gastroenterology, Freeman Hospital, Newcastle Upon Tyne, UK*

10.1136/gutjnl-2016-312388.181

**Introduction** Percutaneous endoscopic gastrostomy (PEG) insertion is a valuable means of providing enteral nutrition. Previous studies have identified risk factors for poor outcomes and a scoring system devised. Further studies have shown other variables might be important including CRP and neutrophil-lymphocyte ratio (NLR). This study aimed to externally validate the score and analyse for additional variables associated with 30 day mortality.

**Methods** Retrospective review of new PEG insertions in our institute between July 2009 to October 2015. Patient demographics, indication for PEG insertion, bioprofile, ASA grade

and survival were recorded. The Sheffield Gastrostomy score (SGS) and the NLR were then calculated for each patient. Univariate analysis was performed and receiver operating characteristic (ROC) curves constructed to assess the discriminative ability of the scoring system.

**Results** 171 PEG insertions (median age 73 years, 91 males) were included. Indication for PEG was Stroke (50), Cancer (30), Neurological (24), Dementia (5), Other (58) and not stated (4). Univariate analysis showed that 30 day mortality was associated with ASA grade 3–4 ($p = 0.026$) and NLR ($p = 0.012$) and a trend towards age > 70 ($p = 0.085$) and low albumin levels ($p = 0.058$). For each increasing SGS gradation mortality rose, with 5.3% of those scoring zero dying compared to 38.5% scoring three. The area under the ROC curve was 0.617 (95% confidence interval 0.534–0.695, $p = 0.04$) showing reasonable discrimination.

**Conclusion** The SGS displayed reasonable predictive ability in this external sample but identified further predictors (ASA grade and NLR). This suggests that the SGS requires remodelling with additional variables identified from a large, multicentre prospective study.

**Disclosure of Interest** None Declared

## PTU-096 5 YEAR GASTROSTOMY AUDIT: THE BENEFITS OF A NUTRITION NURSE LED SERVICE

[1]E Pindard*, [1]T Marshall, [2]P Neild. *[1]Nutrition CNS (Endoscopy); [2]Gastroenterology Consultant, St Georges University Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.182

**Introduction** Percutaneous Endoscopic Gastrostomy (PEG) is usually the preferred method of providing enteral nutrition in those patients whereby oral nutrition is contraindicated or inadequate for more than four to six weeks. Yet it is an invasive procedure and not without complications. The National Confidential Enquiry into Patient Outcome and Death (NCEPOD, 2004) found (19%) of PEG procedures were futile or not indicated at all. Furthermore 30 days PEG related mortality was reported to be between 2% to 26%. It was therefore advised that clinicians need to ensure appropriateness of its usage and that patient selection is paramount.

At our trust a Nutrition Nurse Specialist (NNS) assesses all adult patients referred for a gastrostomy. Complex patients are discussed with a Consultant Gastroenterologist or Gastroenterology Registrar. In the absence of the NNS a Gastroenterology Registrar reviews patients.

**Methods** Data was collected prospectively, by the NNSs, on both inpatients and outpatients referred for gastrostomy between 1 April 2010 and 1 April 2015. Information recorded included indication for and source of referral, time to procedure, morbidity and 30 day mortality.

**Results**

**Abstract PTU-096 Table 1**

| | PEG (n) | RIG (n) | JEJUNOSTOMY (n) |
|---|---|---|---|
| Tube Insertion | 208 | 317 | 24 |
| Tube Change | 23 | 47 | 7 |
| Tube Removal | 51 | 14 | 0 |

Table 1 above shows the numbers of PEG, RIG (Radiologically Inserted Gastrostomy) and jejunostomy insertion, changes and removals.

**Morbidity**

- During this period there were 5 infections at the tube site confirmed by positive culture (0.9%, reduced from 12.5% pre current NNS)
- 3 leakages resulting in peritonitis (0.5%)
- 1 bleeding post procedure -anticoagulation not held as per advice (0.2%)

**Mortality** Overall 30 day mortality from any cause following gastrostomy was 5.6% (n = 31). 3.8% (n = 21) were in the RIG group and 2% (n = 11) were in the PEG group.

193 (35%) patients were referred for gastrostomy but did not go ahead with the procedure or had it deferred. With the cost of gastrostomy insertion of approximately £2000 (PEG/RIG) this has resulted in a cost saving to the trust of £386,000.

**Conclusion**

- Despite on-going training indication for gastrostomy insertion is still not understood by referring teams.
- A NNS led service can reduce morbidity, mortality and procedure failure rate.
- Comparing data to pre current NNS appointment the total number of tube insertions has doubled however deferral rates remain the same. There was a 15% failure rate which has since decreased to 3%.
- Infection rate reduction, may be linked to the development of an education programme, development of nutrition link nurse role, competencies and policy.
- Improve knowledge on procedure and complications to reduce the number of inappropriate referrals.

**Disclosure of Interest** None Declared

## PTU-097 NUTRITIONAL SCREENING IN PATIENTS WITH COLORECTAL CANCER PRIOR TO ELECTIVE SURGERY: IS IT DONE ACCURATELY AND DOES IT PREDICT OUTCOME?

[1,2]E Wesley*, [3]B Thompson, [4]J Tham, [4]N Smart, [5]B Engel, [4]I Daniels. *[1]Gastroenterology, Musgrove Park Hospital, Taunton; [2]Gastroenterology; [3]Dietetics; [4]Surgery, Royal Devon and Exeter NHS Foundation Trust, Exeter; [5]Dietetics, University of Surrey, Guildford, UK*

10.1136/gutjnl-2016-312388.183

**Introduction** Patients undergoing surgery for colorectal cancer (CRC) are at high risk of malnutrition, this is detrimental to their post-operative outcome. Nutritional screening is performed pre-operatively using the malnutrition universal screening tool (MUST) but the accuracy of completion and its ability to predict post-operative outcome is currently unknown.

**Aims**

- To assess the frequency and accuracy in which MUST scoring is completed in the real world setting of a colorectal unit of busy teaching hospital
- To identify whether the pre-operative MUST score predicts poor outcome after CRC surgery in terms of increased risk of complications and length of hospital stay.

**Methods** 136 consecutive patients undergoing elective surgery for CRC were prospectively independently MUST scored by 2 study investigators. Data was prospectively collected on the MUST score calculated by nursing staff as well as information

on patient demographics, operative details and post-operative outcomes.

**Results** 76 (56%) were male. The age range was 46–97, median 73, 75% of the patients were >65. The BMI range was 14.6–43, median 26.1. 32% of the patients had right colon lesions, 21% left colon and 43% rectal.

MUST scoring was almost universally completed by nursing staff (98.5%)but the accuracy was poor with significant differences in scores ($p = 0.001$). The weight loss component of the scoring was the source of error.

73% of the patients had a MUST score of 0, 19% had a score of 1 and 8% $\geq$ 2. 60% of patients had their surgery by the laparoscopic approach. 61.5% experienced no post-operative complications, 9.5% experienced significant complications (Clavien-Dindo 3 a-5). Hospital length of stay ranged from 0–43 days, median 6 days.

MUST score was not able to predict the risk of post-operative outcome as defined by an increased risk of post-operative complications ($p = 0.96$) or increased length of hospital stay ($p = 0.95$). ASA status showed a trend towards significance for predicting post-operative complications ($p = 0.06$).

**Conclusion** MUST screening is almost universally done however the accuracy is poor. There is a risk that patients who are at risk of malnutrition and may benefit from nutritional support are being overlooked.

MUST screening alone did not predict an increased length of hospital stay or risk of post-operative complications. The prevalence of malnutrition as detected by MUST score was low. This is likely to be because a significant proportion of the patients were overweight or obese. An alternative screening tool such as the short nutritional assessment questionnaire (SNAQ) might be more suitable in this patient group.

**Disclosure of Interest** None Declared

## PTU-098 IMPROVING PEG COMPLETION RATES: ADOPTION OF AN ALGORITHM TO MAXIMISE SUCCESS: AN 18 MONTH SINGLE-CENTRE REVIEW

J Frost*, A Dhanda, J Ratcliffe, N Fisher. *Russells Hall Hospital, Wolverhampton, UK*

10.1136/gutjnl-2016-312388.184

**Introduction** Percutaneous endoscopic gastrostomy (PEG) placement is an established technique for nutritional support, with a procedural success rate around 95% in most case series.[1] Failed procedures generally need alternative surgical or radiolofical approaches. In recent years we have adopted an algorithm for maximising PEG placement success rate and have now reviewed our outcomes.

**Methods** Referrals are vetted by the nutrition support team before selection and cases accepted for PEG are listed on a consultant gastroenterologist's list. The preferred procedural algorithm is: 1 A standard PEG technique is used with finger indentation and a safe-track technique; transillumination not considered necessary. 2 Trochar insertion into the stomach is assisted by counter-traction on the surrounding mucosa with a snare if necessary. 3 If this doesn't help then the PEG trochar +/- sheath are removed and a long drainage access (kellett) needle is passed to assist gastric puncture. 4 If the PEG is unsuccessful, then a further attempt on another day is considered with another endoscopist if necessary.

For this review, the nutrition team, endoscopy and clinical databases were reviewed for all patients accepted for PEG placement for 18 months from July 2014 onwards. Outcome measures included PEG success rates, techniques used, procedural complications and 30 day mortality.

**Results** 154 patients were accepted for first PEG placement. Five patients did not proceed to PEG attempt owing to death or swallowing recovery.

In the 149, all patients (100%) achieved successful PEG insertion at first or second attempt. Most cases (140/149, 94%) were done with the standard pull-through technique. In 6 cases (4%) a Kellett needle was used. In 3 cases (2%) a second endoscopy procedure was required for PEG completion: in 2/3 of these cases, initial failure was attributed to inadequate trans-illumination but successful completion was later done by another endoscopist. In the third case the oesophagus could not be intubated due to a large pharyngeal pouch; this was later overcome with the help of an oesophageal guidewire placed under fluoroscopic guidance. There were no identified procedural complications and overall 30 day mortality was 9%.

**Conclusion** The procedural algorithm we have described for PEG placement, which excludes the need for transillumination, includes optional usage of a long drainage access needle and considers a second endoscopy procedure if the first procedure fails, led to a 100% completion rate in this case series. Adoption of this approach may therefore minimise the need for other higher-risk alternatives.

### REFERENCE

1 Potack JZ, Chokhavatia S. Complications of and controversies associated with PEG: Report of a case and literature review. *Medscape J Med* 2008;**10**(6):142.

**Disclosure of Interest** None Declared

## PTU-099 A LARGE PROSPECTIVE AUDIT OF MORBIDITY AND MORTALITY IN PATIENTS WITH FEEDING GASTROSTOMIES PLACED FOR HEAD AND NECK CANCER

K Keshk*, S Lewis, N Pitts. *Gastroenterology, Derriford Hospital, Plymouth, UK*

10.1136/gutjnl-2016-312388.185

**Introduction** Feeding patients undergoing radical treatment for head and neck cancer via a percutaneous endoscopically or radiologically placed/inserted gastrostomy (PEG, RIG) is common practice. PEG/RIG insertion is not entirely safe and complications may occur with long-term usage. We did a prospective audit of PEG/RIG related complications in patients having them placed prior to surgery for head and neck cancer.

**Methods** Community dietitians reviewed all patients with a gastrostomy placed prior to surgery or radiotherapy for head and neck cancer. They prospectively recorded morbidity and mortality between 2008–2014. In addition hospital databases and case notes were examined. Recorded morbidity included insertion site infection, leakage, over granulation, haemorrhage and buried bumper.

**Results** In the 206 patients there was one death within 30 days from placement, no deaths attributable to gastrostomy placement. One patient underwent a laparotomy for peritonitis. 95 minor complications occurred in 72 (35%) patients or

1:887 days of having a gastrostomy. The commonest complication was peristomal site infection occurring in 55 (27%) patients or 1:1531 days of having a gastrostomy, all of which settled with antibiotics. There was no buried bumpers or tumour implantation at the insertion site reported in the study. There was no procedure related 30 day mortality.

**Abstract PTU-099 Table 1** Complications of gastrostomies

| Minor complications | N | Major complications | N |
|---|---|---|---|
| Peristomal wound infection | 74 | Peritonitis | 1 |
| Gastrostomy deterioration | 12 | | |
| Peristomal leakage | 1 | | |
| Abdominal pain | 2 | | |
| Pulled/Fell out | 6 | | |

**Conclusion** We have shown a low rate of major complications (0.5%) and a relatively high minor complications rate (35%) of PEGs and RIGs in patients with head and neck cancer. Wound infection can be reduced by careful sterile technique, preoperative antibiotics, a 1 cm abdominal incision and avoiding tightness of the crossbar. We conclude that the use of PEG tubes is a safe method of delivering non-oral nutritional support for patients undergoing treatment for head and neck cancer.

## REFERENCES


1 Gauderer MW, Ponsky JL, Izant RJ, Jr. Gastrostomy without laparotomy: A percutaneous endoscopic technique. *J Pediatr Surg* 1980;**15**:872–5.
2 Mansoor H, Masood MA, Yusuf MA. Complications of percutaneous endoscopic gastrostomy Tube insertion in Cancer patients: A retrospective study. *J Gastrintest Cane* 2014;**45**:452–459.
3 Burney RE, Bryner BS. Safety and long-term outcomes of percutaneous endoscopic gastrostomy in patients with head and neck cancer. *Surg Endosc* 2015;**29**(12):3685–9.
4 Hunter JG, Lauretano L, Shellito PC. Percutaneous endoscopic gastrostomy in head and neck Cancer patients. *Ann Surg* 1989;**210**:42–46.


**Disclosure of Interest** None Declared

## PTU-100 A REGIONAL SURVEY AND RETROSPECTIVE STUDY OF THE RISKS OF TUMOUR IMPLANTATION AFTER STANDARD PULL-THROUGH PEG INSERTION FOR HEAD & NECK CANCERS – A THEORETICAL RISK?


[1]M Swinton*, [1,2]DH Vasant, [1]LD Morris, [1]T Earley, [1]Y Clarkson, [1]PL Shields, [1]EJ Nixon. *[1]Gastroenterology, Lancashire Teaching Hospitals Trust, Preston; [2]Manchester Academic Health Sciences Centre, University of Manchester, Manchester, UK*


10.1136/gutjnl-2016-312388.186

**Introduction** Despite documented low risk (<1%) of stomal metastases and limited evidence-base, current BSG guidelines advocate a direct puncture approach to gastrostomy in head & neck cancers (HNC).[1] We hypothesised that there would be a variation in the gastrostomy insertion practices for HNC and surveyed hospitals in our region and aimed to retrospectively determine the incidence of PEG site metastases at our centre where pull-through technique PEG is often the first line approach in HNC.

**Methods** Firstly, an electronic survey on gastrostomy insertion practices in HNC was circulated to all members of the regional Gastroenterology network (representing 11 NHS hospital trusts in the North West of England). Secondly, in a retrospective study, all PEG placements using pull-through technique for HNC at Lancashire Teaching Hospitals between 2011–2014 were reviewed. Data including patient demographics, tumour site, size, stage and histology, HNC treatments before and after PEG, PEG insertion details, length of follow-up, imaging of the PEG site post procedure and sites of recurrence, were recorded. Data are expressed as the mean (± standard error of the mean) unless stated otherwise.

**Results** The survey of endoscopists (n = 30, 11 consultants) from ten NHS trusts in the North West revealed that seven centres were compliant with BSG guidance (six using radiologically inserted gastrostomy techniques and one offering endoscopic gastropexy as first-line). Three centres use the pull-through technique for HNC. Only 2/30 (7%) of respondents (both consultants) have ever encountered a case of PEG site metastases in their careers post pull-through PEG insertion for HNC. In the retrospective study, 106 HNC patients (age 60 ± 1 years, 77 male, 29 female) were followed-up for 784 ± 40 days post pull-through PEG insertion. Most patients had tumours within the oral cavity (70%), 22% had tumours in the pharynx or below, with the remainder having neck lesions. Overall, in 92% of cases PEG placements were prophylactic (pre-treatment), 49% had documented peg removal at a mean time of 499 ± 45 days, 29% developed recurrent/ metastatic disease and 25% died at 488 ±54 days post PEG insertion. There were no cases of PEG site metastases identified, however only 36% had imaging of the PEG site post-procedure with most recent imaging available at 682 ± 102 days post-procedure.

**Conclusion** Our survey highlights a variation in gastrostomy practices for HNC across the region. Despite the BSG guidelines, some centres still use the pull-through approach and our data suggest the risk of seeding with this approach is low.

## REFERENCE


1 Westaby D, *et al*. *Gut* 2010;**59**(12):1592–605.


**Disclosure of Interest** None Declared

## PTU-101 THE INTRODUCTION OF A PATHWAY FEATURING THE USE OF NASAL BRIDLES IMPROVES OUTCOMES FOLLOWING PERCUTANEOUS ENDOSCOPIC GASTROSTOMY INSERTION AMONGST AN ELDERLY COHORT


[1]M Stammers*, [2]E Murphy, [1]T Nicholas, [3]K Hedges. *[1]Gastroenterology Department; [2]Dietetics Department; [3]Elderly Care Department, St Richard's Hospital, Chichester, UK*


10.1136/gutjnl-2016-312388.187

**Introduction** Percutaneous endoscopic gastrostomy (PEG) tubes are associated with complications and excess mortality if mistimed or inserted inappropriately. A 2008 anonymised NCEPOD review highlighted a very high mortality rate of 43% at one week post-insertion.[1] The aim of this study was to see if the introduction of a new pathway, featuring the use of nasal bridles, could improve PEG related outcomes amongst inpatients at SRH - a hospital where >25% of inpatients are over 75.

**Methods** Nasal bridles for nasogastric (NG) tubes and a new multi-disciplinary pathway were introduced at SRH: May-Sept 2014. In Dec-2015 the notes for all inpatients receiving a

PEG tube were reviewed. ***Group 1*** – patients receiving PEG tube the year before the changes: [May 2013 – May 2014]. ***Group 2***, the year after: [Sept 2014 – Sept 2015]. Prior modes of feeding and outcomes were analysed: *1 outcome*: 30 day mortality. *2 outcomes*: major complications; length of stay.

**Results** 58 inpatients received a PEG tube during the study period. Full records were unavailable for 2 from each group. Of the 54 remaining: 27 were male, 27 female; mean age: 76 (range: 34–95). ***Group 1:*** 29 patients (53.7%); None received a bridle or parenteral nutrition. 27.6% of patients multiply failed conventional NG progressing straight to PEG - mean age of subgroup: 85 (range: 76–93). *1 outcome:* 30 day mortality - **27.6%.** *2 outcomes:* two suffered a major complication (intra-abdominal sepsis); mean length of stay was 61 days. ***Group 2:*** 25 patients (46.3%); No patients received parenteral nutrition but 36% of patients received a nasal bridle prior to PEG - the mean age of this sub-group was 82 (range: 78–95). The mean delay from placement of bridle to PEG tube insertion was 26.5 days. *1 outcome outcomes:* 30 day mortality - **12%.** *2 outcomes:* there were no major complications and the mean length of stay was 51 days.

**Conclusion** Decisions regarding the timing of PEG tube insertion are fraught with difficulty. The changes have greatly improved outcomes following PEG tube insertion locally. We, the authors, feel this is primarily because: 1) amongst a very elderly subgroup, nasal bridles helped to appropriately delay PEG tube insertion until nutrition was optimised; 2) the protocol served to improve communication between healthcare professionals preventing inappropriate PEG insertion. The changes were inexpensive but also contributed to saving the hospital up to 250 excess bed days, worth over £70,000.

## REFERENCE

1 Johnston SD, *et al*. Death after PEG: results of the national confidential enquiry into patient outcome and death. *Gastrointest Endosc*. 2008 Aug;**68**:223–7.

**Disclosure of Interest** None Declared

## PTU-102 CRITICAL CARE NUTRITION IN THE UNITED KINGDOM – A SURVEY OF CURRENT PRACTICE

[1]M FitzPatrick*, [2]MA Stroud, [3]A De Silva. *[1]Department of Gastroenterology and Hepatology, John Radcliffe Hospital, Oxford; [2]Department of Gastroenterology and Hepatology, University Hospital Southampton, Southampton; [3]Department of Gastroenterology and Hepatology, Royal Berkshire Hospital, Reading, UK*

10.1136/gutjnl-2016-312388.188

**Introduction** Patients in the intensive care unit (ICU) are at high risk of malnutrition. Consensus guidelines recommend a dietitian be part of the ICU team and available within working hours, and hospitals have a nutrition support team (NST) for patients with complex needs. We investigated the provision of nutrition support and patterns of dietetic practice on ICUs in the UK.

**Methods** An online survey was sent to members of the Parenteral and Enteral Nutrition Group and Critical Care Group of the British Dietetic Association (n = 560). Results were analysed in Microsoft® Excel.

**Results** There were 166 responses, 141 from dietitians, an estimated response rate of 30%. 134 (81%) worked in England, 18 in Scotland and 11 in Wales. Most (136, 82%) were from general ICUs, with 30 (18%) from specialist ICUs including 8 cardiac units, 8 neurosciences units, 6 transplant units, 6 HPB/liver units, 4 trauma centres, 3 burns units, 3 intestinal failure units and 1 oncology unit.

Only 88 respondents (53%) said their unit had a dedicated ICU dietitian, although 149 (90%) had regular dietitian support. Only 78 respondents (47%) said their unit had dietitian input every weekday. 137 respondents (83%) said their unit had access to an NST but only 103 (62%) stated the NST attended the ICU regularly.

153 respondents (92%) said all patients on parenteral nutrition would receive dietitian input on their unit and 132 (80%) said all those on enteral nutrition would have dietitian input. Only 60 respondents (36%) said all ICU patients would have dietitian input.

107 units (64%) used actual body weight to calculate patient requirements, whilst 48 units (29%) used estimated body weight. 11 units (7%) used ideal body weight. 79% (124/156) of respondents used an equation model to calculate requirements, most commonly the Henry (53%) and Penn State equations (37%). There was significant variation in kcal/kg (range 10–35 kcal/kg, median 20–25 kcal/kg) and nitrogen intake (range 0.05–0.25 gN/kg, median 0.15–0.20 gN/kg) targets between units.

153 (94%) respondents stated their unit used gastric residual volume (GRV) to guide enteral feeding, with GRVs triggering a reduction in feed rate ranging from 200 ml to 500 ml. Specialist supplemental feeds were not commonly used, although 16 (10%) respondents said their unit used glutamine. 126 (79%) respondents said their unit followed NICE guidelines on refeeding syndrome.

**Conclusion** Whilst dietitian and NST input is available on most ICUs, half of units lack a dedicated ICU dietitian, do not have daily dietitian involvement and lack regular NST input. There is significant variation in the methods used to calculate patient requirements, in the use of GRV and of specialist supplementation. National guidance for critical care nutrition may help reduce disparities in dietetic provision.

**Disclosure of Interest** None Declared

## PTU-103 HOWBEST TO DELIVER ENTERAL ACCESS FOR POST-PYLORIC HOME ENTERAL TUBE FEEDING? A 2-YEAR REVIEW

[1]NGautam*, [1]HM Htet, [2]Y smith, [1]NC Fisher. *[1]Gastroenterology; [2]Community Dietician, Dudley Healthcare NHS Trust, Dudley, UK*

10.1136/gutjnl-2016-312388.189

**Introduction** Home enteral tube feeding (HETF) has grown in the past 2 decades and there is now also a growing demand for post-pyloric HETF (PP-HETF) for selected cases.[1,2] The optimum route for delivering this is not established, with several options available including surgical jejunostomy (SJ), direct percutaneous endoscopic jejunostomy (DPEJ), and PEG with jejunal extension (PEG-J). We have reviewed our experience to help identify comparative outcomes.

**Methods** Choice of feeding device was clinician-led according to indication, surgical and endoscopic risk. A 2 year review was done from Jan 2014 onwards. Patients were included if they were (1) already undergoing PP-HETF as of January 2014 or (2) had an interventional procedure to start PP-HETF at any time thereafter during the study period. Cases were identified from the community dietetic and electronic

endoscopy databases. Case files were reviewed to identify outcome measures which were categorised as: Success of planned procedures; longevity of feeding device, premature removal (removal because of sepsis, migration, blockage or accidental), procedural complications or mortality

**Results** 26 patients were identified (M:F 14:12, median age 55, range 22–83). Indications for PP-HETF were learning difficulties with Gastro-oesophgeal(GO) reflux (8), neurodegenerative or cerebrovascular disease with GO reflux (5), upper GI cancers(9) & others (4).

Feeding interventions done successfully prior to or during the study period were SJ (10), DPEJ (14), PEG-J (14).Procedural success rates during study period were; SJ; 10/10 (100%), DPEJ;7/11 (64%), PEG-J; 12/13 (92%).Longevity of feeding devices at review census point (in months, median & range) was: SJ, 11 (3–23); DPEJ,18 (3–48); PEG-J, 6 (0.25–23).

Tube premature removal rates (and reasons) were: SJ; 3/10 (30%; all fell out), DPEJ; 3/14(21%; 1 accidental, 2 infected), PEG-J; 6/14 (43%; 4 accidental, 2 blocked). There were no procedural complications recorded but one patient (DPEJ) died <7 days from respiratory failure.

**Conclusion** In this case series which includes similar numbers of the common PP-HETF options, SJ had the highest, and DPEJ the lowest, procedure success rate.DPEJ had the highest longevity. Choice of feeding device for PP-HETF will depend on co-morbidity and surgical/ endoscopic risk but when DPEJ can be placed this may be the preferred option for long-term feeding.

## REFERENCES

1 Ojo O. Managing patients on enteral feeding tubes in the community. *Br J Community Nurs* 2010;**15**:S6–S13.
2 Ojo O. The challenges of home enteral tube feeding: a global perspective. *Nutrients* 2015;**7**(4):2524–2538. doi:10.3390/nu7042524.

**Disclosure of Interest** None Declared

## PTU-104 SMALL BOWEL TRANSPLANTATION DOES IMPROVE QUALITY OF LIFE, BUT NEEDS A DISEASE SPECIFIC TOOL

[1]V Blackwell, [2]L Holdaway, [1]S Travis, [2]S Reddy, [2]G Vrakas, [2]A Smith, [2]A Vaidya, [2]P Friend, [1,2]P Allan*. *[1]Translational Gastroenterology Unit; [2]The Oxford Transplant Centre, Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

10.1136/gutjnl-2016-312388.190

**Introduction** Small bowel intestinal transplantation is provided for patients with intestinal failure for whom complications, among other reasons, such as intestinal failure associated liver disease (IFALD), multiple central venous catheter (CVC) infections, loss of venous access or who have intra-abdominal desmoids. In addition, within the American guidelines is quality of life (QoL). There is no robust QoL data collection tool to compared patients undergoing small bowel transplantation compared to those remaining on parenteral nutrition (PN).

**Methods** Data of all patients undergoing small bowel transplant in Oxford, one of the 2 national adult small bowel transplant centres in the UK, are captured on a prospectively entered database. QoL data was recorded using patient related outcome measures (PROM) and using EQ5D both pre and post intestinal transplant. Data was audited in January 2016. The Oxford Intestinal Failure (IF) cohort also had QoL data recorded and was used as a comparator.

**Results** PROM measurements include survival where out of 29 transplants that had occurred, 19 were alive (66%), 1 (5%) was on TPN as an inpatient and 2 (11%) were on home iv fluids, 16 (84%) were on no TPN, iv fluids or tube enteral nutrition support.

Questionnaire data utilised the visual analogue scale part of the EQ5D as a global rating scale for the patients to record their assessment of QoL. It was recorded as median (range) for 4 patients who completed questionnaires pre and post transplant giving 4 pre results and 7 post results; pre-transplant 17.5 (10–30) and post-transplant 79.5 (60–85). 4 patients had only filled in pre-transplant questionnaires: 35 (10–50), which included 1 patient who died post-transplant, 2 patients at their assessment and 1 who was post-explant of their graft for chronic rejection and are listed for retransplantation. In addition, 5 patients completed post-transplant questionnaires on 7 occasions 80 (55–90). This compares to the Oxford IF cohort of whom 30 patients filled in a questionnaire on 1 occasion, 15 on a 2nd at a median of 5 months (1–15) following the first and 3 on a 3rd occasion at 4 months (3–5) after the second. The median (range) for the Oxford IF cohort was 62.5 (25–100), 65 (30–100), 75 (60–85).

**Conclusion** From this preliminary series, small bowel transplantation does improve quality of life post-transplant compared to pre-transplant. The level post-transplant is better than that experienced by patients on home PN. A better QoL data tool is required to effectively assess patients undergoing small bowel intestinal transplantation that can be effectively compared to patients who remain on PN.

**Disclosure of Interest** V. Blackwell: None Declared, L. Holdaway: None Declared, S. Travis: None Declared, S. Reddy: None Declared, G. Vrakas: None Declared, A. Smith: None Declared, A. Vaidya: None Declared, P. Friend: None Declared, P. Allan Consultant for: Abbvie, Conflict with: BresMed advisor; NPS Pharma educational grant

## PTU-105 CYTOREDUCTIVE SURGERY AND SMALL BOWEL TRANSPLANTATION IS A FEASIBLE OPTION FOR PATIENTS WITH END-STAGE PSEUDOMYXOMA PERITONEI

[1,2]P Allan*, [2]S Reddy, [3]B Moran, [2]G Vrakas, [4]H Giele, [3]F Mohamad, [2]J Gilbert, [2]S Sinha, [2]A Vaidya, [3]T Cecil, [2]P Friend. *[1]Translational Gastroenterology Unit; [2]The Oxford Transplant Centre, Oxford University Hospitals NHS Foundation Trust, Oxford; [3]The Pseudomyxoma peritonii Centre, Hampshire Hospitals NHS Foundation Trust, Basingstoke; [4]Department of Plastic Surgery, Oxford University Hospitals NHS Foundation Trust, Oxford, UK*

10.1136/gutjnl-2016-312388.191

**Introduction** Pseudomyxoma peritoneii (PMP) arising from a low grade appendix tumour has good outcomes from cytoreductive surgery and hyperthermic intraperitoneal chemotherapy. In those that recur or present with extensive small bowel involvement preventing complete tumour removal, obstruction leads to poor quality of life and is eventually fatal. Small bowel transplant could offer a life prolonging opportunity in endstage disease.

**Methods** From 2013–2015, 4 PMP patients were referred for consideration of small bowel transplantation with end stage disease and intestinal failure. Outcomes include time on PN,

mortality, rejection, nutritional status, tumour markers, radiological evidence of recurrence and quality of life.

**Results** All 4 patients underwent radical debulking and small bowel transplantation. Average time on waiting list was 40 days (range 2–112). Organs transplanted: all were modified multivisceral transplants including stomach, duodenum-pancreatic complex, small bowel and abdominal wall; 3 received colon and 1 case a kidney. Median cold ischaemia time was 6hrs 59 mins (range 5hr 46 to 10 hr 22, 3 cases). Post-op stay on ITU average 14.5 days (range 2–45). Time on PN postoperatively: median 31 (range 19–51). Mortality risk: 2 survived at time of review, 11 months and 7 months; 2 died (Day 26 and day 64) the first from anastomotic leak, GVHD with associated fungal and bacterial chest sepsis, the other died of GI bleed and anastomotic leak. No episodes of acute rejection of intestinal graft seen but a single episode of grade 1 skin rejection of abdominal wall graft at day 68 treated with methylprednisolone. QOL data using EQ5D: pre-transplant 3 patients gave a VAS average 30 (range 10–75). Post-transplant VAS median 75 (70–80) at 2–4 months. Both the surviving patients are independent of TPN and well at home.

**Conclusion** From this preliminary series, cytoreductive surgery followed by multi-visceral small bowel transplantation is technically feasible for endstage PMP. Furthermore, in those who survived, it is has been life transforming giving so far an extra 7–11 months independent of TPN and excellent QOL. The long term outcomes will determine the effectiveness of this procedure. Early referral might allow surgery in physiologically fit patients improving the outcomes. This major surgical intervention requires close collaboration between Peritoneal Malignancy & Transplant teams.

**Disclosure of Interest** None Declared

## PTU-106 IMPROVED SURVIVAL AND INDEPENDANCE FROM PARENTAL NUTRITION FOR PATIENTS WITH INTESTINAL DYSMOTILITY

R Appleby*, C Yu, J Nightingale. *Leonard Jones Intestinal Failure Unit, St Marks Hospital, London, UK*

10.1136/gutjnl-2016-312388.192

**Introduction** Patients receiving home parental nutrition (HPN) for intestinal dysmotility have a poor 5 years survival of 68% and independence from HPN at 5 years of 12% (*Lloyd et al.* 2006[1]). Only abdominal malignancy patients fared worse. We aimed to compare the same outcomes, at the same centre 10 years since this study to see if changes in practice had impacted these outcomes.

**Methods** An institutional database of patients referred to the Leonard Jones Intestinal Failure Unit at St Marks Hospital was interrogated for patients who started HPN between 1/1/04-1/10/15 and had the primary cause of their intestinal failure recorded as 'dysmotility' or 'other'. The discharge and outpatient letters of those patients were inspected. Patients were excluded if there was any mechanical obstruction, IBD or coeliac disease prior to starting HPN or insufficient clinical information to rule these out. Measured outcomes were survival, intestinal transplant and independence from HPN.

**Results** 159 patients were identified as potentially having dysmotility. 91 were excluded because dysmotility was not the primary cause of the intestinal failure or there was insufficient information, leaving 68 for the final analysis. The median age of this cohort was 39 years (range 16–78) and 19% were male. In total there were 471.2 years of follow up since starting HPN (median 4.4 (range 0.03–26.9)). 21 patients (31%) had a bowel resection before starting HPN.

Overall survival 91%, (n = 62, 5 died on HPN, 1 off HPN), intestinal transplant 4% (n = 3, all successful), 29% (n = 17) were independent of HPN. 5 year outcomes were available for 18 patients. Survival at 5 years was 84% and independence from HPN was 40%. There were no transplants in this group.

23 patients had a diagnosis of chronic intestinal pseudo-obstruction (CIPO), 18 primary and 5 secondary, median follow up was 4.2 years. Overall survival was 91% and independence from HPN was 40%. 4 had positive histological diagnosis of neuropathy and 4 of myopathy. Both secondary CIPO (n = 5) and neuropathic bowel (n = 4) were predictive of independence from HPN compared to other dysmotility diagnoses, secondary CIPO odds ratio 0.03 (95%CI 0.0015–0.6, $p < 0.05$), neuropathy odds ratio 0.098 (95%CI 0.009–1.0, $p = 0.05$).

**Conclusion** Our recent data implies improved outcomes on HPN for patients with dysmotility, particularly patients with secondary CIPO. This may be due to advances in treatment of underlying conditions.

### REFERENCE

1 Lloyd DA, Vega R, Bassett P, Forbes A, Gabe SM. Survival and dependence on home parenteral nutrition: experience over a 25-year period in a UK referral centre. *Alimentary Pharmacol Ther* 2006;**24**:1231–40

**Disclosure of Interest** None Declared

## PTU-107 THE USE OF THE MALNUTRITION UNIVERSAL SCREENING TOOL IN A SPECIALIST HOSPITAL: AN AUDIT

[1]SS Malik*, [2]SM Gabe. *[1]Imperial College, London; [2]St Mark's Hospital, London, UK*

10.1136/gutjnl-2016-312388.193

**Introduction** The British Association of Parenteral and Enteral Nutrition's (BAPEN) nutritional screening week in 2011 found that 25–34% of patients admitted to hospital were at risk of malnutrition. It results in longer admissions and greater morbidity and mortality, costing in excess of £13 billion per annum. Malnutrition poses a substantial burden both medically and financially, which has resulted in the National Institute of Clinical Excellence (NICE), formulating quality statements and guidelines, which state that all patients must be screened for the risk of malnutrition using a validated screening tool. The Malnutrition Universal Screen Tool (MUST) is a well recognised and utilised screening tool, which is also recommended by NICE and BAPEN. The aim of this audit is to investigate whether inpatients at a specialist hospital are being screened for malnutrition using the validated MUST and whether this is being utilised correctly.

**Methods** Inpatients at a spcialist hospital were identified. All patients' notes were obtained and searched for the presence of the MUST and a MUST score. Patients' age and time taken from admission for a MUST score to be calculated were recorded. The MUST score was also independently calculated and checked against documented scores.

**Results** 61 inpatients were identified (31 males and 30 females). The MUST was present for 59 (96.7%) patients and a MUST score was documented for 51 (83.6%) of these patients. The MUST score was calculated after a mean of 2 days. 23 (37.7%) patients had an incorrect MUST score. A total of 33 (54.1%) patients either had no MUST present, no MUST score documented or an incorrect MUST score. 24 (39.3%) of these patients were subsequently allocated the incorrect risk category.

**Conclusion** Malnutrition poses a major medical and financial burden. Whilst the MUST is a well-validated tool and is being completed in the majority of patients, it is not being utilised correctly and a significant number of inpatients at risk of malnutrition are not receiving the correct management. It is evident that unintentional weight loss of patients is not being elicited and in some cases alternative routes to calculating a patients BMI, if weight and height are unobtainable, have not been explored. Healthcare professionals need to be educated on the importance of unintentional weight loss and a patients' BMI and these must be elicited. Trust guidance on calculating the MUST score must be reviewed by all nurses and doctors. The availability of the MUST application for mobile devices, designed to aid calculating the MUST score, should be promoted.

**Disclosure of Interest** None Declared

## PTU-108 SUSTAINIBILITY OF THE IMPACT OF NUTRITION SUPPORT TEAM (NST) AT A DISTRICT GENERAL HOSPITAL-5 YEAR RESULTS

[1]K Eaton, [1]E Copeland, [1]H Roberts, [2]M Patel, [3]L Perry, [4]S Gupta*, [3]A Tarn. *[1]Dietetics; [2]Pharmacy; [3]Clinical Biochemistry; [4]Gastroenterology, Croydon University Hospital, Croydon, Surrey, UK*

10.1136/gutjnl-2016-312388.194

**Introduction** Although in 2010 Croydon University Hospital had Parenteral Nutrition (PN) team,it was felt patient care could be improved by broadening the team's scope and extending its influence. Audit showed that despite Trust policy on PN use, it was non-compliant with NCEPOD recommendations. This was a key driver to form a Nutrition Support Team (NST) in October 2010. Our aims were to reduce inappropriate use of PN and emergency PN, ensure administration through central venous catheters and encourage EN where appropriate. This analysis was to check for sustainability of impact of NST after 5 years.

**Methods** In 2010 NST members included a Chemical Pathologist, Gastroenterologist, Dietitian and Pharmacist. In 2012, a Consultant Biochemist, Dietitian joined the team. Protocols were drawn up, ratified and made available on a NST link on Trust Intranet. Patients requiring PN had to be discussed with NST. Radiology Department was contacted for timely insertion of peripheral inserted central venous catheters (PICC). Medical and nursing staff were trained on care of lines and appropriate use of PN.

**Results** Results are shown in the Table. Use of peripheral cannulae for PN has gone down from 31% in 2009/10 to 4% in 2010/11 to 0% since 2011/12.Cost savings have been made in a number of areas. In 2010/11, savings of £20,671 were made. In 2013,NST advised and implemented a change in supplier of PN bags, resulting in total cost savings of £19,822. The total number of referrals for PN, number of inappropriate referrals, use of emergency PN, number of patients requiring PN for <5 days has fallen while total number of days of PN and the mean have increased perhaps indicating more appropriate use of PN.

**Abstract PTU-108 Table 1**

| | 2009–10 | 2010–11 | 2011–12 | 2012–13 | 2013–14 | 2014–15 |
|---|---|---|---|---|---|---|
| Referrals deemed inappropriate (%) | 15 (20) | 29 (40) | 9 (14) | 22 (22) | 13 (15) | 10 (13) |
| Of those, no. not started on PN(%) | 0 | 13 (45) | 8 (89) | 11 (50) | 9 (69) | 7 (70) |
| PN patients | 75 | 59 | 55 | 88 | 72 | 70 |
| PN out of hours (%) | 19 (25) | 18 (31) | 21 (38) | 17 (19) | 6 (8) | 10 (14) |
| Total PN days | 681 | 539 | 523 | 835 | 745 | 878 |
| Mean PN days (±SEM) | 9 | 9.1 (1.2) | 9.5 (1) | 9.4 (1) | 10.3 (1.4) | 12.5 (1.9) |
| Median PN days | 6 | 5 | 7 | 7 | 8 | 7 |
| PN < 5 days (%) | No data | 22 (37) | 14 (25) | 25 (28) | 21 (29) | 16 (23) |

**Conclusion** Our intervention resulted in safer,coordinated and appropriate delivery of PN which has been sustained over 5 years. The feedback from hospital management,clinical staff has been positive and encouraging. These results may be extrapolated to all hospitals that care for patients requiring parenteral nutrition.

**Disclosure of Interest** None Declared

## PTU-109 IMMUNOSUPPRESSION; AN INDEPENDANT RISK FACTOR IN CATHETER RELATED BLOOD STREAM INFECTIONS IN PATIENTS ON LONG TERM PARENTERAL NUTRITION?

S Oke*, D Ismail, SM Gabe. *Lennard Jones Intestinal Failure Unit, St Mark's Hospital, Harrow, UK*

10.1136/gutjnl-2016-312388.195

**Introduction** Catheter related blood stream infections (CRBSI) are a serious complication for patients on home parenteral nutrition (HPN).[1] 20% of patients on HPN at our institute take immunosuppressive medication. Little data is available to assess if immunosuppression confers any increased risk of CRBSI. We have therefore performed a retrospective cohort study on patients on HPN, cared for at St Mark's Hospital (Harrow) to assess if immunosuppression increases susceptibility to CRBSI.

**Methods** The Intestinal Failure Unit Database (a local database of all HPN patients) was interrogated between 01/01/2013 to 1/10/2015. Patients on HPN were divided into two arms; those with confirmed CRBSI and those without. The two groups were sub catagorised into immunosuppressed and non-immunosuppressed, and then catagorised by immunosuppression type and disease type.

**Results** A total of 149 patients (227 separate episodes) (age 18–86) with CRBSI & 170 patients (age 16–85) without CRBSI were identified. The distribution of disease types was broadly similar for both groups of patients with 39 (26%) patients with IBD, 26 (17%) with mesenteric ischaemia, 30 (20%) with motility disorders & 32 (21%) with surgical complications in the CRBSI group. This compared to 44 (26%)

**Abstract PTU-109 Table 1** Analysis of disease CRBSI against immunosuppression by disease type

| | CRBSI | | Non CRBSI | | |
|---|---|---|---|---|---|
| | Immunosuppressed | Non Immunosuppressed | Immunosuppressed | Non Immunosuppressed | Fisher's Exact |
| IBD | 15 | 24 | 26 | 18 | 0.07 |
| Mesenteric vascular disease | 3 | 23 | 1 | 22 | 0.6 |
| Motility disorder | 3 | 27 | 2 | 12 | 0.64 |
| Surgical complications | 3 | 29 | 1 | 36 | 0.33 |
| Active malignancy | 1 | 2 | 6 | 15 | 1 |

with IBD, 23 (14%) with mesenteric ischaemia, and 14 (8%) with motility disorder & 37 (22%) with surgical complications in the non CRBSI group. 25 (17%) of the CRBSI group were immunosuppressed while 39 (23%) in the non CRBSI group were immunosuppressed.

For each disease subtype CRBSI was compared against immunosuppression status (Fisher's exact test). It was found that there was no statistical increase in risk in CRBSI with immunosuppression $p = 0.07$ ($>0.05$) (see table 1)

No significant differences were seen according to the type of immunosuppression used ($p = 0.6$), or if patients were on dual or single immunosuppression ($p = 1.0$).

**Conclusion** Although there is a clinical assumption that immunosuppression is a risk factor for developing CRBSI, our large retrospective cohort study has shown that this does not appear to be an independent risk factor in the development in patients on HPN.

## REFERENCE

1 Buchman AL, Moukarzel A, Goodson B, Herzog F, Pollack P, Reyen L, Alvarez M, Ament ME, Gornbein J. Catheter-related infections associated with home parenteral nutrition and predictive factors for the need for catheter removal in their treatment. *JPEN J Parenter Enteral Nutr* 1994;**18**(4):297–302.

**Disclosure of Interest** None Declared

## PTU-110 LONG-TERM SAFETY OF TEDUGLUTIDE TREATMENT FOR PATIENTS WITH INTESTINAL FAILURE ASSOCIATED WITH SHORT BOWEL SYNDROME: POOLED DATA FROM 4 CLINICAL TRIALS

[1]SM Gabe*, [2]U-F Pape, [3]E Delmaestro, [4]B Li, [3]NN Youssef, [4]D Seidner. *[1]St Mark's Hospital, London, UK; [2]Charité University Medicine, Berlin, Germany; [3]NPS Pharmaceuticals Inc, Bedminster; [4]Vanderbilt University Medical Centre, Nashville, United States*

10.1136/gutjnl-2016-312388.196

**Introduction** Teduglutide (TED) is indicated for the treatment of adults with intestinal failure associated with short bowel syndrome (SBS-IF) who are dependent on parenteral support (PS). In phase III randomised placebo-controlled trials, TED significantly reduced PS volume requirements and number of PS infusion days per week in patients (pts) with SBS-IF. Here, we present combined safety data from TED-treated pts in these trials and their respective open-label extension studies.

**Methods** Safety data were pooled from 4 TED clinical studies in adult pts with SBS–IF: two 24 week, double-blind, placebo-controlled trials with 2 respective open-label extensions of 28 weeks' and 2 years' duration (NCT-00081458, -00798967, -00172185, -0930644).

**Results** Across 4 studies, 173 pts received subcutaneous TED (0.05 mg/kg/d, n = 134; 0.10 mg/kg/d, n = 39). 140 (81%) were treated with TED for ≥6 months and 111 (64%) were treated for ≥12 months; mean duration of TED exposure was 67 weeks. Most pts (97%) experienced ≥1 treatment-emergent adverse event (TEAE); the majority were mild (53%) or moderate (38%) in severity. TEAEs reported by ≥10% of pts were 42% abdominal pain; 29% upper respiratory tract infection; 27% catheter sepsis or nausea; 20% headaches or asthenic conditions; 19% injection-site reactions; 18.5% abdominal distension or urinary tract infections; 18% gastrointestinal (GI) stoma complications; 17% catheter site–related reactions or febrile disorders; and ≤15% vomiting, musculoskeletal pain, diarrhoea, fluid overload, hypersensitivity, or flatulence. The incidence rates of the most commonly reported GI adverse events (AEs) and fluid overload decreased over treatment time **(Table)**. TEAEs that led to premature discontinuation occurred in 20% of pts (n = 34); the most common was abdominal pain (5%; n = 8). Serious AEs (SAEs) were reported by 58% of pts (n = 101). The only SAE reported in ≥5% of TED-treated pts was catheter sepsis (25%; n = 43). As previously reported, 3 cases of malignant neoplasms occurred (metastatic adenocarcinoma, non–small-cell lung cancer, and squamous cell carcinoma). Metastatic adenocarcinoma was considered treatment related; this pt also had a history of Hodgkin disease treated with chemotherapy and radiation.

**Abstract PTU-110 Table 1** Most common GI AEs overload by time to onset from start of teduglutide treatment

| | Time Period, week | | | | | | |
|---|---|---|---|---|---|---|---|
| AE, % | <4 (n=173) | 4 to <12 (n=163) | 12 to <24 (n=156) | 24 to <36 (n=148) | 36 to <48 (n=123) | 48 to <72 (n=117) | ≥72 (n=69) |
| Abdominal pain | 23 | 12 | 9 | 10 | 2 | 0 | 10 |
| Nausea | 15 | 6 | 2 | 1 | 2 | 3 | 1 |
| Abdominal distension | 8 | 7 | 1 | 2 | 0 | 2 | 0 |
| GI stoma complication | 12 | 2 | 1 | 1 | 0 | 2 | 3 |
| Fluid overload | 5 | 4 | 3 | 3 | 1 | 3 | 0 |

**Conclusion** TED was generally well tolerated in pts with SBS-IF. No new safety signals were identified in the pooled analysis. The most frequently reported AEs were consistent with the underlying disease condition and known mechanism of action of TED and were reported early in the treatment period. Data from phase III trials demonstrate the safety of long-term TED treatment.

**Disclosure of Interest** None Declared

## PTU-111 TEDUGLUTIDE REDUCES THE NEED FOR PARENTERAL SUPPORT IN PATIENTS WITH SHORT BOWEL SYNDROME WHO HAVE ULTRA-SHORT REMNANT BOWEL AND/OR NO COLON-IN-CONTINUITY

[1]SM Gabe*, [2]K Fujioka, [3]S Schneider, [4]NN Youssef, [5]U-F Pape, [6]K Jeejeebhoy. *[1]St Mark's Hospital, London, UK; [2]Scripps Clinic, La Jolla, United States; [3]University of Nice-Sophia Antipolis, Nice, France; [4]NPS Pharmaceuticals Inc, Bedminster, United States; [5]Charité University Medicine, Berlin, Germany; [6]St. Michael's Hospital, Toronto, Canada*

10.1136/gutjnl-2016-312388.197

**Introduction** Prior to the availability of teduglutide (TED), functional bowel length was recognised as an important prognostic factor in patients (pts) with short bowel syndrome (SBS).[1] Pts with shorter residual small bowel following intestinal resection generally are more likely to remain chronically dependent on parenteral support (PS) to meet fluid and nutrient needs.[1]TED enhanced absorption and reduced the PS volume needed to maintain clinical status in a wide range of pts with varying etiologies and durations of SBS.[2-4] In the STEPS (NCT00798967) study, 27/43 (63%) TED-treated vs 13/43 (30%) placebo-treated pts achieved responder criteria (≥20% reduction in weekly PS volume from baseline at Wks 20 and 24).[4] Mean PS volume reduced by 4.4 L/wk at Wk 24 from the baseline mean volume of 12.9 L/wk. This subanalysis was undertaken to determine the impact of TED in pts with ultra-short (≤40 cm) remnant bowel and/or no colon-in-continuity.

**Methods** Data from pts randomised to TED 0.05 mg/kg/day in STEPS whose bowel length was known (n = 40) were assessed by descriptive statistics. Also, data from all pts randomised to TED 0.05 mg/kg/day in STEPS, regardless of bowel length (n = 43), were analysed according to presence or absence of colon-in-continuity. No between-group comparisons were done owing to the small sample size.

**Results** Responder criteria were met by similar percentages of pts regardless of bowel length, including pts with remnant bowel length ≤25 or ≤40 cm **(Table)**. At Wk 24, pts in each of these 2 groups with ultra-short bowel had mean decreases in weekly PS volume of 3.9 and 3.6 L, respectively. Data analysis from all pts randomised to TED, regardless of bowel length, found that 13/17 (77%) pts without colon-in-continuity and 14/26 (54%) pts with colon-in-continuity met the responder criteria. Furthermore, the mean change in weekly PS volume at Wk 24 was greater for pts with no colon-in-continuity (–6.4 L/wk) than pts with colon-in-continuity (–3.2 L/wk).

**Conclusion** Pts without colon-in-continuity show a numerically greater response to TED, perhaps reflecting natural adaptation by GLP-2 secreting cells in pts with colon-in-continuity. The overall findings reinforce the benefits of treatment with TED 0.05 mg/kg/day to enhance absorptive capacity in SBS regardless of remnant anatomy.

### REFERENCES

1 O'Keefe, *et al*. *Clin Gastroenterol Hepatol* 2006;**4**:6–10.
2 Jeppesen, *et al*. *Gut* 2005;**54**:1224–31.
3 Jeppesen, *et al*. *Gut* 2011;**60**:902–14.
4 Jeppesen, *et al*. *Gastroenterology* 2012;**143**:1473–81.

**Disclosure of Interest** None Declared

**Abstract PTU-111 Table 1** Baseline characteristics and changes in PS requirements from baseline to week 24 in SBS patients with ≤40 cm or ≤25 cm remnant bowel

| | Remnant Bowel Length | | | |
|---|---|---|---|---|
| | ≤40 cm (n=11) | >40 cm (n=29) | ≤25 cm (n=5) | >25 cm (n=35) |
| Age, mean years (range) | 41.4 (22.0, 63.0) | 54.7 (36.0, 78.0) | 37.6 (31.0, 49.0) | 52.9 (22.0, 78.0) |
| Duration of PS dependence, mean years (range) | 9.5 (1.1, 24.9) | 6.2 (1.1, 21.4) | 8.9 (1.4, 24.9) | 6.9 (1.1, 21.4) |
| Estimated small bowel length, mean cm (range) | 25.3 (15.0, 32.0) | 106.8 (45.0, 250.0) | 20.0 (15.0, 25.0) | 93.6 (26.0, 250.0) |
| Responder rate, n (%) | 7 (63.6) | 18 (62.1) | 3 (60.0) | 22 (62.9) |
| PS infusion at baseline, mean days/week (range) | 6.2 (3.0, 7.0) | 5.3 (3.0, 7.0) | 6.0 (3.0, 7.0) | 5.5 (3.0, 7.0) |
| PS volume at baseline, mean L/week (range) | 13.9 (5.4, 25.2) | 11.7 (0.9, 33.1) | 13.1 (5.4, 19.2) | 12.2 (0.9, 33.1) |
| PS volume, mean change from baseline at Week 24, L/week (range) | –3.9 (–6.4, –0.5) | –4.3 (–13.9, 2.3) | –3.6 (–5.7, –0.5) | –4.3 (–13.9, 2.3) |

## PTU-112 PROTON PUMP INHIBITORS – A RISK FOR MICRONUTRIENT DEFICIENCY. BUT ARE WE LOOKING OUT FOR THIS?

TM El Menabawey*, S Dluzewski, S Phillpotts, R Preedy, K Besherdas. *Gastroenterology, Barnet Hospital, Royal Free NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.198

**Introduction** Proton pump inhibitors (PPIs) have long been established as an effective evidence based therapy for many upper gastrointestinal diseases including peptic ulcer disease, gastro-oesophageal reflux disease, oesophagitis and dyspepsia. However, nonjudicious use of PPIs creates both preventable financial as well as medical concerns. There are several studies that point to potential micronutrient deficiencies including iron, vitamin B12, magnesium and calcium as a consequence of long-term PPI use. While these risks are considered to be relatively low in the general population, they may be notable in elderly and malnourished patients on PPIs. Although high quality evidence for the true burden of deficiency is scarce, clinicians should have an awareness of the potential for these side effects in patients, particularly those on long-term PPIs. We hypothesised that despite increasing evidence of micronutrient deficiency in patients on long term PPIs, this is not assessed in clinical practice.

**Methods** A single centre, retrospective analysis of all patients on long term PPIs usage in a large NHS North London trust was performed. Patients with Barrett's oesophagus were used as a database of patients on long term PPIs. Their names were identified from the Unisoft endoscopy reporting system as undergoing endoscopic surveillance for Barrett's. We reviewed their electronic patient records to see if they had ever had their indices for B12, ferritin or magnesium tested whilst they had been undergoing outpatient clinical review.

**Results** Of 41 patients identified, 38 (92.7%) had not had serum magnesium checked in the last 12 months including 15 (36.59%) who had never had it checked. 32 (78.1%) had not had serum ferritin or B12 checked in the past 12 months. Including 9 (21.95%) whom had never had it checked. The median magnesium level was low (0.77, range 0.76–0.89). The median ferritin was normal (106, range 13–196). There was one incidence of B12 deficiency (2.44% all patients, 31.3% of all those tested). Median serum B12 was normal (351, range 10.6–645).

**Conclusion** Despite evidence in the literature of an association between long term PPI use and micronutrient deficiency, the investigation for this by clinicians in a high-risk group was poor and inconsistent. Even in this small cohort, magnesium and B12 deficiency was detected. We would recommend that clear guidance from the British Society of Gastroenterology and other national Gastroenterology bodies on micronutrient monitoring in patients on long term PPIs is required. This may improve screening of micronutrients in long term PPI usage and identify those requiring supplementation.

**Disclosure of Interest** None Declared

## PTU-113 ACUTE GASTROINTESTINAL BLEEDING IN PATIENTS WITH AN IMPLANTED LEFT VENTRICULAR ASSIST DEVICE; A SINGLE CENTRE EXPERIENCE FROM THE UNITED KINGDOM

[1]A Marley*, [2]P Harvey, [2]C Dobson, [3]L Marley, [3]S Lim, [2]N Bhala, [2]R Boulton. *[1]Queen Elizabeth Hospital Birmingham, Birmingham, UK; [2]Gastroenterology Department; [3]Cardiology Department, Queen Elizabeth Hospital Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.199

**Introduction** Left ventricular assist devices (LVAD) are used in patients with advanced heart failure, generally as a bridge to cardiac transplantation. One complication is gastrointestinal bleeding (GIB) often related to the development of angiodysplasia (AD), platelet dysfunction and the requirement for patients to be on anticoagulation as well as an antiplatelet agent. Achieving definitive haemostasis is challenging, often requiring multiple endoscopic and radiological interventions.

We report a single centre experience with one of the largest UK LVAD populations.

**Methods** All LVAD patients with episodes of GIB were assessed. GIB episode was defined as GIB requiring GI consultation. Data was collected from electronic patient record and review of patient notes. Interventions to achieve haemostasis were subdivided by those stopping a bleeding episode and interventions with no subsequent GIB episodes.

**Results** Forty-one patients have had an LVAD implanted of which 8 (20%) had GIB, including 13 separate episodes. Three patients had recurrent GIB episodes. All patients were routinely anticoagulated including 7 on warfarin, 1 unfractionated heparin. Concomitant medications included; 7 aspirin and 1 clopidogrel.

Investigation comprised; 16 gastroscopies (OGD), 3 flexible sigmoidoscopies (FS) and 6 CT angiograms (CTA).

OGDs included findings of; 7 D2 oozing/angiodysplasia, 2 gastric oozing/angiodysplasia, 1 gastritis and 6 were normal. None of the FS provided either diagnosis or therapeutic opportunity. 5 CTAs were non-diagnostic, although one delineated a significant bleeding point amenable to embolisation. CTA was noted to suffer artefact from the LVAD likely reducing diagnostic accuracy

Interventions included; one radiologically guided embolisation, 2 monotherapy argon plasma coagulation (APC), 1 monotherapy haemospray, 5 dual therapy (including combinations of APC, heater probe, adrenaline injection and haemospray). There was no intervention in 8 OGDs. Interventions preventing further episodes included one of; embolisation, dual therapy of APC and haemospray or adrenaline injection. In 5 patients haemostasis was spontaneous.

**Conclusion** GIB was common in those with an LVAD in-situ, in three cases this was recurrent. In such cases haemostasis was challenging, requiring multiple interventions. All patients were anticoagulated and most used antiplatelet agents, which could not be safely stopped. Further investigation is required to establish the optimal approach to such high risk patients, however dual therapy including APC or, if possible, CTA with embolisation appear to be the strategies of choice.

**Disclosure of Interest** None Declared

## PTU-114 TREATMENT SWITCHING PATTERNS BETWEEN GAVISCON FORMULATIONS AND OTHER ALGINATES PRESCRIBED FOR GASTROESOPHAGEAL REFLUX DISEASE (GERD) IN ROUTINE, GENERAL PRACTICE

[1]D Williams, [2]CJ Currie, [3]P Okhuoya*, [3]J Wilkinson, [4]E Berni. [1]*Pharmatelligence*; [2]*Population Medicine, Cardiff University, Cardiff*; [3]*Heath Outcomes, Reckitt Benckiser, Hull*; [4]*Global Epidemiology, Pharmatelligence, Cardiff, UK*

10.1136/gutjnl-2016-312388.200

**Introduction** GERD is a common and bothersome ailment that can lead to more severe gastrointestinal disease. Treatment discontinuation is a metric that provides an insight into treatment satisfaction and treatment efficacy. Various alginate products are available to alleviate the symptoms of GERD, and Gaviscon formulations represent the most commonly used product. The purpose of this study was to characterise the epidemiology and treatment switching patterns between Gaviscon formulations and other alginate products indicated for GERD.

**Methods** Data for this study were derived from a 10% sample of the UK population in the Clinical Practice Research Datalink (CPRD). Eligible subjects had a first diagnosis of GERD in 2009, allowing for 5 year follow-up period. Survival analysis methods were used to analyse switching patterns within alginate groups comparing alginate versus Gaviscon. Potential clinical indicators of people likely to switch were identified using a classification and regression tree (CART), and significant covariates then used as co-variables for a Cox regression model.

**Results** Following exclusions, 22,625 patients were identified for analysis. The average age at time of diagnosis of these patients was 52 years, with 57.1% females. 69.6% of patients were current alcohol drinkers compared to the three other alcohol groups, never drunk (14.9%), previous drinkers (3.1%) and missing (12.5%). The Kaplan-Meier plot (figure) illustrates that the time to a first switch within alginates was quicker for patients that experience a switch from a generic alginate to Gaviscon compared to Gaviscon to a generic alginate. The proportion of patients that had not switched at the end of treatment years were as follows: year 1: 0.97 vs 0.91, year 2: 0.94 vs 0.85, year 3: 0.92 vs 0.82, year 4:0.91 vs 0.77 and year 5:0.88 vs 0.75. CART modelling elucidated three co-variables associated with switching treatment: first prescription of generic alginate or Gaviscon, gender, and alcohol status. In the Cox model there was a corresponding difference in these metrics: alginate to Gaviscon versus Gaviscon to alginate (aHR = 1.77, 95% CI 1.38–2.28).

**Conclusion** There was an association between the type of alginate prescribed for GERD treatment and the likelihood of switching. Patients were more likely to switch from alginate to Gaviscon compared with the reverse. The data showed that those patients taking Gaviscon from first prescription were less likely to switch to an alternative alginate treatment. Possible explanations for this include potential differences in efficacy, or differences in organoleptic properties.

**Disclosure of Interest** D. Williams Conflict with: This work was funded by Reckitt Benckiser, C. Currie: None Declared, P. Okhuoya: None Declared, J. Wilkinson: None Declared, E. Berni: None Declared

## PTU-115 PAN-ENTERIC PROLONGATION OF TRANSIT TIMES AND HEIGHTENED CAECAL FERMENTATION IS PRESENT IN TYPE 1 DIABETIC PATIENTS WITH PERIPHERAL NEUROPATHY

[1,2]AD Farmer*, [2]SD Mohammed, [2]M Scott, [3]A Drewes, [3]C Brock. [1]*Department of Gastroenterology, University Hospitals of North Midlands, Stoke on Trent*; [2]*Wingate Institute of Neurogastroenterology, Barts and the London, London, UK*; [3]*MechSense, University Hospitals Aalborg, Aalborg, Denmark*

10.1136/gutjnl-2016-312388.201

**Introduction** The wireless motility capsule (WMC) is a minimally invasive ambulatory technology that concurrently measures pressure, pH and temperature as it traverses the gastrointestinal (GI) tract. Knowledge gaps remain concerning GI motility in type 1 diabetes (T1DM) with established diabetic sensorimotor polyneuropathy (DSPN). It has been recently suggested that the change in pH across the ileocaecal valve (ICV) is a surrogate marker of bacterial fermentation in the caecum.[1] The aim was to explore whether T1DM patients with DSPN have demonstrable GI dysmotility with in comparison to matched healthy controls. Furthermore, we aimed to investigate the co-relationships between motility, self-reported GI symptoms, quality of life and objective markers of DSPN.

**Methods** 41 patients with T1DM with DSPN (33 male, mean age 51 years, range 35–71) and 41 healthy controls (28 male, mean age 51 years, range 28–78) underwent a WMC study using a standardised protocol following consumption of a meal of known nutritional composition (SmartBar).[2] Segmental transit was derived from measures around known anatomical landmarks as identified by compartmental pH changes. In patients, vibration thresholds and the Michigan Neuropathy Screening Instrument (MNSI) were collected in conjunction with self-reported GI symptoms (Patient Assessment of Upper Gastrointestinal Disorder Severity Symptom Index (PAGI-SYM)).

**Results** Differences in regional and whole gut transit times are shown in Table 1. ICJ pH drop was associated with prolonged colonic transit ($r = 0.34$, $p = 0.01$). Multivariate linear regression, controlling for age, gender, duration of T1DM and glycaemic control, did not demonstrate an association between PAGI-SYM, regional or total transit times but higher vibration thresholds and MSNI were associated with prolonged gastric emptying time ($p = 0.03$, $p = 0.002$ respectively).

**Abstract PTU-115 Table 1** Regional and panenteric transit times

| Regional Transit | T1DM (mean ± SD) | Healthy Controls (mean ± SD) | *P* value |
|---|---|---|---|
| Gastric emptying time (minutes) | 308 ± 305 | 170 ± 45.3 | 0.005 |
| Small bowel transit time (minutes) | 261 ± 94 | 231 ± 63 | 0.04 |
| Colonic transit time (minutes) | 2098 ± 1144 | 1430 ± 869 | 0.004 |
| Whole gut transit time (minutes) | 2712 ± 1252 | 1699 ± 782 | <0.0001 |
| ICJ pH change (delta pH) | 1.8 ± 0.4 | 1.1 ± 0.5 | <0.0001 |

**Conclusion** T1DM is associated with prolongation of regional and whole gut transit prior to the development symptoms independent of disease duration and glycaemic control.

Moreover, such prolongation is associated with clinical markers of DPSN. Further work is warranted to examine the longitudinal nature of these findings and whether pharmacotherapeutic interventions can lead to the restoration of normal motility.

**REFERENCES**
1 Farmer, *et al*. *WJG* 2014.
2 Wang YT, *et al*. APT 2015.

**Disclosure of Interest** None Declared

## PTU-116 EXPLORING THE ASSOCIATION BETWEEN GENETIC POLYMORPHISMS AND SWALLOWING MOTOR CORTEX EXCITABILITY INDUCED BY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION: IS RESPONSE PREDICTED BY GENETIC PREDISPOSITION?

[1]A Raginis-Zborowska*, [1]S Hamdy, [1]E Michou, [2]N Pendleton. *[1]Institute of Inflammation and Repair; [2]The Institute of Brain, Behaviour and Mental Health, The University of Manchester, Manchester, UK*

10.1136/gutjnl-2016-312388.202

**Introduction** Non-invasive brain stimulation such as repetitive Transcranial Magnetic Stimulation (rTMS) is used to manipulate excitability in the swallowing motor cortex. However, the molecular mechanisms controlling this excitability remain unknown. Swallowing neurophysiology and impairments might be in part driven by genes. The aim of this study was to determine whether the variability in excitability after 1 Hz and 5 Hz rTMS within the pharyngeal motor cortex might be affected by putative selected single nucleotide polymorphisms (SNPs).
**Methods** 11 SNPs from 7 genes (*BDNF, COMT, TRKB, APOE, DRD2, GRIN2B* and *GRIN1*) were selected a priori to explore possible link between neurophysiological outcomes after rTMS intervention with high (5 Hz) and low (1 Hz) frequencies. A total of 41 healthy young (mean age 25.4 ± 4.6 years) volunteers were investigated. All subjects were assessed for corticobulbar excitability after single-pulse TMS. Repeated measurements of motor evoked potentials (MEPs) from the pharynx were recorded before and for up to one hour after the interventions of 1 Hz and 5 Hz rTMS. Salivary DNA was collected and process post-hoc and SNPs correlated with pharyngeal MEPs and interventions (1 vs. 5 Hz rTMS).
**Results** Non-carriers of the minor G allele from SNP rs6269 from *COMT* gene are more likely to be non-responders (*P*-value =0.026), while those carrying G allele are more likely have inhibitory and excitatory outcomes after delivering 1 Hz and 5 Hz rTMS. Cross-tabulation analysis with chi square indicated there was a significant difference between 5 Hz rTMS outcome and one SNP - *DRD2* rs1800497: specifically carriers of minor allele A from this *DRD2* gene were more strongly inhibited (*P*-value =0.03) while non-carriers were more likely to represent non-responders.
**Conclusion** We now report possible evidence for genetic associations with the neuromuscular control of swallowing influenced by rTMS paradigms. Two SNPs from *COMT* and *DRD2* genes appear to play a role in pharyngeal cortex excitability depending on the stimulation applied. Further research is needed to establish more detailed information which might be used in developing more stratified approach in the field of dysphagia therapy with non-invasive brain stimulation.
**Disclosure of Interest** None Declared

## PTU-117 SCREENING FOR COELIAC DISEASE IN IRRITABLE BOWEL SYNDROME IS STILL WORTHWHILE: AN UPDATED SYSTEMATIC REVIEW AND META-ANALYSIS

[1,2]AJ Irvine*, [1,2]AC Ford, [3]WD Chey. *[1]Leeds Institute of Biomedical and Clinical Sciences, University of Leeds; [2]Leeds Gastroenterology Institute, St James's University Hospital, Leeds, UK; [3]Department of Internal Medicine, University of Michigan Health System, Ann Arbour, United States*

10.1136/gutjnl-2016-312388.203

**Introduction** Coeliac disease (CD) and irritable bowel syndrome (IBS) may share similar symptoms, including bloating, abdominal pain, and diarrhoea. A previous meta-analysis demonstrated the prevalence of CD was higher in patients with IBS than controls without IBS, but recent studies have cast doubt on this. We therefore updated our previous meta-analysis.
**Methods** MEDLINE and EMBASE were searched from 2008 (the date of a previous meta-analysis) up to February 2016. Relevant case series and case-control studies with unselected adults with IBS (+/- controls) were reviewed. IBS diagnosis was based on specific symptom-based criteria, physician's opinion, or questionnaire data. Tests for CD included IgA antigliadin antibodies (AGA), tissue transglutaminase antibodies (tTG), endomysial antibodies (EMA), or dudoenal (D2) biopsies after positive IgA AGA, tTG, or EMA. The proportion of individuals meeting criteria for IBS testing positive for CD was combined, to give a pooled prevalence in all studies. For case-control studies the prevalence of a positive test for CD in both cases with IBS and controls without IBS were compared using odds ratios (OR) with a 95% confidence interval (CI).
**Results** 10 studies used IgA AGAs to screen for CD in 4525 subjects, 2094 of whom had IBS. Pooled prevalence of positive IgA AGAs in IBS subjects was 5.7% (95% CI 1.7% to 11.8%). 7 of these were case-control studies and the odds ratio for a positive IgA AGA in 1530 IBS cases, compared with 2430 controls, was 2.97 (95% CI 1.42 to 6.18). 32 studies used EMA or tTG in 14150 subjects, 8219 of whom had IBS. Pooled prevalence of positive EMA or tTG was 2.6% (95% CI 1.6% to 3.8%). 12 of these were case-control studies and the odds ratio for a positive EMA or tTG in the 2677 IBS cases compared with 5931 controls was 2.60 (95% CI 1.41 to 4.79). 23 studies followed positive coeliac serology of any type with the offer of duodenal biopsy in 9784 individuals, 6991 of whom met criteria for IBS. Pooled prevalence of biopsy-proven CD in these studies was 3.3% (95% CI 2.3% to 4.5%). 8 of these were case-control studies and the odds ratio for biopsy-proven CD in 2025 IBS subjects compared with 2793 controls was 3.96 (95% CI 2.06 to 7.59).
**Conclusion** Screening for CD in people with symptoms compatible with IBS is still worthwhile. Between 2.6% and 5.7% will have a positive serological test for CD, and 3.3% will have biopsy-proven CD. In all instances, the prevalence was significantly higher than in controls without IBS-type symptoms.
**Disclosure of Interest** None Declared

## PTU-118 COMPARISON OF ANAL SPHINCTER FUNCTION USING SOLID-STATE AND WATER-PERFUSED HIGH RESOLUTION ANORECTAL MANOMETRY (HRAM) IN HEALTHY VOLUNTEERS

A Rasijeff*, M Withers, J Burke, W Jackson. *GI Physiology, Castle Hill Hospital, Cottingham, HU16 5JQ, UK*

10.1136/gutjnl-2016-312388.204

**Introduction** To compare anal sphincter pressure parameters using water-perfused (WP) and a solid-state (SS) HRAM catheter in healthy volunteers using a standardised protocol to provide normal values.

**Methods** 60 asymptomatic volunteers were studied (20 M/ 40 F). WP HRAM single-use ano-rectal catheters (ARC), 10 channels, external diameter 14 Fr (MUI Scientific, Canada) and SS HRAM multi-use ARC, 8 channels placed 0.8 cm apart, external diameter of 12 Fr, 16 Fr at sensors (UniSensor AG, Switzerland) both distributed by Ardmore Healthcare, UK. Studies were performed consecutively in a randomised order with the volunteers in the left-lateral position with knees & hips flexed. After a 3 minute familiarisation period, the following test manoeuvres were performed according to a standardised protoco,[1] Rest- subject relaxed and lying still, anorectal pressures measured for 1 minute. Cough- asked to cough once maximally. Squeeze- asked to squeeze maximally for 5 seconds. Cough & squeeze manoeuvres were repeated twice. Sensation of maximum rectal capacity was assessed by gradual inflation of the balloon at a rate of 2 ml/sec using an automated pump.

**Results** Normal values (5 th-95th percentile) for parameters of ano-rectal function in males & females using.

**Abstarct PTU-118 Table 1**

| Males: | SS HRAM: | WP HRAM: |
|---|---|---|
| Anal canal length (cm) | 3.0-5.0 | 2.8-5.3 |
| Resting pressure (mmHg) | 50.3-115.5 | 42.1-104 |
| Cough increment (mmHg) | 70.5-364.4 | 31.5-147.6 |
| Squeeze increment (mmHg) | 76.0-527.6 | 38.1-301.5 |
| Max tolerated volume (ml) | 99.5-276.3 | 120.1-250 |
| Females: | SS HRAM: | WP HRAM: |
| Anal canal length (cm) | 1.9-4.2 | 1-7-3.5 |
| Resting pressure (mmHg) | 25.6-94.5 | 33.4-101.9 |
| Cough increment (mmHg) | 43.3-259.5 | 27.8-136.3 |
| Squeeze increment (mmHg) | 34.5-332.8 | 27.2-188.5 |
| Max tolerated volume (ml) | 87.6-236.4 | 80.2-233.4 |

**Conclusion** Significant differences between the two systems were observed for maximum squeeze increment and maximum cough increment in males & females ($p < 0.001$). There was no significant difference between the two catheter types in relation to anal canal length, resting pressure or maximum tolerated volume. This study utilised the same manometry system to record and analyse results, making it the first study to directly compare the impact of catheter choice on HRAM in normal volunteers.

### REFERENCE

1 Carrington EV, *et al*. Traditional measures of normal anal sphincter function using HRAM) in 115 healthy volunteers. *Neurogastro & Motility* 2014;**26**(5):625–635.

**Disclosure of Interest** None Declared

## PTU-119 ASSOCIATION BETWEEN ACUTE SEPSIS AND OROPHARYNGEAL DYSPHAGIA IN A HOSPITALISED ELDERLY POPULATION

[1]A Sasegbon*, [2]P Dark , [3]L O'Shea, [4]S Hamdy. [1]*Department of Gastroenterology*; [2]*Institute of Inflammation and Repair*; [3]*SLT Department*; [4]*Centre for Gastrointestinal Sciences, Institute of Inflammation and Repair, Salford Royal Hospital NHS Trust, Manchester, UK*

10.1136/gutjnl-2016-312388.205

**Introduction** Elderly patients are recognised to be at increased risk of oropharyngeal dysphagia (OPD), the causes of which are likely to be multifactorial.[1,2] The study aim is to identify if sepsis is an additional risk factor for OPD in the elderly (age $\geq$ 65).

**Methods** A hospital electronic database was searched for all elderly patients ($\geq$65 years) referred for assessment for suspected dysphagia between May 2013 and January 2014. Exclusion criteria were age < 65 years and/or concurrent OPD due to: acute intracranial event, space occupying lesion or trauma. Data were collected on age; sex; co-morbidities; delirium; existing OPD; body mass index (BMI) on admission + discharge; sepsis; type of sepsis; microbiology confirming sepsis; diagnosis of sepsis made before OPD; recovery of OPD with resolution of sepsis; mortality; aspiration subsequent to sepsis and OPD and medication potentially contributing to OPD (e.g. benzodiazepines and opiates). Sepsis was defined as evidence of a systemic inflammatory response syndrome with a clinical suspicion of infection.

**Results** Three hundred of 1470 patients referred for dysphagia assessment during the study period met the inclusion criteria. The prevalence of sepsis induced OPD was 17% (50 patients). The mean age was 82 years while the median was 80. The interquartile age range was 12.5 years. 60% were male and 40% female. Admission BMIs ranged from 15.8 to 34.3 with a median of 21.2.Common co-morbidities included: dementia, chronic obstructive pulmonary disease, ischaemic heart disease, diabetes and chronic kidney disease. Within this group, the vast majority (76%) failed to recover swallowing, 14% had complications of aspiration and 36% died. Types of sepsis included: chest (48%); mixed (26%); urological (18%); biliary (4%); cellulitis (2%); intra-abdominal (2%); gastroenteritis (2%) and unknown (2%). Confirmatory microbiology was found in only 38%. Other factors contributing to the risk for dysphagia included delirium (18%) or new onset confusion (26%), reduced conscious level (26%) and intake of medication potentially contributing to OPD (38%). However 14% of patients had sepsis induced dysphagia without any clear or established risk factors.

**Conclusion** The prevalence of sepsis induced dysphagia is significant (17%) and should be taken into account in any new onset aspiration event in older hospitalised patients. Additional risk factors include neuroleptic medication, reduced conscious levels and associated confusion. Sepsis should be recognised as a major factor in the decompensation of swallowing and OPD in the elderly which rarely recovers, has increased mortality and might be considered a geriatric syndrome for which clinicians should be vigilant.

### REFERENCES

1 Shaw DW, Cook IJ, Gabb M, Holloway RH, Simula ME, *et al*. Influence of normal ageing on oral-pharyngeal and upper esophageal sphincter function during swallowing. *Am J Physiol*. 1995;**268**(3 Pt 1):G389–96.

2 Rofes L, Arreola V, Almirall J, Cabre M, Campins L, Garcia-Peris P, *et al*. Diagnosis and management of oropharyngeal dysphagia and its nutritional and respiratory complications in the elderly. *Gastroenterology Research and Practice*. 2011;**2011**:13.

**Disclosure of Interest** None Declared

## PTU-120 EXTENDED BRAVO STUDIES (>48 HRS) IMPROVES DIAGNOSTIC YIELD OF GASTRO-OESOPHAGEAL REFLUX DISEASE (GORD) IN PATIENTS WITH NORMAL MULTICHANNEL INTRALUMINAL IMPEDANCE-PH (MII-PH) STUDIES

[1,2]C Chia*, [2]I Miah, [2]I Koumoutsos, [2]I Nasr, [2]T Wong. [1]*Gastroenterology, Tan Tock Seng Hospital, Novena, Singapore*; [2]*Gastroenterology, Guy's & St Thomas' Trust (GSTT), London, UK*

10.1136/gutjnl-2016-312388.206

**Introduction** MII-pH catheter studies measure both acid and non-acid reflux and are considered by some to be the gold standard in the diagnosis of GORD. Wireless pH capsule (Bravo) may increase the diagnostic yield of standard 24 hr catheter-based studies by overcoming the limitation of day-to-day reflux variability. This study aims to assess the additional diagnostic yield of extended Bravo recordings (up to 96 hours) in patients with normal 24 hr MII-pH results.

**Methods** A total of 44 patients with typical GORD symptoms but negative 24 hr MII-pH studies off proton pump inhibitor (PPI) were referred for Bravo capsule studies. Bravo studies were performed beyond 48 hrs (up to 96 hrs). Bravo analysis was conducted using the 'Worst Day Analysis' (WDA) and 'Average Day Analysis' (ADA). Reference values for MII-pH and Bravo equivalent were adopted from internationally established studies (Table 1). Subgroup analyses were made on cohorts whose MII-pH showed normal AET with (A) normal number of total reflux events (TRE), (B) normal number of non-acid reflux (NAR) events and (C) increased number of NAR events. Statistical analysis was performed using SPSS V20.

**Results** Our study group (male = 14, female =30) successfully completed Bravo studies up to 96 hours in 77.3% and beyond 48 hours in 97.7%. Using the WDA and ADA respectively, Bravo (AET cut-off >4.2%) captured an additional 59.1% and 43.2% of patients with increased AET ($p < 0.001$) in cases with normal AET on MII-pH. In MII-pH subgroups (A), (B) and (C), Bravo WDA was able to reveal an additional positive AET of 61.8%($p < 0.001$), 60.9%($p < 0.001$) and 50.0% ($p = 0.016$) respectively compared to MII-pH. Inclusion of symptom reflux association in Bravo cases with increased AET also showed additional diagnostic yield over MII-pH ranging from 42.9–47.7% ($p \leq 0.031$) across all subgroups.

**Conclusion** Extended Bravo studies (>48hours) diagnosed GORD in more than half of cases with an initial normal MII-pH. Half of those with increased NAR events on MII-pH showed positive acid reflux on prolonged Bravo. This additional yield can alter diagnosis from functional heartburn/hypersensitive oesophagus to GORD in difficult cases and influence management.

**Disclosure of Interest** None Declared

**Abstract PTU-120 Table 1** Increased bravo acid exposure time (AET) in normal MII-pH studies

| 24hr MII-pH* | Bravo 'Worst Day Analysis' (WDA) | | | Bravo 'Average Day Analysis' (ADA) | | |
|---|---|---|---|---|---|---|
| | Increased AET (>5.3)[1] | Increased AET (>4.4)[2] | Increased AET (>4.2)[3] | Increased AET (>5.3)[1] | Increased AET (>4.4)[2] | Increased AET (>4.2)[3] |
| Normal AET (n=44) | 54.5% (p<0.001) | 59.1% (p<0.001) | 59.1% (p<0.001) | 29.5% (p<0.001) | 40.9% (p<0.001) | 43.2% (p<0.001) |
| (A) Normal AET & Normal TRE (n=34) | 58.8% (p<0.001) | 61.8% (p<0.001) | 61.8% (p<0.001) | 29.4% (p=0.002) | 41.2% (p<0.001) | 44.1% (p<0.001) |
| (B) Normal AET & Normal NAR (n=23) | 56.5% (p<0.001) | 60.9% (p<0.001) | 60.9% (p<0.001) | 26.1% (p=0.031) | 39.1% (p=0.004) | 43.5% (p<0.002) |
| (C) Normal AET & Increased NAR (n=14) | 50.0% (p=0.016) | 50.0% (p=0.016) | 50.0% (p=0.016) | 35.7% (p=N.S.) | 35.7% (p=N.S.) | 35.7% (p=N.S.) |

Table 1: Increased Bravo Acid Exposure Time (AET) in normal MII-pH studies
N.S. =not significant
NAR=Non-acid Reflux
*Cut-off values based on Shay et al. Am J Gastroenterol 2004; 99:1037
1 Pandolfino et al. Am J Gastroenterol 2003; Vol. 98, No. 4, 2003
2 Wenner et al. Scand J Gastroenterol 2005; 40: 768–774
3 Ayazi et al. Clinical Gastroenterology And Hepatology 2009; 7:60–67

## PTU-121 ANORECTAL DYSFUNCTION IN QUIESCENT INFLAMMATORY BOWEL DISEASE: IS THERE A ROLE FOR BIOFEEDBACK THERAPY?

[1,2]DH Vasant*, [1,2]JK Limdi, [3]K Solanki, [1,3]NV Radhakrishnan. [1]*Gastroenterology, Pennine Acute Hospitals NHS Trust, Greater Manchester*; [2]*Manchester Academic Health Sciences Centre, University of Manchester, Manchester*; [3]*GI Physiology, Pennine Acute Hospitals NHS Trust, Greater Manchester, UK*

10.1136/gutjnl-2016-312388.207

**Introduction** Despite optimal disease control and the absence of objective evidence of mucosal inflammation, symptoms of faecal incontinence (FI), increased stool frequency, urgency and tenesmus secondary to anorectal dysfunction can significantly reduce quality of life (QoL) in Inflammatory Bowel Disease (IBD) patients. Biofeedback therapy (BFT) is an established treatment for FI but its role in IBD patients with Anorectal dysfunction has not been explored.

**Methods** In a retrospective study, we reviewed all patients with IBD referred for Anorectal Manometry (ARM) studies and BFT at our institution between 2009–2014 for FI.[1] Data confirming IBD quiescence was recorded with endoscopy, histology, radiography and biochemistry from all subjects. Additionally, IBD phenotypes and therapies, surgical and obstetric histories, baseline FI frequency, QoL scores (rated 0–10), ARM data and Endoanal Ultrasonography results (when available) were recorded. Patients were classified as responders or non-responders to BFT based on symptoms at follow-up.

**Results** Nine IBD patients (median age 53, 7/9 female), with quiescent IBD (6/9 Crohn's Disease (CD) and 3/9 Ulcerative Colitis (UC)), median baseline FI frequency 11.5/week and QoL score 6, completed in our Gastroenterologist-led BFT programme. In the CD cohort; 1/6 had previous anal fistula repair, 2/6 previous right hemicolectomy with ileal resection and 3/6 crohns colitis. In the UC group; 2/3 patients had proctitis/proctosigmoiditis and the other patient had ileo-anal pouch post-panproctocolectomy. Based on ARM findings; All patients had external sphincter weakness 9/9, whilst 6/9 had internal anal sphincter weakness and 2/9 met criteria for co-existing dyssynergic defecation. Following a mean of 3 BFT sessions; 8/9 (89%) patients reported improvement in FI symptoms with statistically significant improvement in FI frequency compared to baseline (Mann-Whitney $U = 0.5$, $P = 0.003$) and 5/9 (56%) reporting no FI episodes.

**Conclusion** Our data in a heterogenous cohort of IBD patients with moderate QoL scores and FI despite disease quiescence, highlights the importance of considering referral for ARM studies after excluding active inflammation. BFT appears to be as effective in IBD patients as it is in non-IBD patients with FI and may have a role in improving QoL in these patients.

### REFERENCE

1 Vasant D, Solanki K, Sharma R, *et al*. Ptu-180 predicting outcomes of biofeedback therapy for faecal incontinence – where 'good' practice makes perfect. *Gut* 2015;**64**:A142.

**Disclosure of Interest** None Declared

## PTU-122 A NATIONAL SURVEY OF GI PHYSIOLOGY & MOTILITY SERVICES IN THE UK AND IRELAND

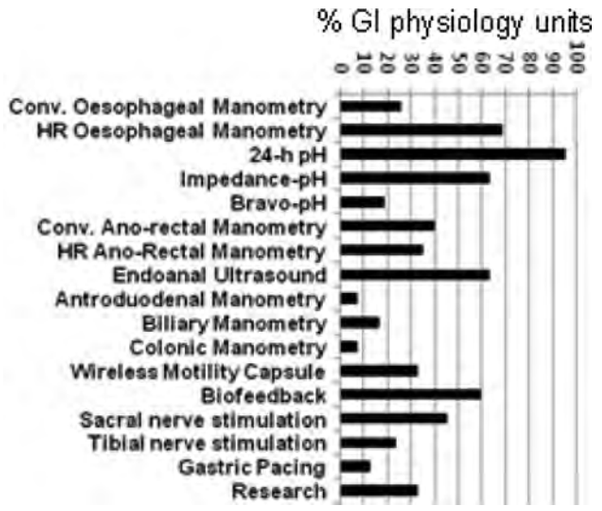
[1]DH Vasant*, [1]S Hamdy, [2]K Solanki, [2]S Senapati, [3]L Smith, [4]J Barlow, [2]NV Radhakrishnan. [1]*Manchester Academic Health Sciences Centre, University of Manchester, Manchester*; [2]*Pennine Acute Hospitals, Rochdale*; [3]*GI Physiology, Sheffield Teaching Hospitals, Sheffield*; [4]*GI Physiology, Spire Manchester Hospital, Manchester, UK*

10.1136/gutjnl-2016-312388.208

**Introduction** Clinical demands and advances in diagnostics and therapeutics have seen a rapid growth in GI physiology/motility services. We surveyed the practice, training and attitudes towards services nationally, to determine if these aspects have kept pace with expansion and to identify areas for development.

**Methods** An online survey developed by a multi-disciplinary panel with medical, surgical and GI physiology representation was circulated to all GI clinicians and physiologists in the UK & Ireland by their national societies BSG, AGIP, AUGIS and ACPGBI. The survey included both generic questions and specific ones signposted for 'specialists' (GI physiologists/clinical leads).

**Results** 313 responses (59% Gastroenterologists) were received, with 221/313 (71%) from 98 institutions having an on-site GI physiology unit. Most units (88/98) had a clinical lead (60% Gastroenterologists, 34% with 'subspecialty interest'). Figure 1 summarises the services available nationally. GI physiologists/nurse specialists conduct the majority of studies (69%) and biofeedback (84%). GI physiologists report most studies (Upper GI 71%, Lower GI 69%), however cases are often discussed with a lead clinician prior to finalising (Upper GI: 34% discuss all cases and 38% selected cases; Lower GI: 27% discuss all cases and 27% selected cases), 45% have dedicated multidisciplinary team meetings (MDT) for reporting (held weekly in 72%) and of those without an MDT, 72% felt introducing one would improve provision of therapeutic recommendations. 54% of 'specialists' reported that therapeutic recommendations are not routinely made (50% citing reasons




**Abstract PTU-122 Figure 1**

such as; no subspecialist clinician/ 'not qualified' or 'not necessary'). Moreover, 70% of 'specialists' felt a 'subspecialist' clinician is best placed to make such recommendations, whilst only 4% of clinicians without subspeciality interest are comfortable interpreting the data. Overall, very few felt that services (26%), research opportunities (15%) and training (14% for GI physiologists and 10% for clinicians) were adequate, with most GI physiologists (83%) and clinicians (96%) recommending changes with suggestions including an accredited clinical training programme.

**Conclusion** The survey highlights that GI physiology/motility is a rapidly emerging sub-specialty with limited exposure during clinical training. An MDT approach with subspecialist clinical input facilitates interpretation of complex data and provision of therapeutic recommendations. Percieved deficiencies in current services and training systems have been identified, providing an opportunity to raise awareness nationally via AGIP/BSG and to build on existing training pathways.

**Disclosure of Interest** None Declared

## PTU-123 "HAVE YOUR SECOND BABY FIRST, AND HAVE 'EM YOUNG": RISKS OF OBSTETRIC TRAUMA AND ANORECTAL DYSFUNCTION AFTER OBSTETRIC INJURY

[1,2]E Athanasakos*, [2]A Raeburn, [3]A Vashisht, [2]N Zarate, [2]A Emmanuel. *[1]GI Physiology; [2]Gi Physiology Unit; [3]Women's Health, University College of London Hospital, London, UK*

10.1136/gutjnl-2016-312388.209

**Introduction** Traumatic vaginal delivery is closely correlated with attenuation of anorectal structure and function, and hence symptoms of faecal urgency (FU) and incontinence (FI). We aim to describe the immediate clinical and physiological effect of overt perineal trauma in patients within 6 months of injury.

**Methods** One hundred consecutive postpartum (3–6 months) patients who sustained an obstetric tear at delivery were studied over a 13 month period. Mean age was 33 years (range 22–51 years old), 75 women were older than 30 years. All patients underwent anorectal physiology (ARP) and endoanal ultrasound (EAUS) as per Unit protocol.

**Results** Cohort: 84 of these obstetric tears were first vaginal delivery; of 16 who were multiparous, 11 had also sustained tears in their first delivery. Ten women sustained a 2nd degree tear, 84 a 3rd degree tear (3 a=45; 3 b=33; 3 c=6) and 6 women a 4th degree tear. Instrumentation was necessary in 55 of cases (43 forceps, 11 ventouse and 1 combination). Regarding other risk factors, birth weight was over 4 kg in 26 and 32 required an episiotomy. The table shows symptom burden at median 4 months; 60 patients were symptomatic, presenting with more than one troublesome symptom.

**Abstract PTU-123 Table 1**

| **No symptoms** | **40%** |
|---|---|
| Symptoms | 60% |
| *Faecal urgency* | *39%* |
| *Faecal incontinence* | *19%* |
| *Passive incontinence* | *6%* |
| *Flatus incontinence* | *17%* |
| *Evacuation difficulty* | *9%* |

Investigation: ARP demonstrated 17 with reduced resting sphincter pressure, 43 reduced voluntary squeeze and 27 inadequate endurance squeeze. Only 33 women had entirely normal manometry. Rectal hypersensitivity defined as two reduced thresholds to rectal mechanical distension was found in 11 patients. Similarly, abnormal anal and rectal electrosensory thresholds were seen in 20 and 5 women respectively. There was a significant correlation between those patients who had 3rd degree tears and hypersensitivity to maximum balloon distension ($p = 0.007$) and reduced anal sensitivity ($p = 0.005$). Immediate post-partum repair is often unsuccessful, 56 women had a persistently disrupted or scarred external sphincter and 22 had a disrupted internal anal sphincter on EAUS.

**Conclusion** Maternal age over 30 and first delivery are disproportionately correlated to the likelihood of severe obstetric tears. The majority of women experience symptoms, of which the commonest are FU, FI and flatus incontinence. Sphincter disruption is often persistent despite attempted repair, and is associated with rectal hypersensitivity. Systematic investigation and clinical assessment is recommended to improve clinical management and offer counselling in regards to risks associated with future deliveries.

**Disclosure of Interest** None Declared

## PTU-124 THE TREATMENT NEEDS OF PATIENTS WITH GASTROINTESTINAL DISORDERS IN TERTIARY FUNCTIONAL VERSUS POOLED PSYCHOLOGY CLINICS

G Fairclough*, J Ablett, P Paine. *Salford Royal Foundation Trust, Salford, UK*

10.1136/gutjnl-2016-312388.210

**Introduction** Psychological and physical co-morbidity is associated with poorer outcomes and higher service use for patients with gastrointestinal (GI) disorders. This study aimed to evaluate the treatment needs of patients with GI disorders in tertiary functional versus pooled GI psychology clinics.

**Methods** 67 patients (49 females; mean age 42; range 17–86) completed questionnaires on accessing a tertiary functional (n = 36) and pooled (all causes) GI psychology clinic (n = 31). The Gastrointestinal Symptom Rating Scale (GSRS), Work and Social Adjustment Scale (WSAS), Patient Health Questionnaire (PHQ-9), Generalised Anxiety Disorder Questionnaire (GAD-7) and Visceral Sensitivity Index (VSI) were completed. Mann-Whitney U-test was used for comparison of samples.

**Results** Severity across measures was high amongst both samples. 31% of tertiary functional patients (n = 35) and 37% of pooled GI psychology (n = 30) patients scored within the 'severe range' for all three areas of need; GI symptom severity, functional impairment and distress. 67% of patients within the tertiary clinic were above cut off for clinically significant distress compared with 90% in the pooled GI psychology clinic. No significant differences were found between the two groups of patients for GI symptom severity ($U = 527$, $p = 0.697$), functional impairment ($U = 532$, $p = 0.951$), GI-specific distress ($U = 502.5$, $p = 0.949$) or depression ($U = 403$, $p = 0.078$). Patients seen within the GI Psychology clinic scored significantly higher for generalised anxiety ($U = 350$, $p = 0.014$).

**Conclusion** Clinically significant high levels of GI symptom severity, functional impairment and psychological distress were reported across the samples. This was expected as referral indication to the pooled GI psychology clinic, but surprisingly high in the tertiary functional clinic. This supports developing integrated psychological services within this GI sub–speciality to provide interventions for health-related distress. Generalised

anxiety was significantly higher within the pooled psychology sample. Future studies may determine whether GI patients with less overt anxiety, but nonetheless significant psychological needs, are at risk of under-referral to psychology. Use of questionnaires may identify psychological co-morbidity within gastroenterology services to triage appropriate and timely referrals for psychological therapy.

**Disclosure of Interest** None Declared

## PTU-125 LABORATORY INVESTIGATIONS FOR PATIENTS MEETING DIAGNOSTIC CRITERIA FOR IRRITABLE BOWEL SYNDROME: ARE WE MEETING THE STANDARDS?

J Kennedy*, L Materacki, K Wright, S Waterman, R Makins, A Di Mambro. *Gastroenterology, Gloucestershire Hospitals NHS Trust, Cheltenham, UK*

10.1136/gutjnl-2016-312388.211

**Introduction** Alongside a thorough clinical assessment NICE clinical guideline 61 recommends that patients meeting diagnostic criteria for irritable bowel syndrome (IBS), as defined by the Rome III criteria, should undergo laboratory testing for inflammation (C-reactive peptide (CRP) and plasma viscosity (PV) or erythrocyte sedimentation rate (ESR)), full blood count (FBC) and antibody testing for coeliac disease to exclude non-organic pathology.[1] Faecal calprotectin is a reliable and cost effective adjuvant test to help differentiate between functional and inflammatory bowel disease (IBD).[2,3] Our aim was to assess local adherence to NICE guidelines on investigating patients who meet diagnostic criteria for IBS.

**Methods** As part of a wider study into the use of faecal calprotectin as a diagnostic tool within Gloucestershire Hospitals NHS Foundation Trust, we interrogated clinic letters, endoscopy reports and pathology results for patients in whom a negative (<50 mg/g faeces) or intermediate (50–150 mg/g faeces) faecal calprotectin level had been measured between September 2014 and September 2015. In patients diagnosed with IBS, we identified which of CRP, PV/ESR, FBC and antibody testing for coeliac disease had been done prior to or concurrent with faecal calprotectin measurement.

**Results** Of the 148 patients (age range: 16–81, median age: 35; 72% female) who satisfied inclusion criteria, 63.5% (n = 94) had not undergone at least one of the recommended laboratory tests around the time of faecal calprotectin measurement. PV/ESR had not been checked in a majority (54.1%). Notably, 7.4% of patients had never had coeliac serology checked, 72.7% of whom presented with a change in bowel habit.

**Conclusion** Although clear guidance exists for the investigation of patients meeting diagnostic criteria for IBS and use of faecal calprotectin as a diagnostic tool, insufficient essential accessory investigations are being completed. This risks conditions such as IBD, gastrointestinal cancer and coeliac disease being misdiagnosed as IBS with significant implications for delays in management and ongoing avoidable morbidity. We are reviewing measures to improve local adherence to NICE guidance, and call on other Trusts nationally to reflect on their own practice.

### REFERENCES

1 Irritable bowel syndrome in adults: diagnosis and management. NICE guidelines [CG61]. Published: February 2008.
2 Konikoff MR, Denson LA. Role of faecal calprotectin as a biomarker of intestinal inflammation in inflammatory bowel disease. *Inflammatory Bowel Diseases* 2006;**12**(6):524–34.
3 Faecal calprotectin diagnostic tests for inflammatory diseases of the bowel. NICE diagnostics guidance [DG11]. Published: October 2013.

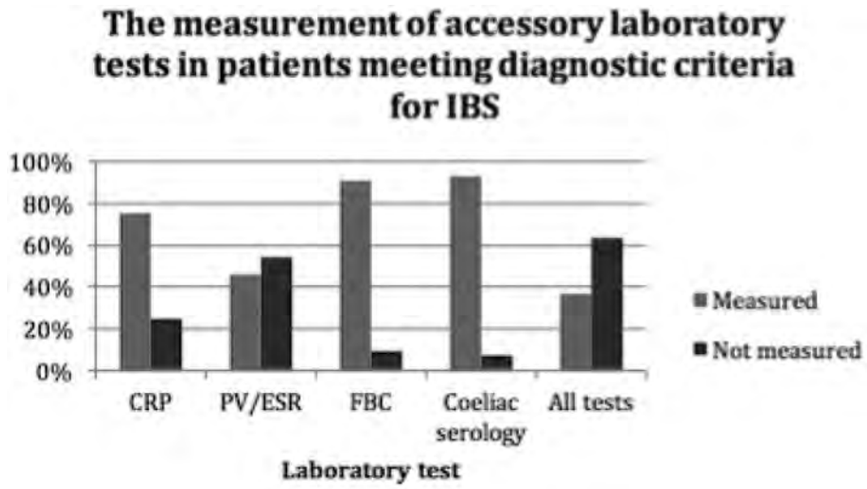
**Disclosure of Interest** None Declared

## PTU-126 HIGH INCIDENCE OF OESOPHAGEAL DYSMOTILITY AND INCREASED INSPIRATORY GASTRO-OESOPHAGEAL PRESSURE GRADIENTS IN PATIENTS WITH UNEXPLAINED RESPIRATORY SYMPTOMS

[1]JM Burke*, [1]W Jackson, [1]PW Waudby, [2]AH Morice. *[1]GI Physiology, Castle Hill Hospital; [2]Cardiovascular and Respiratory Studies, University of Hull, Hull York Medical School, Castle Hill Hospital, Cottingham, HU16 5JQ, UK*

10.1136/gutjnl-2016-312388.212

**Introduction** It has been suggested that reflux and aspiration are common precipitants in respiratory diseases such as cough, asthma and Chronic Obstructive Pulmonary Disease. An excess of acid in these patients has been demonstrated by




**Abstract PTU-125 Figure 1** The measurement of accessory laboratory tests in patients meeting diagnostic criteria for IBS

conventional pH monitoring, but correlation with symptoms are relatively poor. We have previously hypothesised that oesophageal dysmotility leading to both acid and non-acid aspiration may be an important etiological mechanism. Studies have also highlighted the importance of the gastro-oesophageal pressure gradient (GOPG) in the prevalence of reflux.[1]

**Methods** High Resolution Oesophageal Manometry (HRM) was performed in 121 patients, 61 of whom presented primarily with unexplained respiratory symptom and complained predominantly of chronic cough (50), or breathlessness (11). An age and sex matched control group was chosen from patients presenting with suspected gastro-oesophageal reflux disease (GORD). The HRM findings of 61 patients (38 female), mean age 56 (range 18–81) with respiratory symptoms were compared with those of 60 suspected GORD patients (39 female), mean age 57, (range 19–81).

**Results** Mean lower oesophageal sphincter (LOS) and upper oesophageal sphincter (UOS) resting pressures were similar between the two groups. There were fewer intact swallows in the respiratory group compared to those of the GORD group (42% vs 57%, P = 0.03).

Intraoesophageal pressure was significantly lower during inspiration in the respiratory group compared to those of the GORD group (-11.5mmHg vs -8.7, p = 0.001). Consequently, there was a significantly higher GOPG was found in respiratory patients compared to those of the GORD group (46 mmHg vs 33 mmHg, p < 0.01).

**Conclusion** Using High Resolution Oesophageal Manometry, we have demonstrated a higher prevalence of oesophageal dysmotility in patients with unexplained respiratory symptoms than those presenting with typical GORD. Moreover, we have shown that those with unexplained respiratory symptoms exhibit higher inspiratory GOPGs and greater LOS peak contractions possibly stimulating an afferent vagal cough response.

## REFERENCE

1 Ayazi S, DeMeester SR, *et al*. Thoracic-abdominal pressure gradients during the phases of respiration contribute to gastroesophageal reflux disease. *Digestive Disease and Sciences* 2011;**56**:1718–22.

**Disclosure of Interest** None Declared

## PTU-127 EFFICACY OF LINACLOTIDE IN CONSTIPATION-PREDOMINANT IRRITABLE BOWEL SYNDROME IN ROUTINE CLINICAL PRACTICE: A MULTICENTRE EXPERIENCE

[1]J Shearer*, [2]P Paine, [3]A Rej, [3]A Agrawal, [4]AC Ford. *[1]Leeds Gastroenterology Institute, St James's University Hospital, Leeds; [2]Department of Gastroenterology, Salford Royal Hospital NHS Trust, Salford; [3]Doncaster Royal Infirmary, Doncaster; [4]Leeds Institute of Biomedical and Clinical Sciences, University of Leeds, Leeds, UK*

10.1136/gutjnl-2016-312388.213

**Introduction** Constipation-predominant irritable bowel syndrome (IBS-C) is a common and difficult disorder to manage. Linaclotide is licensed in the UK for symptomatic treatment of moderate to severe IBS-C. Data from randomised, controlled trials demonstrate that the drug improves symptoms in patients with IBS-C, but real-world data are lacking.

**Methods** We treated adult patients with IBS-C (Rome III Criteria), attending outpatient clinics in three UK hospitals, with linaclotide 290 mcg once daily. IBS symptoms were assessed at baseline, 4 weeks, and 12 weeks after commencing therapy using the validated IBS symptom severity scale (IBS-SSS). Responders were defined as those patients with a decrease in total IBS-SSS score of >75.

**Results** A total of 108 patients (mean age 43.2; range 17–84 years; 94 (87.0%) female) received linaclotide. In total, 4 week IBS-SSS scores were available for 72 (66.7%) patients, and 12 weeks scores in 26 (24.1%) patients. Effect of linaclotide on individual components of the IBS-SSS, as well as total IBS-SSS score, at 4 and 12 weeks are detailed in Table 1. There were 49 (45.4%) patients who responded to linaclotide, with a reduction in IBS-SSS of >75 at 4 weeks. The drug also led to a significant reduction in straining (3.9 at baseline vs. 2.0 at 4 weeks, P < 0.001), and increase in mean number of stools per week (3.8 at baseline vs. 8.9 at 4 weeks, P < 0.001). At 4 weeks, 61 (56.5%) patients continued the drug and 47 (43.5%) discontinued, 24 (22.2%) due to lack of efficacy or losses to follow-up, and 23 (21.3%) due to adverse events (AEs). Among the 61 patients continuing linaclotide, 22 (36.1%) were responders at 12 weeks. AEs occurred in 43 (39.8%) patients overall, which lead to discontinuation of the drug in 23 (21.3%) patients either before or at their 4 week assessment. These included diarrhoea in 28 (25.9%) (15 discontinued), abdominal pain in 6 (5.6%) (5 discontinued), nausea in 3 (2.8%) (1 discontinued), flatulence in 2 (1 discontinued), headaches in 2 (0 discontinued), faecal incontinence in 1 (1 discontinued), and urgency in 1 (0 discontinued).

**Conclusion** Linaclotide was effective in IBS-C patients in a real-world setting, with significant reductions in IBS-SSS scores and straining, and a significant increase in mean number of stools per week. Responder rates at 4 and 12 weeks were 45% and 36% respectively. 40% of patients reported AEs, with diarrhoea the commonest, occurring in 26% of patients. Previous literature has reported a lower frequency of AEs, which infrequently led to withdrawal of linaclotide. However, in our study the occurrence of AEs led to discontinuation in 21% of patients.

**Disclosure of Interest** None Declared

**Abstract PTU-127 Table 1** Effect of Linaclotide on IBS-SSS

| Score | Baseline | 4 weeks | P value | 12 weeks | P value |
|---|---|---|---|---|---|
| Abdominal pain | 69.2 | 41.5 | <0.001 | 37.3 | <0.001 |
| Days of abdominal pain | 81.6 | 58.3 | <0.001 | 49.2 | 0.001 |
| Bloating | 71.8 | 43.8 | <0.001 | 37.2 | <0.001 |
| Satisfaction with bowel habit | 84.4 | 49.9 | <0.001 | 39.2 | <0.001 |
| IBS interfering with life | 81.5 | 57.4 | <0.001 | 49.2 | <0.001 |
| Total IBS-SSS | 386.1 | 247.8 | <0.001 | 214.0 | <0.001 |

**Abstract PTU-128 Table 1**

| Investigation | Colorectal clinic patients (n = 76) | Gastroenterology clinic patients (n=57) |
|---|---|---|
| None, other than blood tests | 1 (1.3%) | 3 (5.2%) |
| Faecal elastase | 4 (5.3%) | 9 (15.7%) |
| Stool M,C, and S | 12 (15.8%) | 19 (33.3%) |
| Coeliac serology | 54 (71.1%) | 52 (91.2%) |
| Upper GI endoscopy | 19 (25.0%) | 27 (47.3%) |
| Colonoscopy | 61 (80.3%) | 34 (59.6%) |
| Sigmoidoscopy | 12 (15.8%) | 9 (15.8%) |
| Barium swallow | 3 (3.9%) | 1 (1.7%) |
| Barium meal | 1 (1.3%) | 2 (3.5%) |
| Small bowel meal and follow-through | 1 (1.3%) | 7 (12.2%) |
| Barium enema | 2 (2.6%) | 1 (1.7%) |
| CT head | 2 (2.6%) | 0 (0%) |
| CT abdomen | 36 (47.4%) | 19 (33.3%) |
| Abdominal USS | 31 (40.8%) | 20 (35%) |
| Pelvic USS | 18 (23.7%) | 10 (17.5%) |
| Glucose breath test | 1 (1.3%) | 3 (5.2%) |
| 24-hour pH studies | 2 (2.6%) | 0 (0%) |
| Oesophageal manometry | 2 (2.6%) | 0 (0%) |
| Colonic transit studies | 4 (5.3%) | 3 (5.2%) |
| Defaecating proctogram | 2 (2.6%) | 0 (0%) |
| Anal manometry | 1 (1.3%) | 1 (1.7%) |
| Transanal USS | 1 (1.3%) | 1 (1.7%) |
| SeHCAT scan | 5 (6.6%) | 14 (24.6%) |

## PTU-128 PREVALENCE AND MANAGEMENT OF IRRITABLE BOWEL SYNDROME SEEN IN COLORECTAL SURGERY AND GASTROENTEROLOGY CLINICS

[1]J Shearer*, [1]P Luthra, [2]AC Ford. *[1]Leeds Gastroenterology Institute, St James's University Hospital; [2]Leeds Institute of Biomedical and Clinical Sciences, University of Leeds, Leeds, UK*

10.1136/gutjnl-2016-312388.214

**Introduction** Irritable bowel syndrome (IBS) in the UK accounts for a large proportion of patients seen in secondary care. Pathways to the diagnosis of IBS are not standardised, and patients are often reviewed outside a luminal Gastroenterology service. We examined the burden of IBS in both Colorectal Surgery and Gastroenterology clinics.

**Methods** All patients seen with IBS in either Gastroenterology (GE) or Colorectal Surgery (CS) clinics over a 1 month period January to February 2014 at Leeds Teaching Hospitals NHS Trust were identified. The following data were retrospectively recorded: age/sex of the patient, investigations prior to diagnosis, number of visits to that speciality clinic, number and type of medications prescribed, and final placement of the patient. We compared management of patients in both settings using a Chi-squared test.

**Results** There were a total of 76 patients with IBS seen in CS clinics (mean age 49.6 years, 39 (51.3%) female) and 57 patients in GE clinics (mean age 39.1 years, 39 (68.4%) female). The number and type of investigations requested prior to diagnosis are detailed in Table 1. In CS clinics, colonic imaging (colonoscopy, sigmoidoscopy or barium enema) was requested in 70 (92.1%) patients, compared with 39 (68.4%) patients in GE clinics (P = 0.001). Cross-sectional imaging was utilised in 36 (47.4%) patients in CS clinics, compared with 19 (33.3%) patients in GE clinics (P = 0.15). Serological testing for coeliac disease was not performed in 22 (29.9%) patients in CS clinics, and 5 (8.8%) patients in GE clinics (P = 0.008). For the CS clinic patients the mean number of visits was 2.7 (range 1–14) with 22 (28.95%) patients offered prescribed therapy. In the GE clinic patients the mean number of visits was 2.5 (range 1–5), with 43 (75.4%) patients offered prescribed therapy (P < 0.001). Nine (11.8%) patients were seen by both services. Twenty-six (45.6%) patients were referred to a dietician from the GE clinic, but none from the CS clinic (P < 0.001). No patients were referred for hypnotherapy or psychological therapy from either clinic.

**Conclusion** These data highlight the need for a more consistent referral process, and a more specialised approach to the management of this patient group. This should be based on current guidelines for the management of IBS using evidence-based treatments and with easy access to dietetic, psychological, and specialist nurse support.

**Disclosure of Interest** None Declared

## PTU-129 AMBULATORY HIGH RESOLUTION OESOPHAGEAL MANOMETRY: A NOVEL TOOL TO INVESTIGATE NON-CARDIAC CHEST PAIN

J Ooi*, E Yazaki, K Nikaki, D Sifrim, P Woodland. *Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, UK*

10.1136/gutjnl-2016-312388.215

**Introduction** Non-cardiac chest pain can present a clinical challenge to the gastroenterologist. Many causes remain undiagnosed and untreated.

Oesophageal spasm is frequently considered a cause of non-cardiac chest pain, but current diagnostic tools are often poor at making this diagnosis. High resolution oesophageal manometry is now the gold standard oesophageal motility test, and is a swallow-based assessment. Unfortunately most episodes of

chest pain in this context are not swallow-related, and are usually sporadic and unpredictable. Thus most manometry assessments occur in the absence of a symptom event.

We propose that prolonged, ambulatory high resolution may be a tool that can detect these sporadic chest pain events and allow correlation to symptom episodes.

We aimed to test the diagnostic yield of a novel, ambulatory high resolution oesophageal manometry device in the diagnosis of non-cardiac chest pain.

**Methods** We studied 17 patients (7 male, 10 female, age range 14 to 66) with chest pain. All had cardiac pain excluded by cardiology review, and all had been studied with normal upper GI endoscopy. All had also had major oesophageal motor disorder (including spasm) excluded by swallow-based high resolution manometry (with liquid and solid swallows).

An ultra-thin high resolution solid-state catheter was inserted transnasally into the oesophagus. This was connected to a small laptop and battery pack carried in a backpack. Patients were sent home and encouraged to mobilise. Patients were asked to keep the catheter in place at least until a symptomatic pain event was perceived. Symptom events were self-marked on a recorder device that was subsequently synchronised with the manometry output. Manometry tracings were read manually, and motor events at the time of symptoms were examined in detail.

**Results** The median duration of recording with the system was 12 hours, 13 minutes (range 5 hours, 30 minutes to 26 hours, 40 minutes).

12 of the 17 patients perceived typical chest pain symptom during recording.

Of the 12 with typical symptoms, 3 (25%) had clinically important findings that changed management. They had significant oesophageal spasm, pressurisation and shortening associated with pain events. These have been treated successfully with oesophageal body Botox injections (2 patients) and with long laparoscopic myotomy (1 patient). The remaining 9 patients either had no abnormalities, or minor abnormalities that did not correspond to symptoms.

**Conclusion** Ambulatory high-resolution manometry is a novel tool for investigation of non-cardiac chest pain. In our series, we identified management-altering abnormalities in 3 of 17 patients who had previously been investigated with normal cardiac, endoscopic and stationary manometric evaluation.

**Disclosure of Interest** J. Ooi: None Declared, E. Yazaki: None Declared, K. Nikaki: None Declared, D. Sifrim Grant/research support from: Research grant from Sandhill Scientific, P. Woodland: None Declared

## PTU-130 THE CONTRIBUTION OF GASTROESOPHAGEAL REFLUX IN SUPRAGASTRIC BELCHING

J Roscamp*, J Patel, I Miah, T Wong, J Jafari. *Oesophageal Laboratory, Guy's and St Thomas' Hospital, London, UK*

10.1136/gutjnl-2016-312388.216

**Introduction** Supragastric belching (SGB) is characterised by rapid antegrade and retrograde flow of air in the oesophagus that does not reach the stomach.* Whilst proactive SGB is a behavioural phenomenon, reactive SGB occurs in response to a particular stimulus. Currently treatment for SGB is behavioural therapy however this may not be the most appropriate treatment for patients with reactive SGB. In this study we aimed to ascertain prevalence of proactive versus reactive SGB in response to a certain pathological stimulus i.e. GOR.

**Methods** The database of the Oesophageal Physiology Laboratory at Guy's Hospital London were retrospectively searched (November 2014 – present) for patients diagnosed with SGB (>13 SGBs within 24 hrs). The 24 hour pH-impedance studies were analysed to differentiate proactive SGB from reactive (proactive SGB being an SGB without preceding reflux event (or preceding event lasting <1 second), and reactive SGB being an SGB with preceding reflux event (> 1 second)). A patient was then labelled as having predominantly reactive SGB (PR-SGB) if >60% of their SGB was reactive and having predominantly proactive SGB (PP-SGB) if >60% of their SGB was proactive. Reflux Diseases Questionnaire (RDQ) score was obtained for all patients. P value <0.05 was considered significant.

**Results** 28 patients identified for this study (14 males (M), 14 females (F), mean age 51 [27–75]). 82% of patients had PP-SGB events, 11% PR-SGB and 7% had the same number of proactive and reactive SGB. The most common symptoms in patients with PR-SGB were: heartburn 66.6%, belching 66.6% and throat burning sensation 66.6% and, in patients with PP-SGB: belching 68%, heartburn 39% and regurgitation 21%. In total, in all 28 patients, proactive SGBs accounted for 1124 and reactive 216 of SGB events (19.22% of all SGBs being reactive). The 3 patients with PR- SGB had an average RDQ of 3.53, whilst the average RDQ for the patients with PP- SGB was significantly lower 2.36 (p = 0.00004). There was 1 patient with 100% proactive SGB and no patient with purely reactive SGB. The median presentation of reactive SGB was 15.38%.

**Conclusion** Treating GORD may resolve SGB in a small group of patients and ameliorate potential psychological stress caused by a behavioural therapy referral. Whether the remaining SGB events are purely behavioural or in reaction to other types of stimuli other than GOR requires further investigation. Having a high RDQ score may help in identifying patients with PR-SGB.

### REFERENCE

* Bredenoord AJ, *et al*. Aerophagia, gastric, and supragastric belching: a study using intraluminal electrical impedance monitoring. *Gut* 2004:**53**(11),1561–1565.

**Disclosure of Interest** None Declared

## PTU-131 INTERMEDIATE FAECAL CALPROTECTIN: A POSITIVE OR NEGATIVE RESULT? OBSERVATIONS OF A RETROSPECTIVE STUDY

K Wright*, J Kennedy, L Materacki, S Waterman, R Makins, A Di Mambro. *Cheltenham General Hospital, Cheltenham, UK*

10.1136/gutjnl-2016-312388.217

**Introduction** Faecal Calprotectin (FC) can be used to distinguish between irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD). NICE guidelines advise a cut-off of 50 micrograms/g when differentiating between the two; however, an area of diagnostic uncertainty exists with levels between 50 mcg/g and 150 mcg/g. We reviewed our practice with this group assessing underlying pathology, identifying confounding factors and suggesting a streamlined assessment pathway to reduce unnecessary investigations

**Methods** Retrospective, observational study of all Intermediate FC results from September 2014–15. Data collated from biochemical requests, known IBD patients excluded. Clinical letters, pathology results and endoscopy reports interrogated to build a detailed data set

**Results** 82 patients had a FC between 51–150 mcg/g, 56 females, mean age of 42.4 years. Diarrhoea was predominant in 67, constipation: 9, variable bowel habit: 7 with 41 reporting pain. Red flag symptoms were identified in 17 patients. NICE and BSG guidelines recommend testing FBC, CRP, ESR/PV and tTG when assessing for IBS and IBD. Only 19% of our patients had the full complement of tests. PV was least frequently tested, seen in only 31% of patients. TTG was checked in 83%, CRP in 69% and FBC in 81%. 46 patients had endoscopic investigations. Of those, 25 had no red flag symptoms or abnormalities identified on bloods. 17 of these scopes were reported as normal. 2 found evidence of ulceration within the bowel; however, histology excluded IBD and both patients were treated as IBS. Factors contributing elevated FC include non-steroidal inflammatory drugs (NSAIDS), proton pump inhibitors (PPIs), polyps and gastrointestinal (GI) infections. Of our patients; 27 were using PPIs, 7 NSAIDS, 8 had polyps and 5 had recent or ongoing GI infections. None of the patients were found to have IBD at the time of FC requesting or to date. 50 patients were given a confirmed diagnosis of IBS

**Conclusion** FC can be elevated for a variety of reasons. A cut off of 150 mcg/g appears reliable for excluding IBD. Red flag symptoms and organic disease should always be considered. NICE and BSG guidelines recommend checking FBC, CRP, PV and tTG. As demonstrated here, this can be overlooked, delaying diagnosis. Confounding factors should be considered and eliminated where possible. In the absence of organic disease, with symptoms fitting criteria for IBS as defined by ROME III, invasive imaging has not been shown to aid or alter the clinical diagnosis. Patients can be referred to primary care and managed as per local guidelines. FC may be retested at 3 months. If it remains elevated, luminal investigations could then be initiated. A prospective audit is being carried out to validate this pathway

**Disclosure of Interest** None Declared

## PTU-132 AUTONOMIC FUNCTION SCORES AND SLEEP DISTURBANCE SCORES IN FGID PATIENTS WITH AND WITHOUT UPPER LIMB TEMPERATURE DISSOCIATION

KJ Etherson*, C Emmett, Y Yiannakou. *Colorectal surgery, County Durham and Darlington NHS Foundation Trust, Durham, UK*

10.1136/gutjnl-2016-312388.218

**Introduction** Background

Central autonomic dysfunction may result in a unilateral dissociation of temperature sensation, and is increasingly being investigated in FGIDs. The autonomic function score (AFS) and sleep disturbance score (SDS) are accepted measures in aiding the diagnosis of autonomic dysfunction.

**Aims** To assess and compare the AFS and SDS of consecutive FGID patients attending a specialist clinic, with and without upper limb temperature dissociation.

**Methods** Clinic attenders with a FGID diagnosis were sequentially invited to undertake the temperature sensation test. This comprised holding a bag of ice in both hands for 30 seconds and stating if they perceived the temperature to be either unilaterally colder or bilaterally equally cold. Unilaterally colder was considered to be evidence of upper limb temperature sensory dissociation. Patients had their total AFS calculated as follows: headaches, dizziness, sweating and sleep disturbance were severity scored using a Likert scale of 0–3, the sum of which is the AFS. The mean total AFS and mean sleep disturbance score were compared between patients with and without temperature dissociation.

**Results** 173 patients completed the AFS and 7 were excluded from the analysis for incomplete data leaving 166. 115 patients (69%) had upper limb temperature dissociation (group 1) compared to 51 (31%) with normal temperature sensation bilaterally (group 2). The mean total AFS in group 1 was 6.35 [SD 3.17] compared with 5.01 [SD 2.87] in group 2 [P = 0.009]. Mean sleep disturbance scores were not significantly different between the groups.

**Conclusion** FGID patients with upper limb temperature dissociation appear to have a significantly higher autonomic function score than those without temperature dissociation. This seems to suggest that the cause of the temperature dissociation may well be due to autonomic dysfunction acting at a central nervous system level. These results are an interesting observation from our clinic but are likely to be limited by inherent methodological biases in the data collection. Further investigation of autonomic function scores and temperature dissociation are required in formal and appropriately powered clinical research studies to validate these findings.

**Disclosure of Interest** None Declared

## PTU-133 EFFECT OF ELUXADOLINE ON ABDOMINAL AND BOWEL SYMPTOMS OVER TIME IN PHASE 3 CLINICAL TRIALS IN PATIENTS WITH IRRITABLE BOWEL SYNDROME WITH DIARRHOEA (IBS-D)

[1]LA Harris, [2]S Lucak, [3]L Chang, [4]LS Dove*, [4]PS Covington. *[1]Mayo Clinic, Scottsdale; [2]Weill Cornell Medicine, New York; [3]David Geffen School of Medicine at UCLA, Los Angeles; [4]Former employee of Furiex Pharmaceuticals, Inc., an Allergan affiliate, Parsippany, United States*

10.1136/gutjnl-2016-312388.219

**Introduction** Eluxadoline (ELX) is a mixed μ- and κ-opioid receptor (OR) agonist and δ-OR antagonist. It is locally active and approved for the treatment of IBS-D. Effects of ELX on abdominal pain and stool consistency have been reported based on a composite response; effects on other abdominal and bowel symptoms were evaluated over time.

**Methods** Two double-blind, placebo (PBO)-controlled, Phase 3 trials (IBS-3001 and IBS-3002) randomised patients (pts) meeting Rome III criteria for IBS-D to twice-daily treatment with ELX 75 or 100 mg or PBO. Pts completed an electronic diary and rated daily IBS symptoms of abdominal discomfort and bloating (both on a 0–10 scale), and recorded numbers of bowel movements (BMs) and episodes of urgency and fincontinence daily through 26 weeks (wks). To assess trajectories of treatment effects over time, daily symptom scores and counts of BMs and episodes of urgency and incontinence were mwith longitudinal analyses. Treatment effect estimates from the models were evaluated at Wks 4, 8, 12, 16, 20, and 24 based

**Abstract PTU-133 Table 1** Longitudinal analysis of abdominal discomfort and bloating

| | | IBS-3001 | | IBS-3002 | |
|---|---|---|---|---|---|
| | | LS mean | Difference | LS mean | Difference |
| **Abdominal discomfort** | | | | | |
| Week 4 | Placebo | 4.43 | | 4.23 | |
| | Eluxadoline 75 mg BID | 4.23 | -0.20 | 3.92 | -0.31* |
| | Eluxadoline 100 mg BID | 4.11 | -0.33* | 3.95 | -0.28* |
| Week 24 | Placebo | 3.33 | | 3.31 | |
| | Eluxadoline 75 mg BID | 2.95 | -0.39* | 2.99 | -0.33* |
| | Eluxadoline 100 mg BID | 2.96 | -0.37* | 2.84 | -0.48** |
| **Abdominal bloating** | | | | | |
| Week 4 | Placebo | 4.34 | | 4.11 | |
| | Eluxadoline 75 mg BID | 4.17 | -0.17 | 4.05 | -0.06 |
| | Eluxadoline 100 mg BID | 4.07 | -0.28 | 3.91 | -0.20 |
| Week 24 | Placebo | 3.53 | | 3.38 | |
| | Eluxadoline 75 mg BID | 3.20 | -0.33* | 3.41 | 0.03 |
| | Eluxadoline 100 mg BID | 3.21 | -0.32* | 2.97 | -0.41* |

*p<0.05; **p<0.001

on estimated least squares (LS) mean differences (symptom scores) and risk ratios (frequency data).

**Results** 2428 pts with IBS-D were enrolled across both trials. In both studies, daily abdominal discomfort and bloating scores decreased from baseline within the first wk, with greater reductions seen for ELX. Abdominal discomfort scores were significantly lower ($p < 0.05$) than PBO for ELX 100 mg at all time points through Wk 24 in both studies (except Wk 4 in IBS-3002), while bloating was significantly lower ($p < 0.05$) than PBO for ELX 100 mg from Wk 16 onward in both studies (Table). BM frequency and episodes of urgency and incontinence were also reduced from baseline. Both ELX doses significantly reduced ($p < 0.05$) episodes of urgency compared with PBO at all time points through Wk 24 in both studies. Similarly, ELX significantly reduced BM frequency compared with PBO through 24 wks (data not shown). Episodes of incontinence were significantly lower ($p < 0.05$) than PBO for both ELX doses from Wk 16 onward in IBS-3002.

**Conclusion** ELX significantly improves abdominal discomfort and bloating, and significantly reduces BM frequency and episodes of urgency and incontinence; effects are sustained through 6 months of treatment.

## REFERENCE

1 Previously presented at ACG 2015. Abstract #1761. *Am J Gastroenterol* 2015;**110**:S739–S766. doi:10.1038/ajg.2015.275.

**Disclosure of Interest** L. Harris Grant/research support from: Alvine, Rhythm Pharmaceuticals, Consultant for: Allergan plc, QoL, Ironwood, Conflict with: Ironwood, Allergan plc, S. Lucak Consultant for: Allergan plc, Takeda, Salix, Ironwood, Prometheus, Speaker bureau with: Allergan plc, Takeda, Salix, Ironwood, Conflict with: Allergan plc, Takeda, Salix, Ironwood, L. Chang Conflict with: Ironwood, Allergan plc, Valeant, QOL Medical, Takeda, Ardelyx, Commonwealth Laboratories, AstraZeneca, Synergy, L. Dove Consultant for: Allergan plc, P. Covington: None Declared

## PTU-134 NEGATIVE FAECAL CALPROTECTIN TESTING PROVIDES COST-EFFECTIVE DIAGNOSTIC REASSURANCE IN PATIENTS WITH IRRITABLE BOWEL SYNDROME

[1]K Wright, [1]J Kennedy, [1]LB Materacki*, [2]S Waterman, [1]R Makins, [1]A Di Mambro. [1]*Gastroenterology*; [2]*Pathology, Cheltenham General Hospital, Cheltenham, UK*

10.1136/gutjnl-2016-312388.220

**Introduction** The diagnosis of irritable bowel syndrome (IBS) requires careful exclusion of 'red flag' clinical features and blood abnormalities which may indicate an alternative organic diagnosis such as inflammatory bowel disease (IBD).[1] The chronic, recurrent nature of the symptoms of IBS may lead to diagnostic anxiety. Faecal calprotectin (FC) is a useful non-invasive test for intestinal inflammation that can distinguish IBS from IBD when specialist referral or further investigations are being considered.[2] Confident use of FC is likely to save costs by reducing referral and endoscopy burden.

**Methods** This retrospective, observational study investigated the management of patients diagnosed with IBS following gastroenterologist review who had negative FC (<50 µg/g faeces) tested between September 2014 and September 2015. Electronic records were interrogated for clinical letters and the results of blood (full blood count, C-reactive peptide, erythrocyte sedimentation rate/plasma viscosity and coeliac serology), stool and endoscopic investigations. Red flag indicators were defined as per NICE clinical guideline 61.[1] The cost-saving implications of negative FC testing to confirm IBS were evaluated using estimated per person costs of an ELISA test and POCT CalDetect (£22.79), outpatient gastroenterology appointment (£164.00), colonoscopy (£577.68) and flexible-sigmoidoscopy (£351.00).[2,3]

**Results** During the study period 173 non-IBD patients (age range: 17–81 y, median: 35 y, 72% female) were referred for gastroenterologist review and had a negative FC test. There were no documented red flag clinical features nor significant abnormalities on blood testing in 30 patients diagnosed with IBS. 23% and 17% of these patients had undergone colonoscopy and flexible sigmoidoscopy respectively. No significant abnormalities were detected. The estimated cost-saving impact

of a negative FC to confirm a diagnosis of IBS and limit unnecessary referral and endoscopy was £357.29 per person.
**Conclusion** A negative FC may provide cost-effective diagnostic reassurance in patient with suspected IBS without red flag clinical features or blood abnormalities in whom specialist referral or endoscopy is considered. There is a need for FC testing to be made available to primary care physicians with robust pathways to support decision-making.

**REFERENCES**
1 NICE clinical guideline 61 [CG61]. Published February 2008.
2 Faecal calprotectin diagnostic tests for inflammatory diseases of the bowel. NICE diagnostics guidance [DG11]. Published October 2013.
3 Suspected cancer: recognition and management of suspected cancer in children, young people and adults. Clinical guideline appendices A-E. Published June 2015. Commissioned by NICE.

**Disclosure of Interest** None Declared

## PTU-135 HOW MUCH GLUTEN IS THE GENERAL POPULATION CONSUMING AND DOES IT RELATE TO SYMPTOMS?

M Kurien*, I Aziz, N Trott, DO Brien, HA George, MY Hossain, LJS Marks, JI Richardson, R Rigby, DS Sanders. *Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.221

**Introduction** Gluten is a ubiquitous part of a western diet. It is implicated for causing an array of disorders, which have both intestinal and/or extraintestinal manifestations. Our understanding of this heterogeneous group of gluten-related disorders is advancing, however uncertainty exists as to how much gluten the general population is consuming. This study aims to address this knowledge gap and also assess the prevalence of self-reported gluten sensitivity within the general population.
**Methods** Between September and October 2015 a population-based survey was undertaken in Sheffield, UK. Members of the general public, all over the age of 16 years, were invited to complete a modified version of a previously validated written questionnaire. This questionnaire assessed demographic information, GI conditions and also determined the presence of gluten sensitivity (GS). In addition, total gluten consumption was calculated using a food frequency questionnaire. Participants were asked about their use of a gluten free diet (GFD), and whether they had seen a healthcare professional for their symptoms. A diagnosis of coeliac disease (CD) was determined if individuals had a doctor diagnosis of CD, and were also taking a GFD.
**Results** 1003 adults completed the population-based survey (59% female, median age 31 years (16–86 years). The mean consumption of gluten per day for this group was 13.2 g (s.d =9.2 g). The self-reported prevalence of GS was 32.5% (326/1003, female 70% [P < 0.0001], age range 17–82, median age 35 yrs), with 3.7% (38/1003) on a GFD and 1.1% (12/1003) having CD. The proportion of GS individuals who had seen a doctor for their symptoms was 18.3% (65/326). Individuals with GS had an increased prevalence of fulfilling the Rome III criteria for irritable bowel syndrome, in comparison with those without GS (31.3% vs. 5.61%, odds ratio 7.66, p < 0.0001). In addition, mean daily consumption of gluten was considerably lower in this GS group compared to the non GS group (10.8 g vs. 14.4 g, p < 0.0001).
**Conclusion** This is the first study assessing gluten consumption in a UK population. Findings from our work highlight that sensitivity to gluten-based products is common, and that affected individuals have a higher prevalence of IBS. Although only a minority of individuals maintained a gluten-free diet, individuals with gluten related symptoms evidently were electing to reduce their gluten consumption.
**Disclosure of Interest** None Declared

## PTU-136 HETEROGENEITY IN HIGH RESOLUTION MANOMETRY (HRM) AND AMBULATORY PH TESTING AROUND THE WORLD IN 2015

[1,2]R Sweis*, [3]M Fox. *[1]GI Services; [2]GI Physiology Unit, University College London Hospital, London, UK; [3]Department of Gastroenterology, St. Claraspital, Zurich, Switzerland*

10.1136/gutjnl-2016-312388.222

**Introduction** Despite advances in HRM and pH monitoring there is wide variation in technique and technology while reporting is often subjective and open to interpretation. This study assesses current practice around the world.
**Methods** Through an on-line platform (Qualtrics LLC), a survey was distributed to unselected oesophageal units through international NGM societies. Questions explored infrastructure, technology, analysis and reporting. Results are presented as % of the total or mean±SD.
**Results** 91 of 102 responses from 29 countries were analysable.(Table) 43 High (HVC) and 48 Low Volume Centres (LVC) were defined as more and less than 500 referrals/year. HVC employ more staff than LVC (p = 0.02) with more clinicians (3.0±1.0 vs. 2.6±1.2;p = 0.05), physiologists (1.6 ±1.1 vs. 2.0±1.3;p = 0.07) and nurses (3.3±1.2 vs. 2.4 ±1.1;p < 0.001). Most units (63/91;69%) stop medication. 18 (20%) use <12 sensor manometry, 75 (82%) >26 sensor HRM and 53 (58%) use HRM-Impedance (some had several systems).

Adjunctive testing is increasingly incorporated.(Table)

To define pathology, Chicago Classification is used in 65 (71%) units. 60% comment on the upper sphincter. In the presence of a hiatus hernia analysis of oesophago-gastric junction morphology varies widely (p=NS).

64% proceed with pH-monitoring despite ≥Grade B oesophagitis. If intolerant of the catheter, 45% refer for catheter-free monitoring and 16.5% for barium; 14% do nothing further. HVC are more likely to employ catheter-free systems than LVC (47% vs. 17%;p < 0.001).

Of 86 (95%) units with Impedance-pH (Imp-pH), studies are performed on acid suppression in 54% with oesophagitis/Barrett's. Overall, 8% perform all Imp-pH studies on therapy, 9% never do. Dietary modification (acid avoidance) is always recommended in 48%. Meals/snacks are not analysed in 91% units with standard pH and 84% with Imp-pH. Overall 17% do not exclude meals with either. 75% manually analyse every Imp-reflux event while 59% only target symptoms.

For symptom-association, 30% units pool symptoms while 74% analyse each separately.

Therapy advice is included in 49% HVC and 31% LVC (p = 0.044); 40% overall.

**Abstract PTU-136 Table 1**

| | Adjunctive tests | Single solid/ Viscous | Multiple water | Meal | Upright-seated swallows |
|---|---|---|---|---|---|
| Europe (n = 45) | 43 (96%) | 31 (69%) | 38 (42%) | 11 (24%) | 18 (40%) |
| USA (n = 14) | 10 (71%) | 6 (43%) | 7 (50%) | 3 (21%) | 6 (43%) |
| S. America (n = 8) | 9 (100%) | 5 (56%) | 7 (78%) | 0 (0%) | 5 (56%) |
| Australia/NZ (n = 12) | 11 (92%) | 10 (83%) | 8 (67%) | 2 (17%) | 6 (50%) |
| Asia (5) | 6 (100%) | 3 (50%) | 6 (100%) | 1 (17%) | 2 (33%) |
| Africa/Middle East (n = 6) | 5 (100%) | 2 (40%) | 4 (80%) | 0 (0%) | 1 (20%) |
| **Total (n = 91)** | **84 (92%)** | **57 (63%)** | **70 (77%)** | **16 (18%)** | **38 (42%)** |

**Conclusion** There is marked heterogeneity in methodology, interpretation and presentation of HRM and pH studies around the world. This survey sets the background from which agreement of standard operating procedures can begin.
**Disclosure of Interest** R. Sweis Conflict with: Symposium funded by Given Img, M. Fox: None Declared

## PTU-137 ENHANCED DIAGNOSTIC PERFORMANCE OF SYMPTOM-BASED CRITERIA FOR IRRITABLE BOWEL SYNDROME BY HISTORY AND DIAGNOSTIC EVALUATION

[1,2]R Sood*, [3]M Camilleri, [1,2]DJ Gracie, [2]MJ Gold, [1,2]N To, [4]GR Law, [1,2]AC Ford. *[1]Leeds Institute of Biomedical and Clinical Sciences, University of Leeds; [2]Leeds Gastroenterology Institute, Leeds Teaching Hospitals NHS Trust, Leeds, UK; [3]Clinical Enteric Neuroscience Translational and Epidemiological Research (C.E.N.T.E.R.), Mayo clinic, Rochester, United States; [4]Division of Epidemiology & Biostatistics, Leeds Institute of Cardiovascular and Metabolic Medicine, University of Leeds, Leeds, UK*

10.1136/gutjnl-2016-312388.223

**Introduction** Symptom-based criteria to diagnose irritable bowel syndrome (IBS) positively perform only modestly. Our aim was to assess whether including other items from the clinical history and diagnostic workup improves their performance.
**Methods** We collected complete symptom, colonoscopy, and histology data from 318 consecutive, unselected adult patients with lower gastrointestinal (GI) symptoms in secondary care. The reference standard used to define presence of true IBS was patient-reported lower abdominal pain or discomfort associated with a change in bowel habit, in the absence of organic GI disease. Sensitivity, specificity, and positive and negative likelihood ratios (LRs), with 95% confidence intervals, were calculated for Rome III criteria, as well as for modifications, incorporating nocturnal symptoms, results of simple blood tests (haemoglobin (Hb) and C-reactive protein (CRP)), measures of somatisation, and/or affect (hospital anxiety or depression scale (HADS) score).
**Results** Sensitivity and specificity of Rome III criteria for identifying IBS was 69.6%, and 82.0% respectively, with positive and negative LRs of 3.87 and 0.37. Clinically useful enhancements in positive LRs when combining Rome III criteria with items from the clinical history, and blood tests, are shown in the table.

**Abstract PTU-137 Table 1**

| | Sensitivity (95% CI) | Specificity (95% CI) | Positive LR (95% CI) | Negative LR (95% CI) |
|---|---|---|---|---|
| **Rome III criteria and normal Hb and CRP** | 49.0% (34.8%–63.4%) | 89.2% (83.2%–93.6%) | 4.53 (2.67–7.64) | 0.57 (0.42–0.73) |
| **Rome III criteria and HADS score ≥8** | 47.2% (35.3%–59.4%) | 89.1% (84.2%–92.9%) | 4.33 (2.76–6.76) | 0.59 (0.46–0.72) |
| **Rome III criteria and high somatisation** | 37.9% (26.2%–50.7%) | 94.8% (90.6%–97.5%) | 7.27 (3.74–14.2) | 0.66 (0.53–0.77) |
| **Rome III criteria, normal Hb and CRP, and HADS score ≥8** | 34.0% (20.9%–49.3%) | 93.2% (87.9%–96.7%) | 5.04 (2.48–10.2) | 0.71 (0.55–0.84) |
| **Rome III criteria, normal Hb and CRP, and high somatisation** | 24.4% (12.4%–40.3%) | 96.8% (92.0%–99.1%) | 7.56 (2.63–21.7) | 0.78 (0.63–0.90) |
| **Rome III criteria, no nocturnal passage of stool, and HADS score ≥8** | 22.2% (13.3%–33.6%) | 95.4% (91.7%–97.8%) | 4.84 (2.33–10.0) | 0.82 (0.70–0.91) |
| **Rome III criteria, no nocturnal passage of stool, and high somatisation** | 18.2% (9.8%–29.6%) | 99.0% (96.3%–99.9%) | 17.3 (4.45–67.6) | 0.83 (0.72–0.90) |

**Conclusion** Incorporating nocturnal symptoms, somatisation, and affect from the clinical history, and haemoglobin and CRP measurements, enhances performance of symptom-based criteria for IBS. Our findings suggest a different approach to the development of future diagnostic criteria should be used.
**Disclosure of Interest** None Declared

## PTU-138 FEASIBILITY STUDY OF VOLATILE ORGANIC COMPOUNDS IN CONSTIPATION IN PARKINSON'S DISEASE

[1]S Qureshi*, [1]A Bond, [2]L Iwanejko, [1]C Probert. *[1]Gastroenterology, Translational Medicine, University of Liverpool; [2]Skeletal Muscle Pathophysiology Research Group, Institute of ageing and chronic disease, University of Liverpool, Liverpool, UK*

10.1136/gutjnl-2016-312388.224

**Introduction** Patients with Parkinson's disease (PD) have constipation. Constipation often precedes the classical motor signs. Enteric neuropathy may play a role of the aetiology of PD. Exposure to fungi is a risk factor for PD: in vitro models have shown specific fungi-produced volatile organic compounds (VOC), 1 octen-3-ol and 2 octanone, may cause loss of dopaminergic neurones in fruit flies. We propose the hypothesis that intestinal fungal metabolites may a risk factor for PD. This study assessed the feasibility of performing faecal VOCs analysis in people with PD and controls.
**Methods** 8 patients with diagnosed PD were invited from an exercise class (Dancing for Parkinson's). Their partners/carers were also invited as aged-matched controls. Samples from lab volunteers (14) were also analysed. Patients or controls that

had taken any antibiotics or antifungals in the 4 weeks prior to sampling were excluded.

VOCs from 2 aliquots per donor were extracted using Solid Phase Micro Extraction (SPME), separated by gas chromatography–mass and analysed by gas spectrometry (GC-MS). VOCs were identified using AMDIS and comparison with the current NIST library of mass spectra. Reported were prepared using Metab, and statistical analysis undertaken using Metaboanalyst software.

**Results** All 8 PD patients provided samples, despite their constipation. 5 of 6 aged-matched controls provided samples. The average result from the paired technical replicates was used for statistical analysis. There were significantly fewer VOC in samples from PD patients (63), than from controls (74, $p < 0.007$). Young and older controls had a similar number of VOCs (80 and 71 respectively, p = ns). The abundance of VOCs in PD and all controls was compared: 33 differed, 7 of which persisted after correction for multiple comparison, including 2 octanone.

**Conclusion** The study of VOCs in people with constipation is feasible. Those with constipation have fewer VOCs that controls as a whole. There were clear differences in the VOCs from patients with Parkinson's disease in the control group. One of the VOCs that was increased, 2 octanone, in Parkinson's disease is a fungal metabolite that causes damage to dopaminergic neurones in an insect model. More work is necessary to explore the association between PD: a full study will need to include more patients and controls with constipation.

**Disclosure of Interest** None Declared

## PTU-139 A RETROSPECTIVE STUDY ASSESSING THE CLINICAL YIELD OF DIAGNOSING SMALL BOWEL BACTERIAL OVERGROWTH USING LACTULOSE HYDROGEN BREATH TEST

[1]S Khan*, [1]F Bukhari, [1]I Miah, [1]S Alavi, [1]T Wong, [2]J Sanderson, [1]J Jafari. *[1]Oesophageal Laboratory, Guy's Hospital, London; [2]Gastroenterology, Guy's and St Thomas' NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.225

**Introduction** Small intestinal bacterial overgrowth (SIBO) negatively affects both the structure and function of the small intestine leading to a number of acute and chronic symptoms. The lactulose hydrogen breath test (LHBT) is commonly used to detect SIBO. However, little is known to what extent the diagnosis made by this method can affect the patient's clinical state.

The aim of this study was to assess whether patients diagnosed with SIBO using LHBT respond clinically to SIBO treatment.

**Methods** All the patients who were diagnosed with SIBO by LHBT within the last 12 months prior to December 2016 were retrospectively contacted. A visual analogue scale (VAS) on a scale of 0–10 was used to score the severity of their top 3 symptoms pre and post treatment. 0 being the lowest and 10 being the highest severity of each symptom. Positive LHBT was considered as raise of hydrogen >12 ppm against baseline within the first 60 min of the study. A paired t-test was conducted to evaluate the significance of the differences; P value <0.05 was considered as significant.

**Results** 17 patients were included (10 female, median age 40.5, age range 26–70). All these patients were prescribed antibiotics (AB). Reduction of the symptom 1 and 2 were significant pre vs post treatment but not the symptom 3 (P values respectively: <0.006, <0.009, and <0.1). Comparing the total symptom counts also showed significant reduction in the severity of the symptoms (P <).0001). Analysis of the severity of individual types of symptoms, significant improvement was found in bloating ($p < 0.0967$), flatulence ($p < 0.0247$), abdominal discomfort/pain ($p < 0.0279$) and diarrhoea ($p < 0.042$).

**Conclusion** The findings of this study suggest that patients diagnosed with SIBO using LHBT effectively respond to treatment (i.e. AB). Using raise of hydrogen >12 ppm against baseline within the first 60 min of the study is a reliable criteria to diagnose SIBO. Further studies with larger number of patients is required to confirm the findings of this study.

**Disclosure of Interest** None Declared

## PTU-140 EXCITING THE HUMAN SWALLOWING MOTOR SYSTEM BY COMBINATION STIMULI: EFFECTS OF PHARYNGEAL STIMULATION AND CARBONATED LIQUIDS

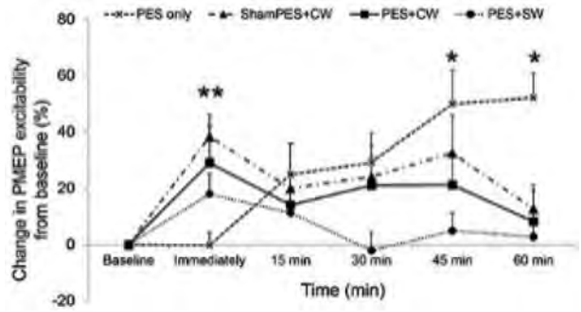
[1]J Magara, [2]E Michou, [1]M Inoue, [2]S Hamdy*. *[1]Division of Dysphagia Rehabilitation, Niigata University, Niigata, Japan; [2]Centre for Gastrointestinal Sciences, University of Manchester, Manchester, UK*

10.1136/gutjnl-2016-312388.226

**Introduction** Previous reports have revealed that excitation of human pharyngeal motor cortex can be induced by pharyngeal electrical stimulation (PES)[1] and swallowing carbonated water (CW).[2] This study is aimed to investigate whether synchronously combining PES with swallowing (of still water, SW or CW) can potentiate this excitation in pharyngeal cortical area and brainstem. Our hypothesis was that combining inputs would potentiate cortico-pharyngeal excitability compared to each alone which would be more advantageous in the rehabilitation of dysphagic patients. For the evaluation of the excitation in pharyngeal cortex or brainstem, Transcranial or transcutaneous Magnetic Stimulation (TMS) was used to stimulate the corticobulbar and craniobulbar neural networks.

**Methods** Fourteen healthy volunteers (4 females, age range 19–35 yrs) participated and were intubated with an intraluminal catheter for delivering PES and recording pharyngeal electromyography. Each participants underwent the baseline corticobulbar, craniobulbar and hand motor evoked potential (MEP) measurements with TMS. Subjects were then randomised to receive one of four 10 minute interventions (PES only, ShamPES+CW, PES+CW and PES+SW). Corticobulbar, craniobulbar and hand MEPs were then re-measured for up to 60 minutes. Data were analysed using ANOVA and post hoc t-tests.

**Results** Two way rmANOVA comparing pharyngeal MEP amplitude changes in the dominant hemisphere for Interventions×Time showed a significant interaction, $F(15, 195) = 2.826$, $P < 0.01$. One-way ANOVA for each Interventions indicated significant changes for PES only ($P < 0.01$) and Sham PES+CW ($P < 0.05$) but not for PES+CW or PES +SW over time. Subsequent post hoc t-tests with Bonferroni correction showed the main increase took place at the immediate follow-up for Sham PES+CW (**$P < 0.01$) and at 45 and 60 minutes for the PES only intervention (*$P < 0.05$) (Fig). One-way ANOVA for each interventions comparing excitability in the brainstem circutry indicated significant amplitude changes only for PES+CW ($P < 0.05$).




**Abstract PTU-140 Figure 1**

**Conclusion** Of the interventions applied, only PES alone was able to induce sustained changes in pharyngeal cortical excitability that built up over time. By contrast, combination stimuli were less effective in promoting enhanced cortical excitability. Of interest, combination stimuli did produce short-term increases in excitability in brain stem reflexes. Our data suggest that PES alone may be most advantageous in dysphagic patients who have a difficulty in performing voluntary swallows.


**REFERENCES**

1 Fraser, *et al. Neuron* 2002; **34**:831–40.
2 Elshukri, *et al. J Appl Physiol* **2016**; 15;120:408–15.


**Disclosure of Interest** None Declared

## PTU-141 A PRAGMATIC RANDOMISED CONTROLLED TRIAL OF HEALING THERAPY IN A GASTROENTEROLOGY OUTPATIENT SETTING


[1]R lee, [2]T Kingstone, [3]L Roberts, [4]S Edwards, [5]A Soundy, [1]P Shah, [6]MS Haque, [7]S Singh*. *[1]Integrated Medicine Department, Freshwinds, Birmingham, UK., birmingham; [2]Research Institute for Primary Care and Health Sciences, Keele University, Staffordshire, keele; [3]Warwick Medical School, University of Warwick, Coventry, coventry; [4]Healer Member of The Healing Trust; [5]Department of Physiotherapy, University of Birmingham; [6]Primary Care Clinical Sciences, University of Birmingham; [7]Good Hope Hospital, birmingham, UK*


10.1136/gutjnl-2016-312388.227

**Introduction** To determine benefits of healing therapy as an adjunct to conventional management in irritable bowel syndrome (IBS) and inflammatory bowel disease (IBD).
**Methods** : 200 outpatients with IBS or IBD were randomised to either conventional treatment or conventional plus 5 sessions of healing therapy. After 12 weeks Controls also had healing therapy. Outcomes used were, the Measure Yourself Medical Outcomes Profile (MYMOP). IBS-QOL and IBDQ and symptom measures.
**Results** There was a significant improvement in the MYMOP score at week 6 ($p < 0.001$) which was maintained to week 12 ($p < 0.001$) and 24 ($p < 0.001$). Improvements in MYMOP were significantly greater in the intervention group at both 6 ($p < 0.001$) and 12 weeks ($p < 0.001$) with effect sizes of 0.7 (95% CI: 0.4 to 1.1) and 0.8 (95% CI: 0.4 to 1.2). Condition specific data for IBS showed that most QoL dimensions had a significant minimum 10 point score improvement at 6 and 12 weeks. The overall score improvement was 12.9 units at week 6 ($p < 0.001$), 12.4 units at week 12 ($p < 0.001$) and 13.8 units at 24 weeks ($p < 0.001$). In IBD there was also similar score improvement but only up to week 12 associated with improved social ($p < 0.001$) and bowel ($p < 0.001$) functions. Between group difference identified for QoL scores in IBS at both week 6 ($p < 0.001$) and 12 ($p < 0.001$) but only for week 12 ($p < 0.001$) in the IBD group.
**Conclusion** The addition of healing therapy in IBS was associated with improvements in symptoms and QoL in IBS, and to a lesser extent in IBD.
**Disclosure of Interest** None Declared

## PTU-142 A COST-EFFECTIVENESS ANALYSIS FOR RADIOFREQUENCY ABLATION (RFA) IN THE TREATMENT OF PATIENTS WITH BARRETT'S OEOSPHAGUS RELATED NEOPLASIA IN THE UNITED KINGDOM


[1]A Filby*, [1]M Taylor, [2]G Lipman, [2]R Haidry. *[1]York Health Economics Consortium, York; [2]University College Hospital, London, UK*


10.1136/gutjnl-2016-312388.228

**Introduction** Barrett's oesophagus (BE) is the precursor lesion to osophageal adenocarcinoma (OAC) which carries a poor 5 year survival. BE progresses in patients through a metaplasia, dysplasia to cancer sequence. There is now consensus from worldwide societies to target the disease when there is dysplasia as these patients will develop invasive cancer in up to 50% of cases if left untreated. Treatment is now firmly established as minimally invasive endoscopic therapy with a combination of endoscopic resection for visible dysplasia surgery with oesophagectomy which can carry a significant mortality and morbidity. The aim of this analysis was to evaluate the cost-effectiveness of treating patients with HGD arising in BE with endoscopic therapy compared with surveillance alone in the UK.
**Methods** A cost-effectiveness model was developed from an NHS perspective. The model structure consisted of a decision tree and a modified Markov model. The model considers a cohort of HGD patients and takes a lifetime time horizon. Patients move through the health states in the model (no dysplasia, low-grade dysplasia, HGD and OAC) based on natural history data (including progression and regression). HGD patients in the treatment arm are treated with RFA (plus EMR in a proportion of cases), LGD patients receive surveillance only. When patients are successfully treated with RFA they move to the 'no dysplasia' health state in the model and can progress again in the future. If treatment is not successful, the patient remains in the same health state in which they started treatment. In the comparator arm, all patients receive surveillance only. In both arms, when patients progress to OAC, patients are treated with oesophagectomy. Treatment with oesophagectomy can result in treatment success or death. The model inputs were derived from published literature, clinical expert opinion and standard cost sources.
**Results** The results estimated that, at a time horizon of 45 years, providing HGD patients endoscopic treatment with RFA compared to endoscopic surveillance until cancer developed resulted in additional costs of £3,939. Patients benefitted from additional quality-adjusted life years (QALYs) of 0.954 per patient. The incremental-cost effectiveness ratio is £4,128. This would be considered cost-effective using the threshold of £20,000 to £30,000 used by NICE.

**Conclusion** The economic model estimates that treating patients with BE related HGD with endoscopic treatment and RFA would be a cost efficient use of NHS resources and endorses the view of the British Society Of Gastroenterology advising this is as the standard of care in these patients.
**Disclosure of Interest** A. Filby Consultant for: Medtronic, M. Taylor Consultant for: Medtronic, G. Lipman: None Declared, R. Haidry: None Declared

## PTU-143 CLINICAL YIELD OF USING COMMON REFLUX-SYMPTOM CORRELATION METHODS: A RETROSPECTIVE STUDY COMPARING THE DEMEESTER SCORE, SYMPTOM INDEX, AND SYMPTOMS ASSOCIATION PROBABILITY IN PREDICTING RESPONSE TO ANTIREFLUX TREATMENT IN PATIENTS WITH GORD

C Prematthilaka*, M Adesanya, I Miah, T Wong, J Jafari. *Upper GI Physiology Unit, Guy's and St. Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.229

**Introduction** Oesophageal pH-impedance monitoring is the gold standard for the diagnosis of gastroesophageal reflux disease (GORD). The DeMeester score is a global measure of acid exposure calculated from reflux parameters. Symptom Index (SI) and the Symptoms Association Probability (SAP) scores correlate symptoms to episodes of gastroesophageal reflux (GOR). Currently, it is not clear which of these scoring methods best relate to the patient's response to treatment. This study investigates the value of these 3 metrics in predicting the clinical outcome of treatment in GORD patients.
**Methods** We retrospectively selected patients who had 24 hour pH-impedance monitoring on suspicion of GORD during December 2014 to October 2015. Abnormal DeMeester was defined as $\geq$14.72, +ve SI as $\geq$50%, and +ve SAP as $\geq$95%. The Reflux Disease Questionnaire (RDQ) was completed by each patient before investigation. After reflux monitoring, patients were followed up to calculate their post-treatment RDQ at least 2 months post treatment. Sensitivity, specificity, positive and negative likelihood ratios and predictive values were calculated.
**Results** 42 patients (11 male; total mean age 51 [25–79]) were included. 25 (59.52%) of these patients were treated. Of these, 21 patients, had medical treatment and 6 had surgical treatment (2 had both). 10/25 (40%) had a reduced RDQ score post-treatment: 8/10 (80%) having medical treatment, 1/6 (23.33%) having surgical treatment. In patients without treatment, 7/17 (41.18%) had a reduced RDQ. The two-tailed $p$ value between the treated and untreated group was not significant ($p = 1.00$).

Considering individual metrics, abnormal DeMeester score showed highest specificity and SAP showed the highest sensitivity in predicting lowering RDQ score post-treatment. When combining different metrics, having all three parameters positive yielded the highest overall clinical value: sensitivity 60%, specificity 95%, positive likelihood ratio 12, positive predictive value 75%, negative predictive value 90% (table 1).
**Conclusion** In patients diagnosed with GORD by pH-impedance monitoring, having all three parameters positive i.e. abnormal DeMeester score, SAP +ve and SI +ve had a high overall value in predicting the response to treatment. Nevertheless, reduction of RDQ was equally seen in untreated GORD group. A study on a larger number of patients might be required to further confirm the findings of this research
**Disclosure of Interest** None Declared

**Abstract PTU-143 Table 1** Sensitivity, specificity, positive likelihood ratios, negative likelihood ratios, positive predictive values, and negative values of differnete combination of DeMeester score, SI, and SAP for predicting response to treatment in patirnts with GERD

| test | sensitvity (%) | specificity (%) | positive likelihood ratio | negative likelihood ratio | positive predictive value (%) | negative predictive value (%) |
|---|---|---|---|---|---|---|
| abnormal DeMeester, SI +ve, OR SAP +ve | 80.00 (33.39-97.48) | 33.33 (11.82-61.62) | 1.20 (0.75-1.93) | 0.60 (0.14-2.51) | 44.44 (21.53-69.24) | 71.43 (29.04-96.33) |
| abnormal DeMeester | 33.33 (7.49-70.7) | 87.50 (61.65-98.45) | 2.67 (0.54-13.10) | 0.76 (0.46-1.25) | 60.00 (14.66-94.73) | 70.00 (45.72-88.11) |
| SI +ve | 61.54 (31.58-86.14) | 58.33 (27.67-84.83) | 1.48 (0.67-3.27) | 0.66 (0.29-1.52) | 61.54 (31.58-86.14) | 58.33 (27.67-84.83) |
| SAP +ve | 77.78 (39.99-97.19) | 37.50 (15.20-64.57) | 1.24 (0.74-2.08) | 0.59 (0.15-2.35) | 41.18 (18.44-67.08) | 75.00 (34.91-96.81) |
| SI +ve AND SAP +ve | 66.67 (22.28-95.67) | 57.89 (33.50-79.75) | 1.58 (0.73-3.43) | 0.58 (0.17-1.90) | 33.33 (9.92-65.13) | 84.62 (54.55-98.08) |
| abnormal DeMeester AND SAP +ve | 60.00 (14.66-94.73) | 90.00 (68.30-98.77) | 6.00 (1.43-26.81) | 0.44 (0.15-1.31) | 60.00 (14.66-94.73) | 90.00 (68.30-98.77) |
| abnormal DeMeester AND SI +ve | 37.50 (8.52-75.51) | 93.75 (69.77-99.84) | 6.00 (0.74-48.90) | 0.67 (0.38-1.16) | 75.00 (19.51-99.37) | 75.00 (50.90-91.34) |
| abnormal DeMeester, SI +ve, AND SAP +ve | 60.00 (14.66-94.73) | 95.00 (75.13-99.87) | 12.00 1.56-92.29) | 0.42 (0.14-1.24) | 75.00 (19.41-99.37) | 90.48 (69.62-98.83) |

## PTU-144 EUS IN THE DIAGNOSIS AND STAGING OF LUNG CANCER: SINGLE CENTRE EXPERIENCE AT GLASGOW ROYAL INFIRMARY

[1]C Harrington*, [2]S Paterson, [1]A Stanley. [1]*Gastroenterology Department, Glasgow Royal Infirmary, Glasgow*; [2]*Gastroenterology Department, Forth Valley Royal Hospital, Falkirk, UK*

10.1136/gutjnl-2016-312388.230

**Introduction** Lung cancer is the leading cause of cancer related death in the Western World.[1] Accurate staging is required to identify those patients with localised Non Small Cell Lung Cancer (NSCLC) who have resectable disease. Patients with Small Cell Lung Cancer (SCLC) or T4,N2-3 or M1 NSCLC are not suitable for surgery. Endoscopic ultrasound (EUS) with fine needle aspiration (FNA) can help obtain a tissue diagnosis where Endobronchial Ultrasound (EBUS)-FNA or CT guided biopsy is not possible.[2]

**Methods** We performed a retrospective search of prospectively recorded data on all patients who were referred for EUS-FNA between 2012 and 2015 for the following indications:

- Suspicious lung mass with or without associated lymphadenopathy. This group has been subdivided into those who underwent EUS-FNA to obtain a tissue diagnosis and those who already had a tissue diagnosis and the EUS-FNA was performed for tumour staging.
- Suspicious mediastinal or epigastric lymph nodes alone. This group has been subdivided into those for whom EUS-FNA was performed to investigate possible recurrence of previously resected lung cancer and those who had unexplained mediastinal or epigastric lymphadenopathy.

Procedure: The EUS-FNA procedures were all undertaken by AJS or SP, with a 22 g FNA needle (Cook Ltd), using a standard linear echoendoscope with ultrasound (Pentax Ltd & Hitachi Ltd). We collected data on patient demographics, EUS findings and procedures, cytology and prior pathology and radiology using our electronic clinical reporting system

**Results** 35 patients were referred for EUS-FNA for the diagnosis or staging of lung cancer during the study period. 2 patients were unsuitable candidates. 25 patients had a suspicious lung mass and 8 had suspicious lymph nodes alone.

In the group with a suspicious lung mass, EUS-FNA led to a diagnosis of lung cancer in 15 patients with 7 patients having benign pathology. 3 patients already had a diagnosis of lung cancer; EUS-FNA led to upgrading of tumour stage in 1 patient.

In the group with suspicious lymph nodes alone, 3 diagnoses of lung cancer were made. Of the remaining 5 patients, 4 had benign pathology and 1 had gastric cancer. No procedural complications were encountered in any patient.

EUS-FNA therefore led to a diagnosis of lung cancer in 60% (18/30) of the cases referred without a prior diagnosis.

**Conclusion** EUS-FNA is a useful modality in the diagnosis and staging of lung cancer when EBUS and/or CT guided biopsy fail to obtain a tissue diagnosis.

### REFERENCES

1 Ferlay J, Shin HR, Bray F, *et al*. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int J Cancer. **2010**;127:2893–917.
2 Colella S, Vilmann P, Konge L, *et al*. Endoscopic ultrasound in the diagnosis and staging of lung cancer. *Endoscopic Ultrasound*. 2014;**3**(4):205–212.

**Disclosure of Interest** None Declared

## PTU-145 THE ROTHERHAM BARRETT'S OESOPHAGUS SURVEILLANCE PROGRAMME. THE FINAL OUTCOME AFTER 37 YEARS

[1]C Royston*, [2]A Charlett, [3]CP Caygill, [1]KD Bardhan. [1]*Gastroenterology Research, Rotherham General Hospital, Rotherham*; [2]*Statistics, Modelling and Economics Department, Centre for Disease Surveillance and Control, Public Health England*; [3]*UK National Barrett's Oesophagus Registry, Division of Surgery and Interventional Science, University College London, Royal Free Hospital, London, UK*

10.1136/gutjnl-2016-312388.231

**Introduction** We present the long-term outcome of Barrett's oesophagus (BO) observed over 37 years at a District General Hospital. We comment on the risk of developing oesophageal adenocarcinoma (OAC), its outcome, and on the value of endoscopic surveillance.

**Methods** The study includes all patients diagnosed with BO from 1.1.1977 to 31.12.2011 and followed-up until 31.12.2013 (37 years). Patients with prevalent OAC were excluded from analysis. Data were prospectively collected and updated at every visit and all deaths recorded. Patients were followed-up by surveillance endoscopy or if contraindicated by age or co-morbidity then by clinic visit or telephone survey, with urgent endoscopy reserved for recurrence of symptoms for all patients. To compare outcome we divided OAC patients according to their method of follow-up at the time OAC was diagnosed. To adjust for the confounding factor of age when creating survival estimates we applied a Cox proportional hazards regression which included gender, age, and age squared (for there is evidence that the relationship with age and survival is not linear).

**Results Total numbers:** 1977–2011 n = 1381. BO numbers steadily increased but plateaued towards the end of the study. BO diagnosis was confirmed by histology in 88%. **Outcome:** In a total FU of 10366 patient-years (mean 7.5y range 0–36y), 54/1381 (3.9%) developed OAC (mean interval 9 years, SD 5.5, range 13 months–25.4 years). Thus 1 OAC developed per 192 patient-years of FU i.e. 0.52% per year. **Mortality:** Deaths from all causes were 417/1381 (30.2%). **Surveillance and survival:** Mortality was significantly lower in the 37 patients under endoscopic surveillance at the time OAC was diagnosed (51% vs 88% p = 0.0141) due in part to the older age and co-morbidity of the other 17 in whom serial endoscopy was contraindicated (mean age 67y vs 75y p = 0.002, respectively). However, after adjusting for age there was no significant difference in mortality between the two groups (p = 0.08). Importantly though, the estimated hazard rate ratio was lower in the surveillance group (0.64, 95% CI 0.30 to 1.48).

**Conclusion Reduction of risk:** The risk of dying from OAC was reduced by about one-third in those under endoscopic surveillance at the time OAC was diagnosed. Identifying such a reduction of *risk* is a very useful indicator of the value of surveillance. **Numbers and implications:** This substantial long-term study was still not large enough to show a *significant* reduction in death once adjusted for confounding factors. Our results stress the need for individual centres to contribute to data warehouses such as national registries.

We now have clear evidence that BO surveillance confers benefit. With today's technology which offers a wider scope of both palliative and curative treatments, and a continued systematic and disciplined approach, we have reason to expect that endoscopic surveillance will give even better results in the future.

**Disclosure of Interest** None Declared

## PTU-147 REGULATION OF MMP-7 EXPRESSION IN THE PROGRESSION TO OESOPHAGEAL ADENOCARCINOMA

[1]HM Garalla*, [1]N Lertkowit, [2]L Tiszlavicz, [2]Z Reisz, [1]G Dockray, [1]A Varro. [1]*Department of Cellular and Molecular Physiology, University of Liverpool, Liverpool, UK*; [2]*Department of Pathology, University of Szeged, Szeged, Hungary*

10.1136/gutjnl-2016-312388.232

**Introduction** The incidence of oesophageal adenocarcinoma (AC) has increased at an alarming rate in the past few decades; the most important risk factor is Barrett's oesophagus (BO). Matrix metalloproteinase (MMP)-7 has been linked to progression in this and many other epithelial cancers; expression of MMP-7 is typical associated with epithelial cells but the regulatory mechanisms remain uncertain. Our aim was to evaluate the pattern of expression of MMP-7 in AC and the mechanisms regulating its expression in an AC cell line.
**Methods** Surgically resected tumours and adjacent tissue from 14 patients with AC were stained with a mouse monoclonal anti-human MMP-7 antibody. Stromal and epithelial compartments were scored separately for staining intensity on a four point scale (0–3) and the percentage of stained cells at each intensity recorded. Western blot and indirect ELISA were applied to an oesophageal adenocarcinoma cell line (OE33 cells). Data are expressed as mean ± SE and comparisons were made by ANOVA or t test as appropriate.
**Results** MMP-7 was localised to carcinoma cells in all AC cases (80 ± 3% cells scored 2 for intensity), and was strongest in tumour cells at the invasive front (93 ± 1% cells scored 3). There was also expression in epithelial cells in adjacent premalignant lesions of BO (78 ± 4% cells scored 1), but <50% of normal epithelial cells were MMP-7 positive. In the stroma, putative myofibroblasts identified as spindle-shaped cells that expressed MMP-7 were abundant in the invasive part of the tumour (75 ± 7% cells scored 3) whereas they were scarce or absent in adjacent tissue. In OE33 cells, there was high constitutive secretion of MMP-7 that was inhibited by blocking vesicular trafficking with brefeldin A, but not by inhibitors of protein kinase C or MAP kinase activation. However, the phosphatidylinositol (PI) 3 kinase inhibitor, LY294002, significantly inhibited MMP-7 secretion detected by both Western blot and ELISA (secretion in 6 h: 0.7 ± 0.1 nM vs 0.40 ± 0.1 nM, $p < 0.002$). MMP-7 secretion was similarly inhibited by another PI 3 kinase inhibitor, TG100713 and by MK2206 which inhibits the downstream mediator of PI 3 kinase, Akt. However, the mTOR inhibitor, rapamycin, had no significant effect on MMP-7 expression.
**Conclusion** MMP-7 expression increases at the invasive front in AC where it is also expressed in stromal spindle-shaped cells. High constitutive expression of MMP-7 in an AC cell line is partly attributable to activation of PI 3 kinase and Akt.
**Disclosure of Interest** None Declared

## PTU-148 ENDOSCOPIC SURVEILLANCE IN DYSPLASTIC BARRETT'S OESOPHAGUS (BO)

[1]HN Alastal*, [2]K Nemeth, [3]M Rashid, [4]J Kenkre, [1]A Rasheed. [1]*Gwent Centre for Digestive Diseases (GCDD), Royal Gwent Hospital, Newport City*; [2]*University of Liverpool, Liverpool*; [3]*Department of Pathology, Royal Gwent Hospital, Newport City*; [4]*Faculty of Life Sciences, University of South Wales, Glyntaff, UK*

10.1136/gutjnl-2016-312388.233

**Introduction** Barrett's oesophagus is a premalignant condition and patients with BO undergo surveillance to detect early cancerous changes. Our aim is to assess the effectiveness of endoscopic surveillance in detecting progression to High-Grade Dysplasia (HGD) or Oesophageal Adenocarcinoma (OAC).
**Methods** All BO cases coded in our histopathology database as dysplastic BO during the period from 2005 to 2015 were identified. The documented endoscopy reports were matched with histopathology reports. A retrospective database was then constructed including demographics, pathological features, modes and rates of follow-up and pathological progression. Our surveillance practice was also audited against the 2013 BSG guidance.
**Results** A total of 73 cases were identified as dysplastic BO; the cohort consisted of 55 males and 18 females. (Mean age: 70.1 years, range: from 51.4 to 88.4 years). 47/73 (64%) had hiatus hernia. Intestinal metaplasia was reported in 71/73 cases. 14/73 cases (19%) progressed to HGD or OAC. Five patients offered oesophagectomy, while the others had surveillance (3), endoscopic mucosal resection (3) or chemo/radiotherapy (3). 4/14 cases were noted to have either prevalent HGD/OAC (3) or interval OAC (1) and hence excluded from the audit. Five cases did not have any follow up either because of the patient's noncompliance (2) or the endoscopists' recommendation (3). 64 (88%) cases had complete data and constituted the cohort for assessment of compliance with BSG guidance. Mean follow up was 4.67 years. The total number of endoscopies performed during this period was 250. 65.2% (163/250) of endoscopies were compliant with BSG follow up protocol. Only 18/130 endoscopies (13.8%) provided both C and M measurements of Prague measurement. Average BO length based on 113 endoscopies was 5.3 cm. The mean expected number of biopsies was 11.0 while the actual number of biopsies taken was 7.3 (66.1%). There was some discordance between the number of biopsies mentioned by endoscopists and the number of biopsies counted by pathologists in 72 available endoscopic and pathological data. Overall compliance with BSG protocol in terms of follow up, Prague criteria and sampling count was 48.4% in total.
**Conclusion** The surveillance program detected progression to HGD or OAC in 10 cases (14.5%). Compliance with BSG protocol in terms of follow up, Prague criteria and sampling count was noted in 48.4%. Further adherence with the BSG guidelines is needed to improve the surveillance program.
**Disclosure of Interest** None Declared

## PTU-149 BARRETT'S OESOPHAGUS PATIENTS ATTENDING HOSPITAL: BASELINE CLINICAL, PATIENT HISTORY AND QUALITY OF LIFE DATA FROM BOSS AND ASPECT

[1]S Love, [1]G Reilly*, [1]C Roberts, [2]P Moayyedi, [3]C Foy, [3]C Stokes, [4]J De Caestecker, [5]S Attwood, [6]P Watson, [7]Y Ang, [8]P Bhandari, [3]O Old, [3]J Hapeshi, [9]I Penman, [10]C Rodgers, [11]C Edwards, [12]D Monk, [13]K Ragunath, [14]D Morris, [15]D Johnston, [16]J Jankowski, [3]H Barr. [1]*Centre for Statistics in Medicine, University of Oxford, Oxford, UK*; [2]*Department of Medicine, McMaster University, Ontario, Canada*; [3]*Gloucester Royal Hospital, Gloucester*; [4]*University Hospital Leicester, Leicester*; [5]*School of Medicine, Pharmacy and Health, Durham University, Durham*; [6]*Queens University Belfast, Belfast*; [7]*Wrightington, Wigan & Leigh NHS, Wigan*; [8]*Spire Portsmouth Hospital, Portsmouth*; [9]*Western General Hospital and Royal Infirmary Edinburgh, Edinburgh*; [10]*Northern Trust, Antrim*; [11]*South Devon Healthcare NHS Foundation Trust, Devon*; [12]*Chester Hospital, Chester*; [13]*Nottingham University Hospital, Nottingham*; [14]*Queen Elizabeth II Hospital, Welwyn Garden City*; [15]*Ninewells Hospital, Dundee*; [16]*University Hospitals of Leicester, Leicester, UK*

10.1136/gutjnl-2016-312388.234

**Introduction** From 2005 to 2011 two large UK studies recruited 6,327 evaluable patients with Barrett's Oesophagus attending hospital clinics. Baseline clinical, patient history and quality of life data was collected prior to randomisation and this rich dataset is the basis for this abstract.
**Methods** Patients were recruited to AspECT and BOSS at local centres through normal endoscopy clinics and surveillance lists including those newly diagnosed or with an existing diagnosis of Barrett's oesophagus.

Baseline information was collected on age, gender, ethnicity, length of Barrett's, presence of hiatus hernia, intestinal metaplasia and low grade dysplasia, concomitant medications, comorbidities, duration and severity of symptoms and patients' self-reported Quality of Life data.
**Results** The sample was mainly male (75%, n = 6,327) with median age of 64 years (range 18–92 years, n = 6,327). Median Barrett's length was 4 cm (range 1–24 cm, n = 6,029) and median time since diagnosis of Barrett's was 2 years (range 0–41 years, n = 5,805). At least one symptom of reflux was experienced by 60% of patients and 46% of patients experienced at least one symptom at least once per week (n = 1,072). Length of Barrett's was associated with age (n = 6,029), gender (n = 6,029), presence of low grade dysplasia (n = 5,955), presence of intestinal metaplasia (n = 6,026) and time since diagnosis (n = 5,913).
**Conclusion** This is our first release of data from AspECT and BOSS with more to follow. It is a large set of data on Barrett's patients which we expect to be typical of Barrett's patients attending hospital clinics in the UK. The average person was a male age 62 with 4 cm Barrett's having had a Barrett's diagnosis for 2 years.
**Acknowledgements** Our thanks to the patients and the sites.

AspECT is sponsored by the University of Oxford with grant funding from CR-UK (A4584) and support from the Investigator-Sponsored Study Program of AstraZeneca with trial management provided by OCTO.

BOSS is funded by the HTA grant number HTA 05/12/01 with trial management provided by BOSS trial office Gloucestershire Hospitals NHS Trust.

The Centre for Statistics in Medicine provides statistical input to both AspECT and BOSS.
**Disclosure of Interest** None Declared

## PTU-150 SIMPLIFIED BARRETT'S RADIOFREQUENCY ABLATION TECHNIQUE IN THE ELDERLY. CONSIDERATION SHOULD BE GIVEN TO BALANCING THE INCREASED RISKS WITH BENEFITS

JA Campbell*, AD Hopper. *Academic Dept of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.235

**Introduction** Barrett's oesophagus (BO) is a major risk factor for the development of oesophageal adenocarcinoma. Radiofrequency ablation (RFA) is an established treatment option in high risk patients with high grade dysplasia (HGD). Recent simplified methods have also been shown to have equivocal treatment success with shorter treatment times. New recommendations to treat patients with low grade dysplasia have been established which will increase numbers of eligible patients. Reduction in procedure duration is attractive to accommodate the increasing referrals, and reduce sedation requirements, especially in the elderly. We aimed to assess the complications and success of simplified RFA technique in consecutive patients undergoing treatment for Barrett's oesophagus.
**Methods** All patients discharged from simplified RFA treatment course for BO over a 2 year period were identified. Circumferential RFA (c-RFA) or Focal Ultra RFA (u-RFA) was performed with a simplified double application of RFA (12 J/cm) - the device was not removed or cleaned. Simplified Focal RFA (f-RFA) with smaller devices was performed with a (3×15 J/cm no clean) regimen. Strict RFA medication protocol and repeat 3 month follow up was performed for each patient. Patient demographics, success of treatment, withdrawal from treatment and complications were noted. Outcomes were compared in age groups under and over 75 (Fisher's exact test) to assess if there was a difference in complication rate.
**Results** 36 patients discharged from simplified RFA treatment were identified (11 female; median age 71: range 46–80). 76 treatments were performed in total (22 c-RFA 11 u-RFA and 43 f-RFA). Complete eradication of Barrett's mucosa was successful in 83.3% (30/36) patients. Median number of treatments was 2 (range 1–6). 1 patient with an incomplete response after 4 treatments was treated twice with a non simplified RFA method but after no further response the patient was discharged from RFA programme. 4/36 patients (11.1%) reported complications which resulted in discharging from programme. Reasons were: prolonged atrial-fibrillation with haemodynamic compromise (2 nd treatment u-RFA); significant oesophageal stricture (c-FRA); hypotensive fall with 7 day admission (u-RFA); prolonged post procedure pain (f-RFA). All complications lead to withdrawal from the RFA programme. 30.7% of patients aged over 75 experienced complications compared to 0% in patients under 75 (p = 0.0121).
**Conclusion** A simplified oesophageal RFA regime is effective to remove BO, however its use in the elderly may be linked with increased complications leading to program withdrawal.
**Disclosure of Interest** None Declared

## PTU-151 PREDICTING 30-DAY MORTALITY AND RE-STENTING FOLLOWING SELF EXPANDING METAL STENT (SEMS) INSERTION FOR THE PALLIATION OF DYSPHAGIA IN PATIENTS WITH OESOPHAGEAL CANCER

[1]J Sterne, [2]J Macdonald, [2]P Phull, [2]J Leeds*. *[1]Aberdeen University; [2]Gastroenterology, Aberdeen Royal Infirmary, Aberdeen, UK*

10.1136/gutjnl-2016-312388.236

**Introduction** Management of dysphagia due to malignant obstruction of the oesophagus can be challenging. Endoscopically placed self-expanding metal stents (SEMS) remain an important tool and have been performed under direct vision in our institution since 2004. A previous audit suggested a significant morbidity and mortality rate and therefore the aim of this study was to identify risk factors for 30 day mortality and re-intervention.
**Methods** A retrospective review of all patients undergoing oesophageal SEMS insertion was performed over the period 2004–2014. Data collected included patient demographics, tumour stage/position, stent type inserted, survival following SEMS insertion, bioprofile and other therapies. Univariate analysis was performed and was followed by multivariate logistic regression to identify independent variables associated with 30 day mortality and re-stenting.

**Results** 396 patients (median age 74 years, 252 males) had 514 stents were inserted over the study period and were included in the study. Regarding 30 day mortality, univariate analysis showed association with distal tumours (OR 1.6), stent length >10 cm (OR 3.0), oncological treatment (OR 0.4), raised CRP (OR 6.1), raised white cell count (OR 6.0), anaemia (OR 2.8) and low albumin (OR 4.9). Multivariate analysis showed white cell count (OR 8.1, 2.0–21.9, $p < 0.001$, albumin <35 g/l (OR 6.9, 2.6–18.8, $p < 0.001$) and oncological treatment (OR 0.3, 0.1–0.8, $p = 0.013$) were independent predictors of 30 day mortality. Regarding re-intervention, univariate analysis showed association with age > 70 (OR 0.6), junctional tumours (OR 0.5), stent length >10 cm (OR 0.6), raised CRP (OR 0.5) and raised white cell count (OR 0.4). Multivariate analysis showed age > 70 (OR 0.5, 0.3–0.9, $p = 0.032$) and raised white cell count (OR 0.4, 0.2–0.8, $p = 0.009$) were independent predictors of re-intervention.

**Conclusion** Raised inflammatory markers were associated with poorer outcomes following oesophageal SEMS insertion and oncological treatment was protective. Longer survival appears to be associated with re-intervention following initial stent insertion. This data may provide a framework for the creation of a prognostic scoring system prior to SEMS insertion.

**Disclosure of Interest** None Declared

## PTU-152 PREDICTION OF MALIGNANT PROGRESSION OF BARRETT'S OESOPHAGUS – A COMPLETE SYSTEMATIC REVIEW AND META-ANALYSIS

[1]K Altaf*, [2]J Xiong, [1]L Hickey, [1]A Kaul. [1]*Department of Surgery, St. Helens and Knowsley Teaching Hospitals, NHS Foundation Hospital, Whiston, UK*; [2]*Department of Hepato-Biliary-Pancreatic Surgery, West China Hospital, Sichuan University, Chengdu, China*

10.1136/gutjnl-2016-312388.237

**Introduction** Barrett's Oesophagus (BO) is a precursor for Oesophageal Adenocarcinoma (OAC). Currently, there are no biomarkers in clinical practice that predict the malignant progression in BO. We sought to clarify the effectiveness of common genetic aberrations as potential biomarkers in this context through a systematic review and meta-analyses.

**Methods** MEDLINE, EMBASE and the Cochrane Library were searched by two independent reviewers to identify all clinical studies that assessed efficacy of p53, p16, Ki-67 and DNA content abnormalities as prognostic markers in BO. The main outcome measure was development of OAC. review and meta-analyses.

**Results** 104 clinical studies, with 12,353 samples were identified. Mutation [DOR 10.91 (2.46–48.42), sensitivity 47% (41–53%), specificity 92% (90–94%), PLR 4.71 (1.73–12.78), NLR 0.65 (0.50–0.85), AUC 0.7921] and loss of p53 [DOR 16.16 (6.09–42.88), sensitivity 31% (25–38%), specificity 98% (97–98%), PLR 6.66 (4.51–9.84), NLR 0.41 (0.11–1.47), AUC 0.9228] were found to be superior to the other p53 abnormalities (Loss of heterozygosity and Over-expression). Ki-67 was also noted to have high sensitivity in identifying high risk patients [DOR 5.54 (3.40–9.05), sensitivity 82% (78–85%), specificity 48% (44–52%), PLR 1.59 (1.20–2.10), NLR 0.42 (0.34–0.51), AUC 0.7607]. Aneuploidy [DOR 12.08 (8.09–18.03), sensitivity 53% (50–57%), specificity 87% (85–88%), PLR 4.26 (2.92–6.20), NLR 0.42 (0.32–0.55), AUC 0.8461], tetraploidy [DOR 5.87 (2.56–13.4), sensitivity 46% (39–53%), specificity 85% (82–87%), PLR 3.47 (1.98–6.05), NLR 0.65 (0.45–0.94), AUC 0.7926] and loss of Y chromosome [DOR 9.23 (4.34–19.63), sensitivity 68% (56–79%), specificity 80% (73–86%), PLR 2.67 (1.29–5.50), NLR 0.49 (0.35–0.68), AUC 0.8073] also predicted the malignant development with respectable accuracy but p16 aberrations [{Hypermethylation - DOR 3.00 (2.02–4.45), sensitivity 56% (51–61%), specificity 63% (59–66%), PLR 1.68 (1.35–2.08) (1.32–1.72), NLR 0.66 (0.54–0.80), AUC 0.6773}, {LOH - DOR 4.19 (1.85–9.53), sensitivity 55% (47–62%), specificity 54% (50–58%), PLR 1.84 (1.13–2.99), NLR 0.73 (0.60–0.88), AUC 0.6915}, {Mutation - DOR 1.61 (0.86–3.01), sensitivity 18% (13–24%), specificity 86% (83–89%), PLR 1.53 (0.97–3.42), NLR 0.96 (0.87–1.04), AUC 0.6890}, {Loss - DOR 2.18 (1.18–4.01), sensitivity 58% (53–63%), specificity 58% (53–63%), PLR 1.51 (1.08–1.95), NLR 0.74 (0.56–0.97), AUC 0.6314}] failed to demonstrate any advantage over the other biomarkers studied.

**Conclusion** Loss and mutation of p53 and Ki-67 effectively predict malignant progression in BO. A panel of biomarkers would be more suited to be included in surveillance programme. This will need to be confirmed in large, prospective clinical trials with cost- efficiency analyses.

**Disclosure of Interest** None Declared

## PTU-153 THE INTESTINAL TRANSCRIPTION FACTORS INTESTINE-SPECIFIC HOMEOBOX (ISX), HEPATOCYTE NUCLEAR FACTOR 4A (HNF4A) AND CAUDAL-TYPE HOMEOBOX 2 (CDX2) ARE ALL EXPRESSED IN BARRETT'S METAPLASIA

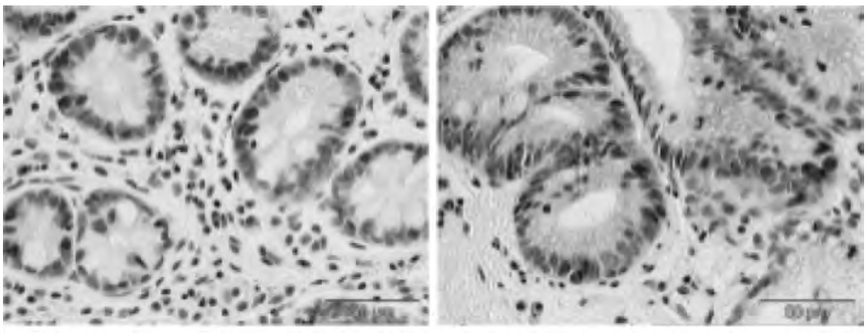
[1,2]LP Griffiths*, [2]B Colleypriest, [2]JM Farrant, [1]D Tosh. [1]*Biology & Biochemistry, University of Bath*; [2]*Gastroenterology, Royal United Hosptial Bath, Bath, UK*

10.1136/gutjnl-2016-312388.238

**Introduction** Barrett's metaplasia (BM) is the substitution of stratified squamous epithelium with intestinal-type columnar epithelium in the distal oesophagus. It is a condition with malignant potential and yet we do not have any satisfactory treatments to reverse it. The cellular and molecular mechanisms are poorly understood, although several transcription factors are implicated including CDX2. We examined expression of CDX2 along the gastrointestinal tract epithelium, as well as more novel transcription factors ISX and HNF4a.

**Methods** Immunohistochemistry protocols were refined for all three transcription factors for formalin-fixed paraffin-embedded sections of forceps biopsies of human tissue from normal and Barrett's oesophagus, and from the gastro-oesophageal junction, stomach, small and large bowel. Additionally, the oesophagi of 8 patients were biopsied; 5 with a normal oesophagus and 3 with BM, where biopsies were taken from both the mid-oesophagus and the BM segment. These biopsies were processed for RT-PCR to see whether the immunohistochemistry findings could be confirmed at mRNA level.

**Results** Slide section immunohistochemistry demonstrates that ISX, HNF4a and CDX2 all express nuclear antibody staining in small and large bowel epithelium. ISX and HNF4a are additionally expressed in stomach mucosa epithelium. None of the transcription factors are seen in normal oesophagus aside from very sparse cells with ISX, but all three are demonstrated in BM. RT-PCR of all 3 transcription factors for all 8 patients from normal oesophagus samples was negative. All 3 BM samples were positive for HNF4a, and 2 of the BM



**Abstract PTU-153 Figure 1**

samples were positive for ISX and CDX2. However, one BM sample was negative for both ISX and CDX2.

Figure legend: Both plates demonstrate nuclear ISX (brown), left = ileum, right = Barrett's metaplasia.

**Conclusion** CDX2 has been intensively studied in BM, but we also show robust expression of ISX and HNF4a. ISX may be a novel key transcription factor in BM, and our findings suggest that the transcription factor profile in BM echoes that found in intestinal epithelium. Our theory is that HNF4a induction occurs earlier than CDX2 in the genesis of BM; it is possible this is an example of an intermediate stage in this process.

**Disclosure of Interest** None Declared

## PTU-154 HMGB1 AS A PROGNOSTIC BIOMARKER IN THE PROGRESSION OF BARRETT'S OESOPHAGUS

[1]R Porter, [1]GI Murray, [2]R Petty, [1]EM El-Omar, [1]GL Hold, [1]MH McLean*. *[1]School of Medicine, Medical Sciences & Nutrition, University of Aberdeen, Aberdeen; [2]Division of Cancer Research, Medical Research Institute, University of Dundee, Dundee, UK*

10.1136/gutjnl-2016-312388.239

**Introduction** Barrett's oesophagus (BO) is metaplasia from normal squamous to mucin secreting columnar epithelium. BO is a precursor of neoplastic progression to dysplasia and adenocarcinoma, with no associated progression biomarker available. High Mobility Group Box-1 (HMGB1) is a ubiquitous nuclear protein that regulates gene expression. When phosphorylated, it translocates to the cytoplasm and extracellular space to stimulate pro-inflammatory responses and influence epithelial cell behaviour. Our aim was to assess expression of HMGB1 in BO and neoplastic progression.

**Methods** Epithelial nuclear and cytoplasmic subcellular expression of HMGB1 was assessed immunohistochemically in endoscopically retrieved paraffin embedded biopsies sourced from the Grampian Biorepository (n = 155 total). Ethical approval was granted by the Grampian biorepository scientific committee. A gastrointestinal pathologist (GIM) confirmed histological diagnosis. 18, 25, 78 and 13 biopsies were assessed, from 11 patients with normal oesophageal mucosa, 14 patients with normal gastric mucosa, 20 patients with non-dysplastic BO and 9 patients with dysplastic BO, respectively. Also included were 12 biopsies (7 patients) and 9 biopsies (6 patients) from non-dysplastic BO associated with progression to dysplasia and adenocarcinoma, respectively. Intensity of HMGB1 staining was double scored as none, weak, moderate or strong immunopositivity. Analysis used Fisher's exact test of 2X2 contingency tables.

**Results** HMGB1 was expressed in the nuclei in all groups. Normal oesophageal biopsies expressed no or weak cytoplasmic HMGB1. Non-dysplastic ($p < 0.0001$) and dysplastic ($p < 0.0001$) BO epithelium expressed stronger cytoplasmic HMGB1 compared to both normal oesophageal and gastric epithelium. Dysplastic BO expressed increased HMGB1 in both nuclear ($p = 0.0003$) and cytoplasmic ($p = 0.0002$) compartments compared to non-dysplastic BO. Background non-dysplastic BO in those that had progressed to dysplasia had increased nuclear HMGB1 compared to non progressors ($p = 0.015$). Background non-dysplastic BO in those who progressed to cancer expressed less cytoplasmic HMGB1 compared to non progressors ($p = 0.0118$). Non-dysplastic and dysplastic BO epithelium had clear foci of absent nuclear HMGB1 expression in areas of moderate/strong cytoplasmic HMGB1 expression.

**Conclusion** There was evidence of dynamic subcellular localisation of HMGB1 expression in association with BO and dysplasia. Cytoplasmic HMGB1 expression may be a novel biomarker to aid diagnosis and predict progression of BO. The functional significance of this warrants further investigation.

**Disclosure of Interest** None Declared

## PTU-155 ENDOSCOPIC MANAGEMENT OF GRANULAR CELL TUMOURS ARISING IN THE OESOPHAGUS: A SINGLE CENTRE EXPERIENCE

[1]N Jawad*, [1]F Norris, [1]J Solomon, [2]M Novelli, [1]L Lovat, [1]R Haidry. *[1]Gastroenterology Department; [2]Histopathology Department, University College London Hospital, London, UK*

10.1136/gutjnl-2016-312388.240

**Introduction** Granular cell tumours (GCTs) are rare and originate from Schwann cells of the nervous system. They are most commonly found in the tongue and breast. GCTs can form anywhere in the gastrointestinal tract and biliary tree but most commonly in the oesophagus. They occur primarily in adults, and more commonly in females and blacks. GCTs are asymptomatic and tend to be incidental findings at endoscopy. GCTs represent 1% of benign oesophageal tumours and have a small risk of malignant transformation when they are greater than 4 cm or exhibit signs of recent growth. Most are in the middle or distal oesophagus and are small appearing as nodules or polyps that are yellow with an intact overlying mucosa. Typically they are single but may be multiple. Histologically they appear as sheets of cells with abdundant eosinophilic granular cytoplasm and small pyknotic nuclei and usually confined to the lamina propria but may invade

submucosa and muscularis propria. They are periodic acid shiff (PAS) and S100 positive on immunostaining. Importantly the squamous epithelium overlying the lesion can show pseudo epitheliomatous hyperplasia that may mimic dysplasia or malignancy.

**Methods** A retrospective search of the UCLH endoscopy and pathology databases from 2002–2015 identified all cases of oesophageal GCTs on histological analysis from biopsies. Patient's medical records were reviewed for demographic data, symptoms, endoscopic findings and management plans.

**Results** Eleven cases of GCTs in the oesophagus (4 male and 7 female) were identified. Diagnosis was proven on histological analysis of biopsies and positivity for the S-100 protein. Patients were 29–65 years old (mean 46.2 years). Tumour diameter was 0.4–2.0 cm. All GCTs were found in the distal oesophagus. Nine of the lesions were confined to the mucosa/submucosa and two extended into the muscularis propria. The most common presenting symptoms for the index endoscopy were dyspepsia and dysphagia. Eight patients were treated by endoscopic mucosal resection (EMR). One patient had multifocal oesophageal GCTs. All patients had no residual GCT at follow up endoscopy and were discharged. Two patients with GCTs were monitored by 2 yearly surveillance endoscopy and endoscopic ulstrasound (EUS) to ensure no change in lesion size occurred. One patient had an oesophagogastrectomy for treatment of an adenocarcinoma and the GCT was an incidental finding.

**Conclusion** Histology demonstrating a deep infiltrative appearing pattern may prompt concern for malignancy. Surveillance endoscopy is advised for asymptomatic GCTs. GCTs that are not excised should be monitored by endoscopy and EUS for any size increase 1–2 yearly. EMR can be performed for small tumours limited to the mucosa safely and successfully.

**Disclosure of Interest** None Declared

## PTU-156 ASSESSING CURRENT UK PRACTICE FOR ENDOSCOPIC SURVEILLANCE IN ACHALASIA

[1]R Sinha*, [2]A Wyman, [3]H Ellison, [4]C O'Shea, [5]M Bramble. *[1]Gastroenterology, University of Edinburgh, Edinburgh; [2]General surgery, Northern General Hospital, Sheffield; [3]Head of Clinical Services; [4]BSG Website Editor, British Society of Gastroenterology, London; [5]Gastroenterology, James Cook University Hospital, Middlesborough, UK*

10.1136/gutjnl-2016-312388.241

**Introduction** There are no established guidelines on achalasia surveillance from the British Society of Gastroenterology(BSG) or the American Society for Gastrointestinal Endoscopy (ASGE).In the absence of guidance,conflicting evidence[1,2] and lack of consensus amongst global experts,[3]a varied clinical practice prevails in the UK.The aim of this study was to document current clinical practice among UK endoscopists regarding achalasia surveillance.

**Methods** An online survey was conducted using SurveyMonkey® endorsed by BSG,AUGIS(Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland)and JAG(Joint Advisory Group on GI Endoscopy).The link was emailed to all the registered members.The first round was conducted in March2015 with a reminder later in August2015.

**Results** The response rate was 71% inclusive of both rounds. Overall 80%of respondents had been performing gastroscopy for over a decade and 68%declared an interest in achalasia and upper gastrointestinal cancer.Almost all(98%)had either diagnosed or performed gastroscopy in patients with achalasia and 62%performed biopsy but only if there was a macroscopic lesion at the time of the index gastroscopy.22%of the respondents performed routine random biopsy of distal oesophagus but only 1.3%used lugol's iodine to target biopsies. Despite the high levels of interest,79%of the respondents did not undertake cancer surveillance in achalasia.Of those who did, less than a quarter(21%)proposed surveillance either after a fixed duration of diagnosis or completion of treatment; majority (80%)proposing a surveillance gastroscopy every 2–3 years whilst 18%recommended every 5 years.Most (58%)performed endoscopic inspection for a macroscopic lesion;26% performed random distal biopsies and 16% used lugol's iodine during surveillance. 93%of respondents had no anecdotal experience of malignancy arising on a background of previously diagnosed achalasia.

**Conclusion** The majority of specialists do not endorse cancer surveillance in achalasia based on a very low perceived risk and anecdotal experience.There is a need for establishing a national database to study the natural history,long-term management and cost-effectiveness of surveillance.It would be helpful for the BSG to recommend against surveillance,highlighting the lack of sufficient evidence and enthusiasm as judged by current clinical practice.

### REFERENCES

1 Leeuwenburghl, *et al*. Long-term esophageal cancer risk in patients with primary achalasia:a prospective study.*Am J Gastroenterol* 2010:2144–2149.
2 Brucher BL, *et al*. Achalasia and esophageal cancer: incidence, prevalence and prognosis. *World J Surg* 2001:745–749.
3 Ravi K, *et al*. Esophageal Cancer screening in Achalasia: Is there a consensus? *Gastroenterology* 2014;146S–682.

**Disclosure of Interest** None Declared

## PTU-157 REVIEWING THE STANDARDISED APPROACH – AN AUDIT OF 250 BARRETT'S SURVEILLANCE CASES

R Das*, A Mandal, D Leonard, S Nawaz. *Gastroenterology, Lincoln County Hospital, Lincoln, UK*

10.1136/gutjnl-2016-312388.242

**Introduction** Barrett's oesophagus (BO) confers a relative risk of 11.3 over that of the general population for the development of oesophageal adenocarcinoma.(Hyid 2011) The endoscopic surveillance of BO remains the only modality for the detection of emergent dysplasia, which has been established as a premalignant development.(Flejou 2005) The 2013 BSG Guideline on BO explicitly suggests the use of a 'minimum dataset' in order to standardise BO reporting and for the audit of this practice in order to ensure high quality BO management.(Fitzgerald et al. 2013)

**Methods** The advised minimum dataset includes the standardised 'Prague classification' and hiatus hernia reporting. We report the audit of standardised reporting in 250 patients – a volume that represents roughly forty percent of the annual Barrett's surveillance load in between two large District General Hospitals in Lincolnshire(UK).

**Results** Adherence to the 'Prague Classification' was demonstrated in 56% of reports (141 of 250). The Gastro-oesophageal-junction was only documented as being noted in 44% (109 of 250), with length of hiatus hernias being documented in 61% (105 of 173).

Nurse endoscopists and doctors utilised the Prague classification equally – 48% and 52% respectively. Nurse

endoscopists reported hiatus hernia length in only 38% of cases, with doctor (any grade) reporting at 62%. Interestingly overall only 32% of reports made any mention of proton pump inhibitor (PPI) use or advised of PPI initiation.

Of the total (n = 250) 7 cases of dysplasia and 4 cases of adenocarcinoma were detected. The single detected high-grade dysplasia was referred appropriately for UGI multidisciplinary team input. Two cases of indefinite dysplasia were noted, and repeat endoscopy planned within a 6 month period. The overall finding of 11 cases (4.4%) of dysplasia or malignancy was in keeping with expected detection rates as reported by recent meta-analyses.(Qiao 2015)

**Conclusion** While dysplasia and adenocarcinoma detection rates are within acceptable ranges, improved adherence to the 'minimum dataset' is needed. We have recommended serial clinical update sessions for endoscopists and planned further re-audit.

## REFERENCES


1 Pietro M, Ragunath K, *et al*. British society of gastroenterology guidelines on the diagnosis and management of Barrett's Oesophagus. *Gut*. 2013;**10**:1136–40.
2 Flejou JF. Barrett's oesophagus: from metaplasia to dysplasia and cancer. *Gut*. 2005;**54**:1–12.
3 Hvid-Jensen F, Pedersen L, Drewes A, *et al*. Incidence of adenocarcinoma among patients with Barrett's oesophagus. *N Engl J Medi*. 2011. **365**: 1375–83.
4 Qiao Y, Hyder A, *et al*. Surveillance in patients with Barrett's Oesophagus for early detection of Esophageal Adenocarcinoma: A systematic review. *Gastroenterology*. 2015. **131**:1038–1040.


**Disclosure of Interest** None Declared

## PTU-158 THE INFLUENCE OF SOCIAL CLASS ON PROGRESSION OF BARRETT'S OESOPHAGUS TO OESOPHAGEAL ADENOCARCINOMA


[1]S Bhattacharjee*, [1]CPJ Caygill, [2]PAC Gatenby, [1]A Watson. *[1]UK Barrett's Oesophagus Registry (UKBOR), Division of Surgery and Interventional Science, Royal Free Hospital, University College London, London; [2]Regional Oesophagogastric Unit, Royal Surrey County Hospital, Surrey, UK*


10.1136/gutjnl-2016-312388.243

**Introduction** The incidence of oesophageal adenocarcinoma (OAC) has been rapidly increasing over the last three to four decades in many western nations, including the UK. Barrett's oesophagus (BO) is the only known precursor condition for OAC. Surveillance of BO may be undertaken with the goal of detecting dysplasia and early neoplasia prior to the development of incurable cancer. The identification of subpopulations of subjects at highest risk of cancer development should allow more effective targeted surveillance.

**Methods** Clinical records of 2896 patients from two centres in the UK, who have consented and registered with the UK Barrett's Oesophagus Registry (UKBOR), were used for the purpose of this study.

Data on patient's occupation were obtained from hospital records, or from death certificates where available.

The most widely used measure of social class in the UK is the 'Registrar General's Classification' which assigns a social class category (I-V with subdivision of class III into III N [non-manual workers] and III M [manual workers] against individual occupation. Social class I are the professionals and higher managers, II and III are junior managers/supervisors, III and IV comprises of semiskilled and manual occupations and those in V are unskilled workers.

A Chi-squared goodness of fit test was used to test for significance of the association of social class in both BO and OAC.

**Results** In the BO group, 1824 people had usable information on occupation.

*Table 1* shows the observed (O) cases of BO and OAC in each of the social classes and the number of expected (E) cases of OAC assuming an equal proportion of social class developed OAC (p-value – 0.003)

The O/E results demonstrate an excess of patients progressing to OAC in social class III M, and a lower than expected number of cases in social classes I, III N and V.

**Abstract PTU-158 Table 1** The influence of social class on the progression of BO to OAC

| Social Class | BO | OAC (observed – O) | OAC (Expected – E) | O/E |
|---|---|---|---|---|
| I | 142 | 2 | 9.6 | 0.20 |
| II | 320 | 24 | 23.1 | 1.03 |
| IIIN | 288 | 11 | 20.1 | 0.55 |
| IIIM | 600 | 51 | 43.7 | 1.16 |
| IV | 289 | 18 | 20.6 | 0.87 |
| V | 185 | 4 | 12.7 | 0.31 |

**Conclusion** Our study shows that more OAC is observed in BO patients in social class III M than expected whereas fewer are observed in social class I, IIIN and V than expected.

## REFERENCES


1 Jansson C, Johansson AL, Nyren O, *et al*. Socioeconomicfactors and risk of esophageal adenocarcinoma: a nationwide Swedish case-control study. *Cancer Epidemiol Biomarkers Prev* 2005;**14**: 1754–1761.
2 Islami F, Kamnagar F, Nasrollahzadeh D, *et al*. Socio-economic status and oesophageal cancer: results from a population based case-control study in a high risk area. *Int J Epidemiol 2009*;**38**:978–988.


**Disclosure of Interest** None Declared

## PTU-159 THE CLINICAL AND SERVICE IMPACT OF THE NATIONAL OESOPHAGO-GASTRIC CANCER AWARENESS CAMPAIGN: A LOCALITY ANALYSIS FROM COUNTY DURHAM


[1]S Koo*, [1]B Awadelkarim, [1]S Choudhary, [2]Y Viswanath, [1]A Dhar. *[1]Gastroenterology, County Durham & Darlington NHS Foundation Trust, Co. Durham; [2]Upper GI Surgery, James Cook University Hospital, Middlesbrough, UK*


10.1136/gutjnl-2016-312388.244

**Introduction** The UK national 'Be clear on cancer (BCOC)' campaigns led by Public Health England aim to improve public awareness of symptoms of cancer with a view to make an early diagnosis and reduce deaths arising from advanced disease. The 2015 national campaign for oesophago-gastric (OG) cancer ran from 26 January to 22 February with a key message of '***Having heartburn, most days, for 3 weeks or more could be a sign of cancer – tell your doctor***' and a secondary message of '***Food sticking when you swallow could be a sign of cancer – tell your doctor.***' The initial analysis of

endoscopic outcomes of the national campaign suggested no significant increase in diagnosis of OG cancers. A locality impact analysis has not been reported so far.

**Methods** Aims: This study is aimed as an impact analysis of the BCOC Oesophago-gastric cancer campaign in a specific locality of South Durham Hospitals (Darlington Memorial and Bishop Auckland[DA(CG1]). It aims to assess two aspects of the campaign: (1) clinical gain of a diagnosis of OG cancer and (2) the service impact of the increase in endoscopy demand as 2 WW and routine referrals.

Methods:

Upper GI endoscopic data was captured from an electronic Endoscopy Scheduling software, as additions to gastroscopy waiting lists at two periods of time: 4 weeks after the OG campaign, in March 2015 and 4 months after the campaign, in July 2015. These included referrals from general practitioners for upper gastrointestinal symptoms in February/March 2015 (to coincide with the campaign period) and June/July 2015 (to coincide with a non-campaign period). Referrals for variceal screening, Barrett's surveillance, inpatient referrals or patients already known to secondary care were excluded. Of 760 referrals during the two periods, 353 were excluded, leaving 407 true referrals from primary care.

**Results** There were a total of 283 referrals (2 WW-149, urgent-66, routine-69) during the campaign period, which was 2.2 times greater than non-campaign period of 123 referrals (2 ww-79, urgent-9, routine-35). The age distribution of cases was similar during both periods, with patients aged 61–80 having highest referral rates. The median age group of patients referred as 2 ww during the campaign period was 61–70 yrs compared to 71–80 yrs in the non-campaign period (one decade lower). Gender distribution was similar across both periods for 2 ww and routine referrals. However, there were 2.4 times more females referred urgently during the campaign period compared to male patients.

During the campaign, despite an increase in referrals, there was no significant increase in OG cancer diagnosis. Only 2 OG cancers (1 oesophageal squamous cell carcinoma, 1 gastric adenocarcinoma) were diagnosed from 2 ww referrals, while none was diagnosed from urgent or routine referrals. These 2 patients presented with dysphagia and weight loss. During the non-campaign period however, 3 malignancies were detected from 2 ww referrals. Only one was an OG cancer (gastric adenocarcinoma), the other two had normal gastroscopies with malignancy detected on imaging (lymphoma, metastatic adenocarcinoma of unknown origin).

A total of 10 Barrett's oesophagus were diagnosed (2.4%), 8 during the campaign period and 2 in the non campaign period. There was no impact on average waiting time from referral to endoscopy for urgent referrals during both periods (29–42 days). The main impact on waiting times was seen for routine referrals: an increase from 29–42 days during non-campaign period to 43–56 days during the campaign period.

**Conclusion** A national Oesophago-gastric cancer awareness campaign produces a significant increase in the number of referrals for gastroscopy, which has an impact on routine waiting times. The campaign has not shown any increase in diagnosis of OG cancers, thereby indicating that other strategies need to be considered for reducing deaths due to these cancers.

**Disclosure of Interest** S. Koo: None Declared, B. Awadelkarim: None Declared, S. Choudhary: None Declared, Y. Viswanath: None Declared, A. Dhar Grant/research support from: Abbvie, Takeda, Shire, Consultant for: Takeda, Abbvie

## PTU-160 DEDICATED BARRETT'S OESOPHAGUS SURVEILLANCE LISTS IMPROVES DIAGNOSIS AND DOCUMENTATION OF FINDINGS

S Phillpotts*, T El Menabawey, R Preedy, K Besherdas. *Gastroenterology, Barnet Hospital, Royal Free NHS Trust, Hertfordshire, UK*

10.1136/gutjnl-2016-312388.245

**Introduction** Oesophageal cancer is the fifth commonest cause of cancer death in the UK, and the incidence of adenocarcinoma is rising. Patients are often without symptoms until the tumour has grown to be inoperable, and the survival for this cancer remains poor. Early diagnosis is crucial to improve survival. Barrett's oesophagus is the pre-cancerous lesion. The British Society of Gastroenterology (BSG) recommends regular surveillance depending on endoscopic and histological findings in order to identify oesophageal cancers at an earlier stage, therefore reducing mortality. There is evidence from previous studies on Barrett's highlighting poor adherence to surveillance intervals, documentation of Barrett's length as well as biopsy protocol. Pooling of Barrett's patients on dedicated Barrett's lists may help with better adherence to guidelines and may enhance detection of dysplasia with better outcomes for patients.

We aim to investigate whether a 'dedicated' Barrett's surveillance list improved diagnosis and adherence to the BSG guidelines compared to more 'ad-hoc' surveillance on routine lists.

**Methods** This retrospective study analysed all patients undergoing endoscopy for Barrett's surveillance at a North London hospital over a one-year period. We looked at documentation of the Prague Classification; adherence to the Seattle Protocol; exclusion of Barrett's; biopsy results; and follow up.

**Results** 76 patients underwent surveillance, with 42 (55%) being performed during the 7 dedicated lists. The dedicated list excluded Barrett's at endoscopy in 7 cases (9.2%) compared to only 1 (1.3%) in the routine list. Documentation was also significantly better with 85% of patients having the Prague Classification recorded, compared to only 32% in the routine group ($p < 0.001$). Also notable are the 7 patients in the routine group that had missing or erroneous information relating to the Seattle protocol. Adherence to the Seattle protocol was equally poor in both groups (dedicated = 49%, routine = 58%). There was no difference in histology results between the 2 groups. The follow up showed no correlation with the initial list, and frequently didn't adhere to the BSG guidance.

**Conclusion** We provide evidence that dedicated lists improve both diagnosis and documentation in patients attending for Barrett's surveillance. However, there still appears to be considerable scope for improving adherence to biopsy protocols and follow up plans. The proven benefit of dedicated endoscopic lists could be extended to dedicated follow up clinics to better subsequent management. Despite the stated shortcomings we recommend trials of dedicated lists on a wider

scale to investigate whether this has a definite improvement in patient experience and management.

**Disclosure of Interest** None Declared

## PTU-161 SYSTEMATIC REVIEW AND META-ANALYSIS ON COMPLICATIONS FOLLOWING OESOPHAGEAL DILATATION FOR BENIGN OESOPHAGEAL STRICTURES- PRELIMINARY RESULTS

SV Venkatachalapathy*, N Burr, V Subramanian, S Everett. *Gastroenterology, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.246

**Introduction** The incidence of benign oesophageal strictures is 0.5% in patients with dyspeptic symptoms.[1] It affects the quality of life by causing dysphagia, regurgitation and in severe cases weight loss. The first line of management is balloon or bougie dilatation. There is ambiguity about the complication rates associated with this procedure. We therefore did a systematic review and metanalysis on complications (bleeding and perforation) associated with endoscopic dilatation.

**Methods** We searched several electronic databases including Pubmed for full journal articles published after 1990 reporting on the use of endoscopic dilatation using bougies or balloons in the treatment of beingn oesophageal strictures. We hand searched the reference lists of all retrieved articles. Cohort or prospective studies involving 10 or more adult patients were included in the analysis. Studies on corrosive/caustic strictures and radiological non-endoscopy guided diltations were excluded. We calculated the pooled proportion of patients who had a complication (perforation or bleed) to therapy in the selected studies. Heterogeneity between the studies was assessed using the $I^2$ statistic.

**Results** Our search identified 32 studies that were included in the final analysis (26 cohort studies and 6 randomised control trials). There were 11 studies that reported on balloon, 8 on bougie and 13 studies reported on both balloon and bougie dilatations. There were 18104 patients, 7195 balloon dilations and 15,936 bougie dilations. There were 7711 (42.5%) males and 7305 (40.3%) females. The pooled rate of perforation was 0.5% (95% CI, 0.3–0.8, $I^2$–7.5%) and 0.3% (95% CI, 0.2–0.5, $I^2$–41.1%) for balloon and bougie respectively. The rate of bleeding was 0.6% (95% CI 0.4–1.1, $I^2$–17.1%), and 0.3% (95% CI, 0.2–0.8, $I^2$–60.6%) for balloon and bougie dilatations respectively.

**Conclusion** This large meta analysis on 18104 patients shows that the risk of perforation and bleeding is low and comparable in both endoscopic guided balloon and bougie dilatations. The rates are lower than the commonly accepted figure of 1% and should be reassuring to both patients and endoscopists.

### REFERENCE

1 Breslin NP, Thomson ABR, Bailey RJ, *et al*. Gastric cancer and other en- doscopic diagnoses in patients with benign dyspepsia. *Gut* 2000;**46**.

**Disclosure of Interest** None Declared

## PWE-001 TRANSCUTANEOUS CERVICAL VAGAL NERVE STIMULATION EXERTS AN ANTI-TNF-ALPHA EFFECT IN HEALTHY HUMANS

[1]C Brock, [2]B Brock, [2]HJ Moller, [1]AM Drewes, [1,3] [4]AD Farmer*. *[1]MechSense, Aalborg University Hospital, Aalborg; [2]Department of Clinical Biochemistry, Aarhus University Hospitals, Aarhus, Denmark; [3]Department of Gastroenterology, University Hospitals of North Midlands, Stoke on Trent; [4]Wingate Institute of Neurogastroenterology, Barts & The London School of Medicine, Whitechapel, UK*

10.1136/gutjnl-2016-312388.247

**Introduction** The vagus nerve is the main neural substrate of the parasympathetic nervous system and has a role in modulating inflammation through the cholinergic anti-inflammatory pathway, via inhibition of the production of pro-inflammatory cytokines at the level of both the spleen and the intestinal muscularis. Animal studies have demonstrated that in vagotomised mice, electrical vagal nerve stimulation (VNS), applied distal to the severance, ameliorates the pro-inflammatory cytokine response to lipopolysaccharide. The cervical vagus nerve is located directly under the skin, making it a suitable target for transcutaneous non-invasive VNS (n-VNS). In this pilot study, we sought to evaluate the effect of non- n-VNS on pro-inflammatory cytokines and cardiometrically derived autonomic parameters in humans.

**Methods** In healthy volunteers, heart rate, blood pressure and validated sympathetic, (cardiac sympathetic index) and vagal, (cardiac vagal tone (CVT)) indices were measured directly before, and 24 hours after, 2 minutes of n-VNS applied bilaterally. Venous blood was also drawn and assayed for pro-inflammatory cytokines (tumour necrosis factor-alpha (TNF-a) and interferon-gamma (IFN-g)) and the anti-inflammatory cytokine (interleukin-10) directly prior to, and 24 hours after n-VNS.

**Results** 20 healthy volunteers (13 females, median age 34 years, range 23–55) all tolerated the n-VNS. Table 1 details the changes in the recorded parameters. There was a negative correlation between change in CVT and change TNF-a ($r_s = 0.45$, $p < 0.05$).

**Abstract PWE-001 Table 1**

| | Prior to n-VNS (mean and standard deviation) | 24 hours post n-VNS (mean and standard deviation) | P value |
|---|---|---|---|
| Heart rate (bpm) | 72.9 ± 9.1 | 72.5 ± 7.8 | 0.78 |
| Systolic blood pressure (mmHg) | 129.9 ± 14.3 | 130.2 ± 17.2 | 0.88 |
| Diastolic blood pressure (mmHg) | 77.7 ± 7.5 | 77.5 ± 9.9 | 0.85 |
| Cardiac sympathetic index | 2.5 ± 0.5 | 2.6 ± 0.6 | 0.22 |
| Cardiac vagal tone (linear vagal scale) | 8.4 ± 4.5 | 9.9 ± 5.5 | 0.02 |
| TNF-a (pg/ml) | 2.0 ± 0.4 | 1.8 ± 0.5 | 0.03 |
| IFN-g (pg/ml) | 5.5 ± 4.5 | 5.2 ± 3.9 | 0.54 |
| IL-10 (pg/mL) | 0.54 ± 0.9 | 0.59 ± 1 | 0.33 |

**Conclusion** These results, for the first time in humans, provide preliminary evidence for an anti-TNF-a in response to n-VNS, potentially mediated by an increase cardiac vagal tone. These data, warrant further investigation in immune mediated

inflammatory disorders such as those with inflammatory bowel disease.

**Disclosure of Interest** None Declared

## PWE-002 CROHN'S DISEASE MUCOSA-ASSOCIATED E. COLI SHOW BETTER TOLERANCE OF A SUPEROXIDATIVE STRESS ENVIRONMENT, THAT MIMICS CONDITIONS INSIDE MACROPHAGE PHAGOLYSOSOMES

AT Tawfik*, JM Rhodes, BJ Campbell. *Gastroenterology, Institute of Translational Medicine, Liverpool, UK*

10.1136/gutjnl-2016-312388.248

**Introduction** Mucosa-associated *E.coli* are commonly found in patients with Crohn's disease (CD), colorectal cancer (CRC) and to a lesser extent in ulcerative colitis (UC)[1,2]. They are able to replicate within macrophage phagolysosomes and are found inside CD tissue macrophages[3,4]. Our aim here was to assess these mucosal *E.coli* isolates for ability to tolerate stress conditions characteristic of that found within the phagolysosome.

**Methods** *E.coli* isolates from patients with CD (n = 16), UC (6), CRC (7), and those obtained from other patients (n = 7; IBS (2), sporadic polyps (3), piles (1), healthy individuals (3)) and laboratory strains (6) were grown in LB medium ($OD_{600nm}$ 0.1). Ten-fold dilutions were plated under stress conditions; 100 mM MES pH5 with or without 1 mM $NaNO_2$ (low pH and nitrosative stress), 1 mM $H_2O_2$ pH7 (peroxidative stress), 1 mM methyl viologen pH7 (superoxidative stress) and compared to growth on LB agar pH7. Data was correlated with ability of isolates to replicate within J774 macrophages.[4] Host oxidative stress response of macrophages infected with either CD isolate HM605 or *E.coli* $K12_{EPI300}$ (susceptible to macrophage killing) were studied. cDNA synthesised from isolated RNA, was subjected to Qiagen $RT^2$ PCR Oxidative stress arrays (n = 3 replicates/arrays performed for condition).

**Results** CD isolates showed greater tolerance to superoxidative stress than isolates from UC, CRC and other patients/laboratory *E.coli* strains ($p < 0.05$ ANOVA; N = 4 expts, n = 3 replicates). In particular, 4/10 colonic CD *E.coli* isolates (HM413, HM427, HM605, HM615) and 2/6 ileal CD isolates (LF82, LF86), all high intramacrophage replicators [4.6 ±2.3 fold], showed high % survival under superoxidative stress (95.2±12.0% (mean±SD); versus laboratory strains [0.9 ±2.3 fold replication], % growth 17.3±38.6%. No differences in tolerance were seen amongst isolates to other stress conditions, excepting all laboratory strains which were intolerant. No evidence was found to suggest that CD isolate HM605 could alter macrophage oxidative stress response to infection to promote its own intraphagolysosome growth; e.g. superoxide stress response genes *Ncf1*, *Nos2* and *Sod2* were all upregulated to similar levels at 6 h (>2-fold) in both *E.coli* HM605- and $K12_{EPI300}$-infected macrophages compared to uninfected controls ($p < 0.05$).

**Conclusion** CD mucosa-associated *E.coli* are tolerant of superoxidative stress to support their survival and replication within host macrophages. Adaptation to the phagolysosome niche appears not to be through ability to alter host oxidative stress response to infection.

### REFERENCES

1 Thomazini, *et al*. Int J Med Microbiol 2011;**301**:475–79.
2 Martin, *et al*. Gastroenterology 2004;**127**: 80–93.
3 Bringer, *et al*. Cell. Microbiol 2006;**8**:471–84.
4 Subramanian, *et al*. AAC 2008;**52**:427–34.

**Disclosure of Interest** A. Tawfik: None Declared, J. Rhodes Consultant for: is/has been a member of advisory boards for Atlantic, Procter & Gamble and Falk, Conflict with: has received honoraria from Abbott, Falk, Ferring, Glaxo Smith Kline, Procter & Gamble and Schering Plough, B. Campbell Conflict with: has received honoraria from Amgen, Falk and Enterome

## PWE-003 ILEOSTOMY FORMATION AS A RESULT OF SURGICAL MANAGEMENT FOR CROHN'S DISEASE: A QUALITATIVE STUDY

[1]A Morris*, B Leach[2]. *[1]Dietetics, UHCW NHS Trust, Coventry; [2]Oxford Health NHS Foundation Trust, Oxford, UK*

10.1136/gutjnl-2016-312388.249

**Introduction** Ileostomy formation for severe Crohn's Disease (CD) brings physical and psychosocial sequelae requiring people to self-manage numerous lifestyle changes. However pre and post formation experiences of an ileostomy and adaptation are underexplored. This qualitative study explores the experiences of adults with CD pre and post ileostomy formation.

**Methods** A phenomenological design utilised in-depth semi-structured interviews with adults with Crohn's and ileostomy. Convenience sample recruitment via Coventry Iileostomy and Internal Pouch Support Group was employed. A topic guide covered the areas of life before and after an ileostomy and feelings about the support received. Interviews were recorded and transcribed verbatim. Data was explored and findings interpreted using Framework Analysis. NVIVO software was used for data management. Member checking and internal peer review were undertaken. Participants gave written informed consent.

**Results** Ten adults (4 men 6 women) with a mean age of 52.2 (±19) years had a mean experience of 18.8(±11.4) years of living with an ileostomy. Three major themes emerged: (1) Controlling nature of Crohn's embodied by pain, diarrhoea, vomiting, and low mood as a life "not worth living" (2) New life post stoma formation facilitated "total freedom" and re-engagement with work/socialising (as a result, individuals "refused to have the ileostomy reversed") (3) Peer support along with clinical nutrition updates would have helped as "people doing it themselves understand". One minor theme emerged around a new life: (2 a) memories of CD affected life with an ileostomy. These experiences meant that certain health promoting behaviours, for example, intentional weight loss for corticosteroid/ smoking cessation induced weight gain, were avoided as individuals were "not going back to a walking skeleton" pre stoma formation.

**Conclusion** Life with Crohn's was debilitating before an ileostomy. Individuals viewed ileostomy construction as a positive experience as the stoma helped manage the CD symptoms. Memories of life pre-ileostomy may affect individuals' behaviour post-ileostomy formation. Implications for clinical practice include multi-disciplinary team (MDT) members understanding that memories of CD may still affect health related behaviour post stoma formation which may require further MDT support.

**Disclosure of Interest** None Declared

## PWE-004 DIAGNOSTIC ACCURACY OF MAGNETIC RESONANCE ENTEROGRAPHY IN DETECTING SMALL BOWEL CROHN'S DISEASE – RELATIONSHIPS WITH FAECAL CALPROTECTIN

[1]A Nelson*, [1]P Oka, [2]D Petty, [2]C Wilkinson, [1]P Kant. [1]*Gastroenterology*; [2]*Radiology, York Teaching Hospital, York, UK*

10.1136/gutjnl-2016-312388.250

**Introduction** Around one third of patients with Crohn's disease (CD) have isolated small bowel involvement at diagnosis. Magnetic resonance enterography (MRE) is a recognised tool for identifying small bowel disease. Faecal calprotectin (FCp) is a marker to help differentiate functional from organic gastrointestinal symptoms and is typically elevated in CD. This study aims to determine the diagnostic accuracy of MRE in patients with symptoms suspicious for CD and assess the relationship between FCp and presence of small bowel disease on MRE.

**Methods** Patients with suspicion for CD who underwent MRE over a 23 month period (Jan 2013 to Nov 2014) were identified using a local database. All study patients had undergone a normal colonoscopy to exclude Crohn's colitis. MRE reports were reviewed for evidence of small bowel abnormalities, and whether these were likely to represent CD. FCp levels (μg/g) from 3 months preceding MRE were recorded. Casenote review revealed outcome and patient disposition at 1 year post-MRE.

**Results** In total 73 patients underwent MRE (mean age 37.5; range 13–77; 46:27 female:male). 3 had MRE findings radiologically diagnostic for CD, their FCp ranged from 389 to 600. 19/73 patients had MRE features of non specific ileitis with corresponding median FCp level of 222 (inter-quartile range [IQR] 71–600). At 1 year a further of 3 of these 19 patients (FCp range 294–600) were positively diagnosed as CD. Of the remaining 16 with non specific ileitis on MRE, none had CD at 1 year. In this sub-group the median FCp was 139 (45–517), 5 had a normal capsule endoscopy, 12 had functional pain, 3 had infectious ileitis, and 1 was lost to follow-up. The majority of patients however (51/73 [69.9%]) had normal MRE with a median FCp of 142 (83–416) and none had CD at 1 year. Median differences in the FCp value between those with normal and abnormal MRE were apparent but not statistically significant ($p = 0.42$). Overall sensitivity of MRE in diagnosing small bowel involvement is high at 100% as is a negative predictive value of 100% although we acknowledge the small sample size. Within the group reported as indeterminate Ileitis only 3/19 were subsequently diagnosed with Crohn's disease.

**Conclusion** MRE excels in excluding small bowel CD in suspected patients and is reliable when positively diagnosing Crohn's. In early Crohn's disease there is uncertainty in differentiating the radiological appearances with other causes of ileitis. These data support the development of an appropriate threshold for abnormal FCp as a screening tool to improve MRE accuracy. This could reduce the number of unnecessary MRE examinations without missing any cases of small bowel CD.

**Disclosure of Interest** None Declared

## PWE-005 THE TRUE COST OF ULCERATIVE COLITIS (UC) IN THE UK – 24 MONTHS FOLLOWING THE FIRST NON-ELECTIVE ADMISSION

[1]AA Soubieres*, [2]A Poullis. [1]*Gastroenterology, St George's Hospital*; [2]*Gastroenterology, St George's, London, UK*

10.1136/gutjnl-2016-312388.251

**Introduction** Inflammatory Bowel Disease (IBD) has a prevalence of around 400 in 100,000 in the UK, with the prevalence of UC specifically of around 243 per 100,000. This gives a figure of 146,000 people in the UK living with UC. Around 30% of IBD patients are under regular hospital follow-up. Around 20–30% of patients with UC will undergo surgery at some point. Healthcare costs in terms of admissions and endoscopic assessment associated with Ulcerative Colitis remain poorly researched. Our objective was to calculate the costs associated with both in and outpatient attendances and endoscopies in the 24 months following the first non-elective (NE) admission for ulcerative colitis in a UK population.

**Methods** Hospital Episode Statistics data for 2011/2 for all clinical commissioning groups in England were analysed to calculate the cost of UC. The data used in this study were obtained from the AXON Database. AXON is a health data warehouse that provides interrogative analysis and health intelligence on Hospital Episode Statistics (HES). Each HES record has a Healthcare Resource Group (HRG) code that is linked to the national tariff. International Classification of Diseases – 10 (ICD-10) diagnosis codes related to UC were used to identify patients.

**Results** In the 24 months following the first NE admission for UC, there were 20444 spells in a general inpatient setting with a cost of £30,767,953.07. The cost of endoscopies from the inpatient spells was £3,535,965.45. There were 4557 inpatient gastroenterology spells with a total cost of £4,068,759.40. Cost of endoscopies during these gastroenterology specific spells amounted to £3,546,993.42. The cost of general outpatient attendances was £9,424,953.22 in comparison to £5,918,472.64 for gastroenterology outpatient attendances. Outpatient endoscopies and gastroenterology endoscopies cost £33,574.83 and £40,006.90 respectively. General A&E attendances totalled £872,666.30 with emergency gastroenterology attendances totalling £119,354.31.

**Abstract PWE-005 Table 1** Total costs of all events in the 24 months following first admission for UC

| Event | Total cost |
|---|---|
| Inpatient attendances | £34,836,712.40 |
| Inpatient scopes | £7,082,958.87 |
| Outpatient attendances | £15,343,425.9 |
| Outpatient scopes | £73,580.73 |
| A&E attendances | £992,020.61 |
| **Total** | **£58,328,698.5** |

**Conclusion** Inpatient attendances make up the greatest proportion of the total cost associated with UC in the 24 month period following the first NE admission. Episodes of severe colitis, by definition require admission for inpatient

management. The lifetime risk of acute severe colitis in a person with UC is between 15–25%.[2,3]We have demonstrated a huge cost burden associated with these admissions. This may reflect poor access to specialist and emergency care during flares as well as delays in carrying out diagnostic investigations. There is potential for significant cost savings by way of rapid access specialist clinics and 7 day a week advice helplines run by IBD specialist nurses to enable timely review and management of patients, thus preventing the need for inpatient admissions.


**REFERENCES**

1 Dinesen LC, Walsh AJ, Protic MN, Heap G, Cummings F, Warren BF, George B, Mortensen NJ, Travis SP. The pattern and outcome of acute severe colitis. *J Crohns Colitis*. 2010 Oct;**4**(4);431–7.

2 Edwards FC, Truelove SC. The course and prognosis of Ulcerative Colitis Gut. 1963 Dec;**4**:299–315.


**Disclosure of Interest** None Declared

## PWE-006 THE EFFECTS OF SMOKING ON THIOPURINE METABOLISM


[1]BD Warner*, [1]E Johnston, [1]S Fong, [1]C Amadi, [1]P Blaker, [2]M Arenas-Hernandez, [2]A Marinaki, [1]J Sanderson. *[1]Gastroenterology; [2]Purine Laboratory, Guy's and St Thomas' NHS Foundation Trust, London, UK*


10.1136/gutjnl-2016-312388.252

**Introduction** There is an unpredictable relationship between thiopurine methyl transferase (TPMT) and hypermethylation. It is likely that cytochrome P450 (CYP450) enzymes play a role in the demethylation of methylated mercaptopurine (MMP), altering the MMP:Thioguanine nucleotide (TGN) ratio(Table 1). Smoking has been shown to induce CYP450 enzymes. One study on smoking and olanzapine demonstrated a 6 fold increase in CYP450 activity through smoking.[1] This might suggest that smoking could upregulate the demethylation process, reducing MMP.

**Methods** Patients on thiopurines had their smoking status recorded as they attended the inflammatory bowel disease (IBD) clinic. Retrospective data on demographics was collected (Table 1). Only measurable TGNs after 6 weeks of therapy were used for analysis. Metabolites measured whilst on allopurinol were excluded. Average TGNs over the treatment period, MMP and MMP:TGN ratios were compared between smokers and non-smokers. Hypermethylators were defined as any patient with an MMP:TGN ratio of $\geq$11 during their treatment

**Results** 230 patients were analysed(117 males).

Table 1 shows comparison in demographics between smokers and non-smokers

**Abstract PWE-006 Table 1**

| | Smokers n = 106 | Non-smokers n = 124 |
|---|---|---|
| Male:female | 51%:49% | 47%:53% |
| Age | 37 | 33 |
| Ethnicity – White:Black:Other | 81%:19%:0% | 80%:9%:11% |
| Crohn's:Ulcerative colitis | 82%:18% | 72%:27% |
| Previous Surgery | 45% | 27% |
| Mean TPMT | 38.4 (median 35) | 34.1 (median 35) |
| Hepatotoxicity | 15.1% | 13.7% |
| Hypermethylation | 28.3% | 42.7% |

Mean MMP for smokers was 1683(SD 2565, median 840) versus 2041 in non-smokers(SD 2401, median 1340) (P = 0.713). Mean MeMP:TGN ratio for smokers was 6.15 (SD 9.06, median 2.22) versus 7.81 in non-smokers (SD 8.01, median 4.70)(P = 0.593).**Conclusion** There were more hypermethylators in the non-smoking cohort than in the smoking cohort (42.7% versus 28.3%(P < 0.05)), however the difference between average MMP and MMP:TGN ratios were not significant although the median differences are compelling. There were significant differences between quantity smoked and the MMP:TGN ratio. Paradoxically, the reduction in methylation if smoking <5 cigarettes/day was reversed when smoking $\geq$15 cigarettes/day. This may suggest an alternative pathway affected by smoking. Smoking status and quantity should be taken into account when monitoring metabolites. Additionally, polymorphisms for CYP450 (CYP1A2*F and CYP1A2*1 C), known to affect drug metabolism between individuals, may be responsible for variation and require further research.


**REFERENCE**

1 Carrillo JA, Herráiz AG, Ramos SI, Gervasini G, Vizcaíno S, Benítez J. Role of the smoking-induced cytochrome P450 (CYP)1A2 and polymorphic CYP2D6 in steady-state concentration of olanzapine. *J Clin Psychopharmacol*. 2003 Apr;**23**(2):119–27.


**Disclosure of Interest** None Declared

## PWE-007 LIVER DISEASE IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE (IBD): CAUSES, PRESENTATIONS AND OUTCOMES


BD Warner*, M Basra, S Anderson, P Irving, J Sanderson. *Gastroenterology, Guy's and St Thomas' NHS Foundation Trust, London, UK*


10.1136/gutjnl-2016-312388.253

**Introduction** Although deranged liver function tests(LFTs) are seen in around 1/3 of patients with IBD at some point during the course of their disease,there is a lack of clarity over how this should be investigated and managed.

**Methods** IBD patients attending clinic between September 2014 and December 2015 were analysed for previously elevated alanine transferase((ALT) defined as >56 IU/L). Analyses,where there were derangement of gamma glutamyl transferase and alkaline phosphatase (ALP) only,were not performed. Data was collected for disease activity,medication,time to ALT normalisation(in months) and ALP.

**Results** Data on 236 patients with elevated ALT were collected (50.4% male, mean age 40 years(range 16 to 83)). 64% had Crohn's disease(CD). 61% had active disease at the time of elevated ALT. Liver injury was predominantly hepatitic(mean ALT:ALP ratio 1.52). Mean ALT was 159 (maximum 1980).

Of the patients with PSC,81% had ulcerative colitis(UC) of whom 75% had pancolitis. The mean ALT:ALP ratio was 0.47 and therefore cholestatic(SD 0.29).

Overall,70% of patients had an ALT which normalised completely(mean of 2.4 months(SD 2.7)). 37% were due to thiopurines and 35% due to disease flares. 6% were other drug related (methotrexate in 8 cases, mesalazines in 2). Where ALT did not normalise,21% were diagnosed with a chronic liver disease.

**Abstract PWE-007 Table 1** Causes of liver disease (The cause was determined as flare-related when there was a temporal relationship between activity and ALT with no other cause identified). PSC: Primary sclerosing cholangitis; NAFLD: Non-alcoholic fatty liver disease

| Cause | N (%) | % Settled | Cause | N | % Settled |
|---|---|---|---|---|---|
| Thiopurines | 68 (29) | 97 | Viral hepatitis | 3 | 67 |
| Disease flare | 66 (28) | 96 | Portal Vein Thrombosis | 2 | 100 |
| Cause Unknown | 22 (9) | 68 | Haemochromatosis | 2 | 50 |
| NAFLD | 17 (7) | 59 | Total Parenteral Nutrition | 2 | 100 |
| PSC | 16 (7) | 13 | IgG4 Pancreatitis | 1 | 100 |
| Other drug related | 14 (6) | 86 | Infective | 1 | 100 |
| Post-operative | 6 | 83 | Ischaemic hepatitis | 2 | 100 |
| Choledocholithiasis | 5 | 80 | Liver metastases | 1 | 100 |
| Alcoholic liver disease | 4 | 100 | HELLP syndrome | 1 | 100 |
| Autoimmune hepatitis | 3 | 100 | | | |

2/3 of thiopurine-induced hepatotoxicity were associated with hypermethylation(Methylmercaptopurine to thioguanine nucleotide ratio >11) and mean ALT:ALP was 1.74 and therefore hepatitic(range 0.15–11.57,SD 1.67).

Median time for normalisation of thiopurine-induced hepatotoxicity was 2 months(SD 3.9) where as it was 0.5 months (SD 15.5) due to flares.

**Conclusion** Liver disease in IBD is common but rarely severe. Thiopurines are the commonest cause. Liver injury associated with active disease is also common. ALT normalised completely in over 95% of drug related cases. Where deranged LFTs continue for over 2 months,then a liver screen is indicated to exclude a chronic liver disease. Where liver derangement is cholestatic and the patient has UC, investigations should be carried out to exclude PSC.

**Disclosure of Interest** None Declared

## PWE-008 FACTORS ASSOCIATED WITH VOLUNTARY CHILDLESSNESS IN WOMEN WITH IBD

[1]C Selinger*, [2]J Ghorayeb, [2]A Madill. [1]*Gastroenterology, Leeds Teaching Hospitals NHS Trust;* [2]*School of Psychology, University of Leeds, Leeds, UK*

10.1136/gutjnl-2016-312388.254

**Introduction** Inflammatory Bowel Disease (IBD) affects many women of child bearing age, but requires complex decision making around pregnancy. While infertility is only slightly increased many women decide against having children. Voluntary childlessness (VC) rates exceed those of the general population by far. The reasons for VC remain incompletely understood.

**Methods** Approximately 4300 female members of the patient organisation Crohn's and Colitis UK aged 18–45 years were asked by email to complete an online questionnaire. Data collection included patient demographics, education, employment, marital status, and disease characteristics. Childlessness status and patient views were assessed as in the previous study by Marri (2007). Disease related pregnancy knowledge was recorded with the validated CCPKnow score.

**Results** 1324 women with mean age of 33 years completed the survey (response rate 31%). Of these 76% were in a long-term relationship and 87% were in employment or education. 776 (59%) suffered from Crohn's disease (CD), 496 (38%) from ulcerative colitis (UC) and 4% from IBD-U. 40% had children [14% pre diagnosis (I); 26% post diagnosis (II)], 36% planned to have children at some stage (III), 7% reported fertility problems (IV) and 17% were classified as voluntarily childless (VC). 673 patients had sought medical advice about pregnancy and IBD.

VC was associated with poorer disease-related knowledge (CCPKnow 5.98 vs 7.47 in (II); $p < 0.001$), older age (35 y vs 28 y in (II); $p < 0.001$), unemployment (9.7% VC; $p < 0.001$), being single (34.5% VC; $p < 0.001$, not seeking medical advice ($p < 0.001$), and diagnosis of CD (19.3% vs 13.9% UC; $p = 0.015$). Women with VC had more hospital admissions (mean 2.85 vs 2.17 (III); $p = 0.03$) and surgical interventions (mean 1.27 vs 0.65 (III); $p < 0.001$). Exposure with different types of IBD medication was not associated with VC.

The main patient concerns were around inheritance (20.6%), inability to cope with a child (20.6%), and the influence of pregnancy on IBD (18%).

**Conclusion** VC occurs frequently in women with IBD and appears to be multifactorial. Disease type and severity influence VC. Differences in disease burden could explain why VC is more common in CD than UC. Patients are mostly concerned regarding inheritability, disease course and the ability to cope with the added stress of being a mother.VC is associated with poor pregnancy specific knowledge and many women may stay childless unnecessarily. Patient education programs may help to reduce the rate of VC by correcting misconceptions and alleviating patient concerns.

**Disclosure of Interest** C. Selinger Grant/research support from: Abbvie, Warner Chilcott, Consultant for: Abbvie, Warner Chilcott, Dr Falk, Takeda, Speaker bureau with: Abbvie, Warner Chilcott, MSD, Takeda, J. Ghorayeb: None Declared, A. Madill: None Declared

## PWE-009 CURRENT PRACTICE AND CLINICIANS' PERCEPTION OF MEDICATION NON-ADHERENCE IN PATIENTS WITH IBD

S Boughdady, A Soobraty, C Selinger*. *Gastroenterology, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.255

**Introduction** Non-adherence to IBD maintenance medication occurs in 30–45% with mesalazine (5 ASA), 15–20% with immunomodulators (IMM), 5–10% with biologics (BIOL); yet clinicians struggle to detect and address non-adherence. Little is known how clinicians perceive the issue of non-adherence and how they address adherence questions (screening and interventions). This survey ascertains perceptions and describes current practice.

**Methods** Consultant gastroenterologists, trainees and IBD specialist nurses from the UK were invited to a web based survey. Data were collected on clinician demographics, patient volume and level of interest in IBD. We assessed perception of non-adherence by overall impression and asked respondents to estimate non-adherence for 5 ASA, IMM and BIOL therapy. Current practice assessment included use of screening tools and interventions to improve adherence.

**Results** Of 98 respondents (53.1% were female, 53.1% < 44 years) 51 were consultants, 17 trainees, 28 IBD specialist nurses and 2 other. Half of respondents had ≥15 years'

experience. Medical staff were classed as general gastroenterologists (43%), having IBD interest (32%) and IBD experts (25%).

Non-adherence was seen as an infrequent problem by 57%. Older respondents saw non-adherence as an infrequent problem more often ($p = 0.006$). The level of non-adherence was estimated as lower than evidence suggests by 31% of respondents for 5 ASA, 28% for IMM and 23% for BIOL. Respondents reporting non-adherence to be a frequent problem were more likely to report adherence levels in line with established evidence (5 ASA $p < 0.001$; IMM $p = 0.012$; BIOL $p = 0.015$). Gender, age, years of practice, level of interest, professional status (consultant vs trainee vs nurse), and patient volume did not influence the likelihood of estimating adherence levels in line with the evidence.

Respondents stated forgetfulness, beliefs about necessity of medication and not immediately apparent benefits as the main reasons for non-adherence.

While 80% regarded screening as important only 25% screen regularly. Only 40% used validated assessment tools. Patient counselling on benefits and risks of medication was the most commonly used intervention.

**Conclusion** Clinicians treating IBD patients frequently underestimate non-adherence and use of validated screening tools is infrequent. This phenomenon occurs across grades and professions. Most respondents identified the main factors associated with non-adherence in line with evidence and counselled patients accordingly. Professional education should focus more on non-adherence practice to avoid adverse treatment outcomes associated with non-adherence.

**Disclosure of Interest** S. Boughdady: None Declared, A. Soobraty: None Declared, C. Selinger Grant/research support from: Abbie, Warner Chilcott, Consultant for: Abbie, Warner Chilcott, Dr Falk, Takeda, Speaker bureau with: Abbie, Warner Chilcott, MSD, Takeda

## PWE-010 MONITORING IBD MEDICATIONS IN PRIMARY CARE: AUDIT OF PRACTICE IN SOUTH WEST LONDON

[1]C Alexakis*, [2]C Oliver, [3]E Hockney, [3]A Amoyel, [4]C Grayson, [1]R Pollok, [2]S Saxena. *[1]Gastroenterology, St George's NHS Trust; [2]Chartfield Surgery, Putney; [3]Essex House surgery, Richmond; [4]Sheen Lane Health Centre, Richmond, London, UK*

10.1136/gutjnl-2016-312388.256

**Introduction** IBD is increasing in the UK. Primary care will likely have a greater role in the management of such patients under 'shared-care' protocols, particularly with regards to drug monitoring and vaccination requirements. A recent national audit indicated varied prescribing practices amongst GPs treating patients with IBD.[1] To address local prescribing behaviours, we audited 4 practices in SW London, against established standards for IBD care.

**Methods** Patients with Crohn's disease (CD) or ulcerative colitis (UC) were identified retrospectively from the records of 4 practices in SW London. Information collected included the number of patients on 5 aminosalicylates (5 ASA) and azathioprine (AZA) for the previous year. The following audit standards were generated, derived from IBD guidelines;[2,3] patients on 5 ASA require yearly renal function; 5 ASA should not be used in CD as maintenance therapy; prolonged (>3 months) or repeated steroid courses (>1/year) should be avoided; patients on AZA should have blood monitoring every 2–3 months; patients on AZA should be offered annual Pneumococcal and Influenza vaccination.

**Results** 70 patients with UC and 45 with CD were identified. 41% UC were on maintenance 5 ASA of whom 86% had appropriate renal function monitoring. 27% CD were on 5 ASA of whom only 58% had renal function checked in the past year. 7% UC and 9% CD had prolonged steroid courses prescribed. 9% and 7% of UC and CD had repeated courses of steroids in the previous year. AZA use was equivalent in the two groups (~20%). However, appropriate blood monitoring was significantly different between UC and CD (93% UC vs 10% CD, $p = 0.001$). The number of patients on AZA who were offered Pneumoccocal vaccination (UC 50% vs CD 60%) and Influenza vaccination (UC 57% vs CD 20%) was considerably short of the audit standards.

**Conclusion** This audit identifies areas of IBD practice in primary care that are performed to a high standard, namely the monitoring of blood tests in patients with UC, and the low use of steroids in both groups. There remain areas that require improvement, notably the vaccination status of patients on AZA, and the inappropriate prescribing of 5 ASA in CD. The findings should prompt improved networking between primary and secondary care, a role which could be fulfilled by an IBD specialist nurse.

### REFERENCES

1 *UK IBD audit steering group*. IBD audit round three. RCP 2012.
2 Mowat C, *et al*. Guidelines for the management of IBD in adults. *Gut* 2011 May;**60**(5).
3 Rahier JF, *et al*. Second European evidence-based consensus on the prevention, diagnosis and management of opportunistic infections in IBD.*J Crohns Colitis*. 2014 Jun;**8**(6).

**Disclosure of Interest** None Declared

## PWE-011 IS ULCERATIVE COLITIS (UC) MANAGED ADEQUATELY IN PRIMARY CARE?

[1]D Aldulaimi*, [2]D Farmer, [3]H Prasher, [4]R Jazrawi. *[1]Gastroenterology, Worcestershire Acute Hospitals NHS Trust; [2]General Practice, NHS South Worcestershire Clinical Commissioning Group, Worcestershire; [3]Medicines Management Solutions, Leicester; [4]Medical, Dr Falk Pharma UK, Bucks, UK*

10.1136/gutjnl-2016-312388.257

**Introduction** Once remission is induced, the majority of patients with mild to moderate UC are managed in primary care on long term 5 ASA maintenance therapy. Lack of adherence to therapy has significant implications for patients with an impact on the use of NHS resources.

The aim was to assess the management of patients with mild to moderate UC on 5 ASA maintenance therapy in primary care.

**Methods** All UC patients on 5 ASA therapy from 31 practices covering three CCGs in were identified and invited to attend a clinic at their practice. Disease location, activity (Walmsley Index), 5 ASA dose and frequency and adherence to therapy were recorded.

**Results** 481 UC patients were identified, 212 reviewed and 158 patients (M:F = 99:59) fully assessed. Age (mean [range]; 60.6 [22–88 yrs.] yrs.). UC subclass (No [%]): proctitis 23 [14%]; distal colitis: 59 [39%]; pan colitis: 38 [24%]; UC unspecified:38 [23%]. 58% on Asacol; 30% on Pentasa and 9% on Mezavant respectively. Maintenance dose range 1–6.4 g/day; 29% were on lower than the recommended dose for

their specific 5 ASA. 48 (31%) received other therapies (azathioprine, steroids or mesalazine enemas). Walmsley Index (mean 2.3) was - ≥4 in 27 patients (17%) indicating flare. 27 patients (17%) had symptoms and 39 (29%) had adherence issues. Several patients missed routine surveillance colonoscopy and blood tests.

**Conclusion** UC is inadequately managed in primary care

**Disclosure of Interest** D. Aldulaimi: None Declared, D. Farmer: None Declared, H. Prasher: None Declared, R. Jazrawi Conflict with: Dr R Jazrawi is medical Director of Dr Falk Pharma UK

## PWE-012 MAINTENANCE THERAPY WITH SALOFALK GRANULES IMPROVES LONG TERM MANAGEMENT OF UC PATIENTS IN PRIMARY CARE

[1]D Aldulaimi*, [2]H Prasher, [3]D Farmer, [4]R Jazrawi. [1]*Gastroenterology, Worcestershire Acute Hospitals NHS Trust, Worcestershire*; [2]*Pharmacology, Medicines Management Solutions, Leicester*; [3]*General Practice, NHS South Worcestershire Clinical Commissioning Group, Worcestershire*; [4]*Medical, Dr Falk Pharma UK, Bucks, UK*

10.1136/gutjnl-2016-312388.258

**Introduction** Following induction of remission, the majority of patients with mild to moderate UC are on 5 ASA maintenance therapy in primary care. Lack of adherence to therapy and patient acceptance of poorer life quality lead to disease relapse, increased severity and complication which impact NHS resources.

Our aim was to evaluate the effect of changing to once daily (OD) Salofalk Granules in patients inadequately controlled on their current 5 ASA therapy.

**Methods** UC patients on 5 ASA therapy from 31 practices covering three CCGs were invited to attend a clinic at their practice. Disease activity (Walmsley Index, use of steroids, days off work and GP and hospital visits were assessed in the past 6 months. A subgroup was switched to Salofalk Granules OD maintenance therapy (main reasons tablet load and dosing frequency 65% and symptoms 29%). All parameters were reassessed 6 months later.

**Results** 158 patients had two complete assessments (99 stayed on current 5 ASA, 59 switched to Salofalk Granules) There was no difference in age, M:F ratio or UC subclass between the two groups. Patients changing to Salofalk Granules had a higher baseline Walmsley Index (2.78 vs 1.99; $p < 0.01$). On reassessment, in patients changed to Salofalk Granules there was a significant reduction in Walmsley Index 2.78 to 2.02, ($p < 0.0001$) vs. 1.99 to 2.01 (NS); more patients felt better (30/59 vs 3/99), fewer felt worse (1/59 vs. 8/99); Patients on Salofalk Granules also had 44% fewer GP visits, 87% fewer hospital visits, 86% fewer days off work and 56% fewer steroid courses. There was an annualised cost saving of £27,500

**Conclusion** In UC inadequately controlled on current 5 ASAs, changing to OD Salofalk Granules improved overall quality of care by improving disease outcomes, patient quality of life, reducing use of NHS resources and cost.

**Disclosure of Interest** D. Aldulaimi: None Declared, H. Prasher: None Declared, D. Farmer: None Declared, R. Jazrawi Conflict with: Dr R Jazrawi is medical Director of Dr Falk Pharma UK

## PWE-013 SHOULD THE TARGET TGN RANGE BE DIFFERENT IN THOSE WITH INTERMEDIATE COMPARED WITH NORMAL TPMT ACTIVITY?

[1]EL Johnston*, [1]BD Warner, [1]SC Fong, [2]MG Ward, [3]V Kariyawasam, [4]M Arenas-Hernandez, [4]TM Marinaki, [1]JD Sanderson, [5]PA Blaker. [1]*Gastroenterology, Guy's and St Thomas' NHS Foundation Trust, London, UK*; [2]*Gastroenterology, Alfred Hospital, Melbourne*; [3]*Gastroenterology, Macquarie University Hospital, Sydney, Australia*; [4]*Viapath Pathology Services, Guy's and St Thomas' NHS Foundation Trust, London*; [5]*Gastroenterology, Tunbridge Wells Hospital, Tunbridge Wells, UK*

10.1136/gutjnl-2016-312388.259

**Introduction** Thioguanine nucleotides (TGNs) are the biologically active metabolites of thiopurines. Methylated thiopurine metabolites (MeMPs) formed via thiopurine-*S*-methyltransferase (TPMT) may also have immunosuppressive properties through inhibition of de novo purine synthesis (*DNPS*).[1] Individuals with intermediate TPMT activity do not produce significant levels of methylated metabolites, with predictably less inhibition of *DNPS* and therefore may tolerate higher levels of TGNs. If confirmed this suggests that the therapeutic range of TGNs (240–450 pmol/$8x10^8$) may differ between patients with intermediate Vs normal TPMT activity.

**Methods** All IBD patients at Guy's and St Thomas' Hospitals treated with either azathioprine or mercaptopurine who had TGNs measured from 2002–2013 were included. Patients receiving low dose thiopurine with allopurinol were excluded. Data was collected using the electronic patient record system and statistical analysis was completed in GraphPad Prism version 5.0.

**Results** 2193 TGN measurements were included in the analysis, 340 (15.5%) from patients with intermediate TPMT activity and the remaining 1853 had normal TPMT activity. The average normalised thiopurine doses between groups was 1.13 Vs 1.87 mg/kg/day respectively, reflecting standard dose adjustment in intermediate TPMT patients. The median TGNs levels were significantly higher in patients with intermediate Vs normal TPMT activity; 370 Vs 277 pmol/$8x10^8$ (P = <0.00001) and the median MeMP levels were lower in patients with intermediate Vs normal TPMT activity; 104 pmol/$8x10^8$ RBC Vs 566 (P = <0.0001). No significant difference was found in the median values of Hb, WBCs, neutrophil or platelet counts between the groups. A lower lymphocyte count (1.3 Vs 1.2 x109/$^9$/ L, P = 0.0010) and trend towards a higher MCV (93 Vs 94, P = 0.0625) was noted in patients with normal TPMT activity.

**Conclusion** Despite significantly higher TGN levels in patients with intermediate as compared to normal TPMT activity, there was no difference in levels of Hb, WBCs, neutrophil or platelets counts. This suggests a greater tolerance to TGNs in patients with intermediate TPMT activity and may indicate that a different TGN therapeutic range is needed in these patients. The likely reason is that methylated metabolites are biologically active and also play a role in overall thiopurine immunosuppression.

### REFERENCE

1 Tay BS, Lilley RM, Murray AW, *et al*. Inhibition of phosphoribosyl pyrophosphate amidotransferase from Ehrlich ascites-tumour cells by thiopurine nucleotides. *Biochemical Pharmacology*. 1969;**18**(4):936–8.

**Disclosure of Interest** None Declared

## PWE-014 ANTI-TNF WITHDRAWAL IN IBD REMISSION: RELAPSE, RESTART AND OUTCOMES

I Parisi*, R Vega, S McCartney, S Bloom. *Gastroenterology, UCLH, London, UK*

10.1136/gutjnl-2016-312388.260

**Introduction** Anti-TNFs are effective agents in inducing and maintaining remission in patients with inflammatory bowel disease (IBD). However, the optimal duration of treatment is still a matter of debate. It has been described that approximately 50% of patients who discontinue biologics while in remission will relapse and this proportion may be increasing with time. Risk factors for relapse have been identified but these do not seem repeatable in all studies[1-2]. The aim of this study was to capture relapse rates in IBD patients in remission post anti-TNF withdrawal in a real life cohort and to identify predictors of relapse or 'early' relapse (≤ 1 year).

**Methods** All patients who achieved clinical remission (defined as a Harvey-Bradshaw score <5) on anti-TNFs for ≥1 year and discontinued biologics were included in the study. Retrospective data regarding patients' demographics, medical history and course of disease were retrieved and patients were prospectively followed up post anti-TNF discontinuation. Potential risk factors for relapse as well as all laboratory, endoscopic and imaging data were recorded. Univariate analysis used t-test for parametric and Mann-Whitney for non-parametric continuous variables, while logistic regression was used for multivariate analysis.

**Results** 42 patients discontinued anti-TNFs on clinical remission between 2002–2014. All but two had Crohn's disease. Mean duration of anti-TNF treatment prior to discontinuation was 3.5±2 years (range 1–11). Follow up period of the study was 36±28 months. Prior to withdrawal 24 patients (57%) had a colonoscopy (confirming endoscopic and histologic remission), 22 (52%) had imaging of their small bowel and 10 (24%) had a faecal calprotectin (FC, mean value 33±21, range 0–70). 28 patients (67%) relapsed post anti-TNF discontinuation, most of them within the first year post withdrawal (n = 16). Out of several factors that were univariately associated with higher rates of relapse (no calprotectin measurement prior withdrawal p = 0.042, younger age at diagnosis p = 0.026, male gender p = 0.023, absence of stricturing/penetrating disease p = 0.048, concomitant immunomodulators p=NS) only not requesting a calprotectin prior withdrawal predicted higher rates of relapse in multivariate analysis (p = 0.036, OR 8.839, 95% CI 1.159–67.438). 23/28 (82%) re-started anti-TNF on relapse, 90% of whom optimally responded on re-initiation. 24 (60%) patients were in clinical remission at three years post withdrawal.

**Conclusion** A normal FC in IBD remission can guide decision on stopping anti-TNF therapy. Rates of relapse in our cohort were higher than in published literature but were not associated with worse overall outcomes as majority of patients responded well on drug re-initiation.

### REFERENCES

1 Molander, *et al*. Inflamm Bowel Dis 2014 Jun;**20**(6):1021–8.
2 Louis, *et al*. Gastroenterology 2012;**142**:63–70.

**Disclosure of Interest** None Declared

## PWE-015 INFLAMMATORY BOWEL DISEASE IN THE ELDERLY: CHARACTERISTICS AND RISK FACTORS FOR DISEASE

J Clough*, M Mendall, D Braim, A Hong. *Croydon University Hospital, London, UK*

10.1136/gutjnl-2016-312388.261

**Abstract PWE-015 Table 1**

| Age at diagnosis | 60+ | 40-59 | 18-39 | <18 |
|---|---|---|---|---|
| UC | 110/854 (12.9%) | 267/854 (31.3%) | 442/854 (51.8%) | 35/854 (4.1%) |
| CD | 43/472 (9.1%) | 112/472 (23.7%) | 266/472 (56.4%) | 51/472 (10.8%) |
| Sex (male) | | | | |
| UC | 51/110 (46.4%) | 132/267 (49.4%) | 195/442 (44.1%) | 13/35 (37.1%) |
| CD | 25/43 (58.1%) | 63/112 (56.3%) | 120/266 (45.1%) | 22/51 (43.1%) |
| Ever smoked | | | | |
| UC | 41/110 (37.3%) | 62/267 (23.2%) | 85/442 (19.2%) | 6/35(17.1%) |
| CD | 21/43 (48.8%) | 57/112 (50.9%)* | 89/266 (33.5%)* | 9/51 (17.6%) |
| Appendix | | | | |
| UC | 9/110 (8.2%) | 7/267 (2.6%) | 8/442 (1.8%) | 1/35 (2.9%) |
| CD | 4/43 (9.3%) | 10/112 (8.9%)* | 54/266 (20.3%)* | 1/51 (2.0%) |
| Ever surgery | | | | |
| UC | 6/110 (5.5%) | 17/267 (6.4%) | 17/442 (3.8%) | 1/35 (2.9%) |
| CD | 8/43 (18.6%) | 22/112 (19.6%) | 107/266 (40.2%) | 21/51 (41.2%) |
| Immunomodulator | | | | |
| UC | 45/110 (40.9%) | 87/267 (32.6%) | 168/442 (38.2%) | 13/35 (37.1%) |
| CD | 24/43 (55.8%) | 64/112 (57.1%) | 162/266 (60.9%) | 34/51 (66.7%) |
| Biologics | | | | |
| UC | 2/110 (1.8%) | 5/267 (1.9%) | 4/442 (0.9%) | 2/35 (5.7%) |
| CD | 0/43 (0%) | 9/112 (8.0%) | 22/266 (8.3%) | 6/51 (11.8%) |

* = P<0.05 for CD v UC

**Introduction** The number of patients presenting with IBD at older ages is increasing and the proportion of patients over the age of 60 is increasing as the IBD epidemic matures. There are only a few case series in literature concerning IBD presenting at older age ages. It is unknown whether the risk factors for disease differ compared to younger age groups.
**Methods** A database was established at CUH in 2002 and currently has 1326 subjects registered. Information was obtained pertaining to the subjects' age at diagnosis, exposure to established risk factors (smoking history and appendectomy), and disease profile. Their requirement for progression therapy was assessed, in terms of the need for immunosuppression, biological agents, and surgery. Patients who had required surgery for peri-anal disease only were not counted as having required surgery.
**Results** The characteristics of the subjects are shown in the table. A higher proportion of patients diagnosed over the age of 60 had UC compared to other age groups. In all in December 2015 303/1326 were aged over 60 giving a prevalence of 22.9% of all subjects with IBD versus an incidence in the over 60 age group of 11.5%. Male predominance is present at older ages of diagnosis of CD as opposed to female preponderance at younger ages. The female predominance in UC did not change across the age groups. Smoking although more common in older CD did not reach significance unlike at younger ages. Likewise appendectomy was not a risk factor in the over 60 s for CD unlike at younger ages. Older subjects were less likely to have had surgery or be on immunomodulators or biologics. For CD colonic disease was common in older subjects.

* = $P < 0.05$ for CD v UC

**Conclusion** CD diagnosed in later years is phenotypically different in terms of the associated risk factors and disease trajectory. It appears to run a more indolent course, with fewer patients requiring immunosuppressive or biologic therapy, and fewer surgical procedures. This raises the question as to whether old age CD disease is a different disease to that observed in younger subjects. The behaviour of UC does not demonstrate such marked differences with age of diagnosis.
**Disclosure of Interest** None Declared

## PWE-016 FAECAL CALPROTECTIN HAS AN ACCEPTABLE SENSITIVITY FOR DETECTING SMALL BOWEL CROHN'S DISEASE: RESULTS FROM REAL WORLD CLINICAL PRACTICE

J Wu, L Bolton, C Chapman, CS Chey*, E Harrison, H Kinderman, H Johnson, A Richards-Taylor, S Weaver, S Mclaughlin. *Gastroenterology, Royal Bournemouth and Christchurch Foundation Hospitals NHS Trust, Bournemouth, UK*

10.1136/gutjnl-2016-312388.262

**Introduction** Faecal calprotectin 'FC' is a quick, non-invasive and inexpensive test proven to correlate well with colonic inflammation. It is used in our institution to also exclude active small bowel Crohn's disease 'CD' although its reliability in such cases has recently been questioned. Using a higher cut-off FC value may exclude active disease in those with known inflammatory bowel disease with a higher specificity and reduce the number of false positives.[1,2]

The aim of this study was to assess whether FC compared to gold standard magnetic resonance enterography 'MRE' can reliably be used in small bowel CD as a screening tool to select those needing further investigation.
**Methods** Data from all CD patients who had undergone MRE to assess for active small bowel CD between January 2012 to November 2015 were reviewed. Patients with a known or new diagnosis of ileal or ileo-caecal crohn's (Montreal classification L1 phenotype) or ileo-colonic crohn's (L3 phenotype) with endoscopic and histologically-proven quiescent colonic disease were included. Data was analysed using Mann-Whitney U testing.
**Results** 194 MREs were performed for investigation of possible small bowel CD during the study period. 64 patients were included for analysis; L1 disease = 90.6% (58 patients), L3 = 9.4% (6 patients).

50% were female. The median age was 48 years (range 17–76 years). Median time between FC and MRE was 30 days (range 0–180 days). 35 patients (54.7%) were Montreal disease behaviour B1, 24 patients (37.5%) with B2 and 5 patients (7.8%) with B3. 4 patients (6%) had peri-anal involvement. 26 patients (41%) had previous Crohn's-related resectional surgery. 39 patients (60.9%) had evidence of active small bowel CD at MRE. The median FC in the active CD group was 246 mg/kg (IQR 556) and 49 mg/kg for the inactive small bowel disease group (IQR 177.5); $p < 0.0001$.

Table 1 shows results for sensitivity, specificity, positive predictive value 'PPV' and negative predictive value 'NPV' of different FC cut-off values in detecting any degree of small bowel activity at MRE.

**Abstract PWE-016 Table 1**

| | Faecal calprotectin (mg/kg) | | |
|---|---|---|---|
| | 50 | 100 | 200 |
| Sensitivity (%) | 90 | 72 | 59 |
| Specificity (%) | 50 | 68 | 70 |
| Positive predictive value (%) | 74 | 78 | 74 |
| Negative predictive value (%) | 77 | 61 | 54 |

**Conclusion** In this study we compared FC results to MRE to exclude or confirm active small bowel CD in real-world clinical practice. This data demonstrates that by using a cut-off value of 50 mg/kg, an acceptable sensitivity for detecting active small bowel CD is achievable. However, at this cut-off value, specificity is low; nevertheless using FC will still reduce demand for MRE.

### REFERENCES

1 F. Fasci-Spurio, A. Chiappini, V. Buonocore, S. Cannizzaro, Z. Maddalena, F. Maccioni, P. Vernia. (2014) Faecal calprotectin concentrations in Crohn's patients with ileal disease location: correlations with disease activity as seen by MRI enterography. *European Crohn's and Colitis Organisation.*
2 MF Hale, K Drew, ME McAlindon, AJ Lobo, R Sidhu. (2015). PTU-054 Faecal calprotectin in patients with suspected small bowel crohn's disease: correlation with small bowel capsule endoscopy. *Gut* **2015**;64:A83. doi:10.1136/gutjnl-2015-309861.169

**Disclosure of Interest** None Declared

## PWE-017 PROSPECTIVE EVALUATION OF THE SAFETY AND EFFICACY OF SWITCHING STABLE PATIENTS WITH INFLAMMATORY BOWEL DISEASE FROM REMICADE™ TO BIOSIMILAR INFLIXIMAB (IFX)

KJ Bennett*, GA Heap, S Hawkins, T Ahmad. *Gastroenterology, Royal Devon & Exeter Hospital NHS Trust, Exeter, UK*

10.1136/gutjnl-2016-312388.263

**Introduction** Biosimilar IFX (CT-P13; Remsima™/Inflectra™) became available in the UK in February 2015 offering significant savings to the NHS. Efficacy and safety data in inflammatory bowel disease (IBD) is limited. From May 2015 IBD patients at the Royal Devon and Exeter NHSFT were switched from Remicade™ to Biosimilar IFX. We reviewed efficacy and safety data during this switch.

**Methods** Treatment was evaluated in IBD patients who met the following criteria: i) Remicade™ treatment for greater than 6 months prior to switch ii) minimum follow-up data of 6 months following switch. Disease activity scores (Harvey-Bradshaw Index for Crohn's disease [CD] and Simple Colitis Score for ulcerative colitis [UC]), CRP, drug levels and total anti-drug antibody levels were collected immediately prior to biosimilar switch and then every 16 weeks. All adverse events were recorded.

**Results** 104 patients (54 male) met the inclusion criteria with a mean age of 43 years (range 17–71). 73 had CD, 29 had UC and 2 had IBD-unclassified. The median duration of Remicade™ therapy prior to switch was 1137 days (95% confidence interval = 933–1290). Missing cases were excluded on a variable by variable basis. There was no significant difference in CRP (median pre-switch = 2, post-switch = 2, $P = 0.81$) or disease activity score (median pre-switch = 1, post-switch = 1, $P = 0.44$) after switching from Remicade™ to Biosimilar IFX. 85% were in remission before compared with 81% six months following switch ($P = 0.51$).

There was no difference in the number of people with detectable total anti-drug antibody levels (pre-switch = 29, post-switch = 27, $P = 0.88$) but a fall in drug levels was noted after switching (median pre-switch =5.4, post-switch = 2.8, $P = 0.01$). 41% had significant anti-drug antibodies pre-switch compared to 36% at 6 months post switch ($P = 0.50$). 11% of patients had positive anti-drug antibodies with undetectable drug levels pre-switch compared to 7% at 6 months ($P = 0.35$).

4 patients had adverse events within eight months of switching to biosimilar IFX; 2 minor infusion reactions and 2 anti-TNF induced skin disease. 19 patients stopped within six months of switching; 6 electively, 9 due to loss of response and 4 for other reasons.

**Conclusion** This uncontrolled data suggests biosimilar IFX is safe and effective with no significant change observed in CRP, disease severity index and drug antibody levels six months after switch. The fall in IFX drug level after switch warrants further investigation.

**Disclosure of Interest** K. Bennett: None Declared, G. Heap Grant/research support from: Hospira, Knapp, Abbvie, MSD, S. Hawkins: None Declared, T. Ahmad Grant/research support from: Hospira, Knapp, Abbvie, MSD

## PWE-018 PREDICTIVE FACTORS FOR AN INDETERMINATE RESULT ON INTERFERON-GAMMA RELEASE ASSAY

[1]K Magri Gatt*, [2]V Petroni, [1]G Magri Gatt, [1]N Azzopardi, [1]P Ellul. [1]*Department of Gastroenterology, Mater Dei Hospital*; [2]*Faculty of Medicine and Surgery, University of Malta, Msida, Malta*

10.1136/gutjnl-2016-312388.264

**Introduction** Interferon-gamma (IFN-γ) release assay is used to identify patients with latent tuberculosis prior to biological treatment initiation. A lack of stimulation capacity of lymphocytes by the test control results in an indeterminate result. This is not uncommon in inflammatory bowel disease (IBD) patients receiving immunosuppressive agents.[1,2,3] The aim of this study is to compare the clinical and laboratory characteristics of patients with indeterminate results to those with determinate results.

**Methods** The national database of IBD patients receiving biological agents was accessed. IFN-γ release assay (QuantiFERON-TB Gold) results were noted. Parameters at the time of testing were collected, namely age, diagnosis, disease activity, blood results and drug treatment. Comparisons between the indeterminate group and determinate group were made using IBM® SPSS® Statistics Version 20. The study was approved by the University and Research Ethics Committee of Malta.

**Results** Data from 136 subjects was analysed. 8.8% ($n = 12$) had an indeterminate IFN-γ release assay result, 2.2% ($n = 3$) had a positive result, while 89% ($n = 121$) had a negative result. The indeterminate group had a significantly lower lymphocyte count ($p = 0.041$), globulin level ($p = 0.042$), immunoglobulin A (IgA) ($p = 0.031$) and haemoglobin ($p = 0.016$). C-reactive protein was higher in the indeterminate group ($p = 0.024$). No significant differences were recorded for age, gender, diagnosis, disease activity, white cell count, neutrophils, platelets, renal/liver function, albumin levels, IgM, IgG, or drug treatment. Critically, only 25% of indeterminate result subjects had a repeat test, all reported as negative.

**Conclusion** Indeterminate results are common in IBD patients, affecting nearly 1 in 10 patients. Patients with low lymphocyte counts, low globulin, low haemoglobin, low IgA and high CRP levels are more likely to have an indeterminate result when tested. The potential of a false negative result is likely to be higher in these patients. One must exert caution when requesting IFN-γ release assays in such IBD patients since the probability of a determinate result may be low. We advise test repetition in all patients with indeterminate results and screening with chest x-ray.

### REFERENCES

1 Helwig U, Müller M, Hedderich J, *et al*, *Corticosteroids and immunosuppressive therapy influence the result of QuantiFERON TB Gold testing in inflammatory bowel disease patients*. *J Crohns and Colitis* 2012;**6**:419–424.
2 Jeong SJ, Han SH, Kim CO, *et al*, *Predictive factors for indeterminate result on the QuantiFERON test in an intermediate tuberculosis-burden country*. *J Infect*. 2011;**62**:347–354.
3 Kobashi Y, Sugiu T, Mouri Y, *et al*, *Indeterminate results of QuantiFERON TB-2G test performed in routine clinical practice*. *Eur Respir J* 2009;**33**:812–815.

**Disclosure of Interest** None Declared

## PWE-019 ABSTRACT WITHDRAWN

## PWE-020 CORTICOSTEROID DOSE REDUCTION WITH VEDOLIZUMAB TREATMENT OF CROHN'S DISEASE

[1]E Loftus, [2]C Siegel, [3]R Panaccione, [4]W Sandborn, [5]M Smyth, [5]A James*, [6]J Xu, [5]B Abhyankar. *[1]Mayo Clinic, Rochester; [2]Dartmouth-Hitchcock Medical Centre, Hanover, United States; [3]University of Calgary, Calgary, Canada; [4]University of California San Diego, La Jolla, United States; [5]Takeda Development Centre Europe Ltd, London, UK; [6]Takeda Pharmaceuticals International Co, Cambridge, United States*

10.1136/gutjnl-2016-312388.265

**Introduction** Corticosteroids (CS) can effectively induce remission of Crohn's disease (CD), but serious side effects prohibit long-term use. Vedolizumab (VDZ) maintenance therapy resulted in a significantly higher percentage of patients with CS-free remission at week 52 versus placebo (PBO) in the GEMINI 2 study of moderately to severely active CD.[1]

**Methods** In GEMINI 2, patients who responded to VDZ induction therapy at week 6 were re-randomised to PBO or VDZ for 46 weeks. From week 6 onward, patients with clinical response began a CS tapering regimen. With exploratory and post hoc analyses, we characterised CS dose reductions following VDZ therapy in the population of patients on stable CS doses (≤30 mg/day prednisone or equivalent) at baseline (week 0). Median CS dose over time, change from baseline CS dose, and CS-free status at week 52 were summarised overall and by tumour necrosis factor antagonist (anti-TNF) treatment (naïve or failure) history.

**Results** At week 52, 68% of patients with baseline CS use decreased their CS dose with VDZ treatment compared with 62% with PBO (**Table**). The median CS dose in either treatment group (VDZ or PBO) at week 52 was 5 mg/day. Higher percentages of patients (overall and anti-TNF-naïve) required CS doses of ≤7.5 mg/day with VDZ versus PBO at week 52 (**Table**). In anti-TNF-naïve patients, the median CS dose at week 52 was 2.7 mg/day with VDZ and 5.0 mg/day with PBO. At week 52, higher percentages of VDZ-treated patients were CS- free for 90 or 180 consecutive days than PBO-treated patients.

**Abstract PWE-020 Table 1** CS Dose changes at week 52

| Week 52 | Anti-TNF-Naïve | | Anti-TNF-Failure | | Overall | |
|---|---|---|---|---|---|---|
| | PBO | VDZ[a] | PBO | VDZ[a] | PBO | VDZ[a] |
| | n = 29[b] | n = 55[b] | n = 33[b] | n = 68[b] | n = 65[b] | n = 127[b] |
| | No. of Patients (%) | | | | | |
| CS dose increased | 5 (17) | 3 (5) | 6 (18) | 10 (15) | 11 (17) | 13 (10) |
| CS dose decreased | 18 (62) | 44 (80) | 20 (61) | 38 (56) | 40 (62) | 86 (68) |
| CS free | 8 (28) | 25 (45) | 3 (9) | 15 (22) | 12 (18) | 44 (35) |
| Daily CS dose ≤ 7.5 mg | 13 (45) | 36 (66) | 14 (42) | 30 (44) | 28 (43) | 70 (55) |

a VDZ every 4 or 8 weeks.
b Patients on CS according to the interactive voice response system (IVRS) at Screening and also on CS for CD according to the case report form at baseline (week 0).

**Conclusion** VDZ maintenance therapy was associated with numerically higher percentages of CS-free patients at week 52 and patients who were CS-free for 90 or 180 days than PBO. Interpretation of these post hoc analyses, including the degree of dose reduction, is limited by differing initiation weeks for CS tapering per patient and small sample sizes.

### REFERENCE

1 Sandborn WJ, *et al*. *N Engl J Med*. 2013;**369**:711–721*; NCT00783692.*

**Disclosure of Interest** E. Loftus Jr Grant/research support from: AbbVie, Janssen, UCB, Takeda, Pfizer, GSK, Amgen, BMS, Genentech, Robarts Clinical Trials, Gilead, Receptos, Consultant for: AbbVie, Janssen, UCB, Takeda, Immune Pharmaceuticals, Celgene, MedImmune, Theradiag, Genentech, Seres Health, Sun Pharmaceuticals, BMS, C. Siegel Grant/research support from: AbbVie, Janssen, Salix, Takeda, UCB, Consultant for: AbbVie, Amgen, Janssen, Lilly, Pfizer, Takeda, UCB, Speaker bureau with: AbbVie, Janssen, Takeda, R. Panaccione Grant/research support from: Abbott, and UCB Inc, Consultant for: Abbott, Biogen, Axcan Pharma Inc, BMS, Centocor Inc, Chemocentryx, Ferring, Genentech Inc, Lippincott Williams & Wilkins, Medscape, Osiris Therapeutics, Inc, Novartis, Genentech Inc, Elan Pharmaceuticals, Inc, UCB, W. Sandborn Grant/research support from: Janssen, AbbVie, Pfizer, Amgen, Genentech, Consultant for: Janssen, AbbVie, Pfizer, Amgen, Genentech, Takeda, Speaker bureau with: AbbVie, Takeda, M. Smyth Employee of: Takeda Development Centre Europe Ltd, London, UK, A. James Employee of: Takeda Development Centre Europe Ltd, London, UK, J. Xu Employee of: Takeda Pharmaceuticals International Co, Cambridge, Massachusetts, USA, B. Abhyankar Employee of: Takeda Development Centre Europe Ltd, London, UK

## PWE-021 TARGETS FOR HEALTH INTERVENTIONS FOR INFLAMMATORY BOWEL DISEASE-FATIGUE

M Artom*, C Norton, W Czuber-Dochan, J Sturt. *Nursing and Midwifery, King's College London, London, UK*

10.1136/gutjnl-2016-312388.266

**Introduction** Fatigue is a complex, multifactorial and multidimensional phenomenon. Recognition of modifiable correlates of fatigue can provide a further understanding of this phenomenon in patients with inflammatory bowel disease (IBD) and aid in the development of interventions tailored towards fatigue. The aim of the present review was to systematically search and synthesise available evidence on potentially modifiable factors contributing to IBD-fatigue and what advances in the management of fatigue in individuals with IBD have been made.

**Methods** The review was comprised of a systematic search and a selective review. The process of selection of the retrieved citations was undertaken in two phases: i) systematic search for new studies published since the search of the previous review by Czuber-Dochan and colleagues in August 2012 (n = 21); ii) reselection of papers (n = 28) included in Czuber-Dochan and colleagues according to the aims of the current review. Seven databases were searched: MEDLINE, EMBASE, CINAHL, PsycINFO, Web of Science, the Cochrane Library and the British Nursing Index. The search included quantitative observational designs and experimental studies.

**Results** Forty-three studies met the inclusion criteria, 27 cross-sectional studies, 7 longitudinal studies, 1 quantitative secondary data analysis, 7 RCTs and 1 open label pilot study.

Studies were conducted in out-patient settings and with population-based cohorts. The quality of included papers was assessed using the Critical Appraisal Skills Programme. The studies were classified as high (n = 15), medium (n = 19) and low quality (n = 9), no studies were excluded on the basis of quality. IBD-fatigue was consistently associated with disease activity, depression, anxiety and sleep difficulties. However, most studies were cross-sectional thus the direction of causation remains unknown. The relationship between biochemical factors, such as anaemia and inflammation, and fatigue was inconsistent. Adding to the existing 5 interventions since the last review in 2013 only 3 interventions were tested to address IBD-fatigue. One assessed the effects of thiamine, one compared exercise advice, omega-3 oil fish oil, a dietary consultation and placebo and the last comparing solution focused therapy and care as usual. Findings from psychosocial and exercise interventions were promising. Nonetheless, interventions continue to be sparse, with methodological limitations and only short-term effects.

**Conclusion** The review identified a number of psychosocial and physical factors, which could potentially be modified through targeted health interventions to improve fatigue in IBD. Research utilising prospective observational studies and RCT design is required to develop and test interventions to reduce fatigue, most likely within a biopsychosocial model of care.

**Disclosure of Interest** None Declared

## PWE-022 DIAGNOSIS AND MANAGEMENT OF LATENT TUBERCULOSIS AND ITS TREATMENT IN IBD PATIENTS RECEIVING BIOLOGIC THERAPY

[1]P Wolfson*, [1]AA Thi, [1]S Bouri, [1]L Owen, [2]A Abbara, [2]L John, [2]RN Davidson, [1]AL Hart. *[1]Department of Inflammatory Bowel Disease, ST Mark's Hospital; [2]Department of Infectious Diseases, Northwick Park Hospital, London, UK*

10.1136/gutjnl-2016-312388.267

**Introduction** Anti-TNF therapies for inflammatory bowel disease (IBD) can lead to a five fold increase of tuberculosis (TB) reactivation in patients with latent TB infection (LTBI). Current European Crohn's and Colits Organisation recommends LTBI screening with Interferon Gamma Release Assay (IGRA) according to local prevalence, national recommendations and preferred in BCG immunised individuals. In this study, we determine the proportion of LTBI in our cohort of IBD patients treated with biologics and any complications of treatment, particularly drug-induced liver injury (DILI).

**Methods** All patients with IBD who were treated with biologics between March 2007 and November 2015 were identified from the high cost funding database held at the Pharmacy of St Mark's Hospital. Case notes and electronic records were retrospectively reviewed to identify records of LTBI screening. The following were excluded from the analysis: those who were treated for active TB and those who did not receive treatment either for latent or active TB. Of note, at this site, in July 2013, an IGRA testing replaced the Mantoux on our screening algorithm. DILI was defined as deranged liver function tests with no other identifiable cause.

**Results** Seven hundred and thirty-two IBD patients were screened for TB prior to starting a biologic. 31 patients (4.2%) were identified as having LTBI and had prophylactic treatment for TB (19 with single agent isoniazid; 12 dual agent isoniazid and rifampicin). Of these 31 patients, 22 went on to have anti-TNF treatment with a median delay of 86 days (range = 7–336 days). Of the 31 that went on to have treatment for latent TB, 3% (n = 1) had side effects, dizziness which was not severe to be stopped the LTBI treatment and non had DILI.

**Conclusion** Rate of LTBI in this population receiving biologics for IBD was 4%; all identified patients were treated and none experienced significant side effects. The median time to starting biologics after screening was 86 days, which may represent a significant delay in starting biologics for the IBD patients; this could have detrimental effects to their IBD related morbidity. There remains the risk of false negative IGRA results in an immunosupressed patient and, as such, place of birth and likely previous exposure should be taken into account.

### REFERENCE

1 Rahier J, Moutschen M, Van Gompel A, Van Ranst M, Louis E, Segaert S, *et al*. Vaccinations in patients with immune-mediated inflammatory diseases. *Rheumatology (Oxford)* 2010;**49**:1815–1827.

**Disclosure of Interest** None Declared

## PWE-023 VITAMIN D ENHANCES THE ABILITY OF ANTI-TNF THERAPY TO SUPPRESS DENDRITIC CELL ACTIVITY IN CROHN'S DISEASE

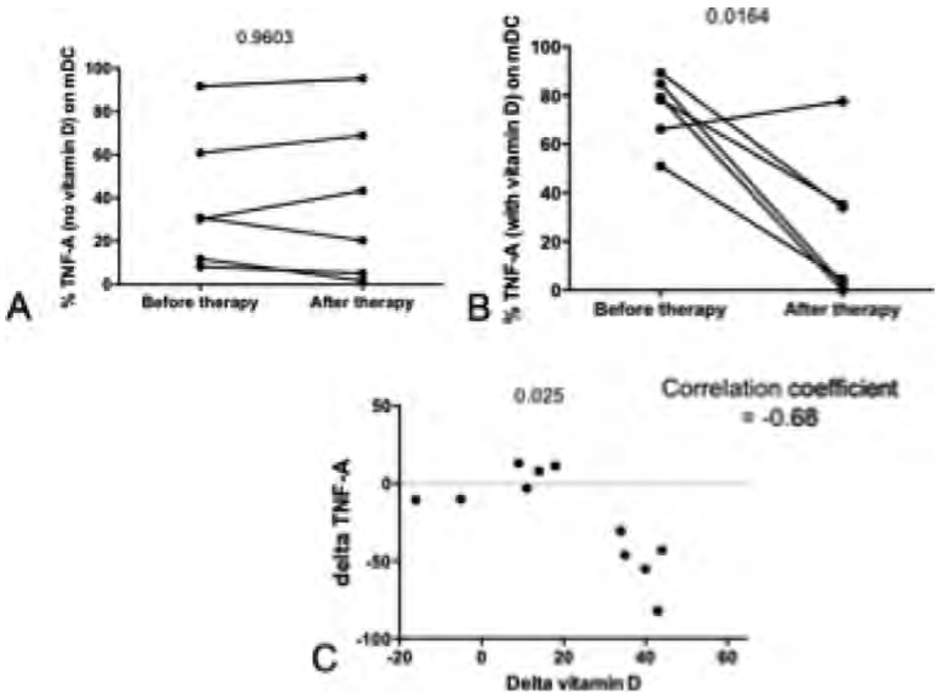
[1,2]PA Hendy*, [1]D Reddi, [3]D Barnardo, [1]L Durant, [1]A Noble, [1]P Bhat, [1]N English, [1]SC Knight, [1,2]AL Hart. *[1]APRG, Imperial College; [2]Gastroenterology, St Mark's Hospital, London, UK; [3]Research Unit (7th floor), Hospital Universitario de la Princesa, Madrid, Spain*

10.1136/gutjnl-2016-312388.268

**Introduction** Dendritic cells (DC) can determine whether the mucosal immune system mounts an inflammatory or regulatory response to antigen and may contribute to the pathogenesis of Crohn's disease. Vitamin D down-regulates DC inflammatory responses and could prove beneficial as a treatment adjunct in Crohn's. This study assessed the effect of high dose parenteral vitamin D treatment on circulating DC phenotype and function in patients with active luminal Crohn's receiving anti-TNFα therapy.

**Methods** Peripheral blood mononuclear cells were isolated from 13 patients with active luminal Crohn's and suboptimal vitamin D levels prior to and 6 weeks after starting anti-TNFα (infliximab) therapy. Patients with low vitamin D (<50nmol/L) were also given a single high dose of parenteral vitamin D (300,000 international units $1,25(OH)_2$ vitamin D3). Flow cytometry was used to identify total DC, ($HLA\text{-}DR^+$ cells negative for markers of other cell lineages (CD3, CD14, CD16, CD19 & CD34)). DC were further subtyped as myeloid (mDC, $CD11c^+CD123^-$). Expression of phenotypic markers (including maturation and homing markers and pattern recognition receptors) and on-going DC cytokine production during 4 hours' culture were assessed.

**Results** Production of TNFα by myeloid DC was significantly reduced (p = 0.016 Fig C) in those patients who received vitamin D alongside anti-TNFα therapy; without vitamin D treatment, TNFα production by myeloid DC did not decrease significantly after anti-TNFα therapy (p = 0.96 Fig B). There




**Abstract PWE-023 Figure 1** A&B TNFα production by mDC before and after treatment with anti-TNFα therapy in: patients who did not (A) and patients who did (B) receive vitamin D. (C) Correlation of change in vitamin D level and decrease in TNFα production by mDC

was a significant negative correlation between change in vitamin D level and change in TNFα production by myeloid DC ($p = 0.025$, correlation coefficient =0.68 Fig D). An increase of serum 25(OH)vitamin D greater than 20 nmol/m was associated with a decrease in myeloid DC TNFα production. Anti-TNFα therapy alone induced a significant upregulation of the skin homing marker cutaneous lymphocyte antigen (CLA) on myeloid DC ($p = 0.0055$), an effect which was not seen in patients receiving adjunctive vitamin D.

**Conclusion** High doses of parenteral vitamin D in patients with Crohn's promotes anti-TNFα down-regulation of circulating myeloid DC production of TNFα which may influence the subsequent interaction of DC and T cells. TNFα promotes a TH-1/ TH-17 response characteristic of Crohn's inflammation; thus the ability of vitamin D to further block TNFα production may promote a more regulatory T cell response and improve outcomes when used as an adjunct to anti-TNFα therapy. The down-regulation of skin homing marker CLA by vitamin D may be clinically useful in those patients suffering cutaneous sequelae of anti-TNFα therapy.

**Disclosure of Interest** None Declared

## PWE-024 EARLY CHANGE IN FAECAL CALPROTECTIN PREDICTS PRIMARY NON- RESPONSE TO ANTI-TNFA THERAPY IN INFLAMMATORY BOWEL DISEASE

[1]P Pavlidis*, [1]S Gulati, [1]P Dubois, [1]G Chung-Faye, [1]J Tumova, [1]L Medcalf, [1]LM Choong, [2]R Sherwood, [1]I Bjarnason, [1]B Hayee. *[1]Department of Gastroenterology; [2]Department of Biochemistry, King's College Hospital, London, UK*

10.1136/gutjnl-2016-312388.269

**Introduction** The early identification of primary non-response to anti-TNFα therapy facilitates the timely management of patients with inflammatory bowel disease (IBD). A recent, pilot study to detect prognostic markers of early response to anti-TNFα therapy identified the two genes coding for the calprotectin subunits (S100A8, S100A9) to be among the most highly expressed gene transcripts in non-responders. This study tests the hypothesis that measurements of faecal calprotectin (FCAL) pre- and post- anti-TNFα induction can predict primary non-response in both Crohn's disease (CD) and ulcerative colitis (UC)

**Methods** Retrospective study of 32 CD and 18 UC patients treated over a two-year period. Outcomes were assessed using Harvey-Bradshaw Index (HBI) or Simple Clinical Colitis Activity Index (SCCAI) (response: drop in HBI/SCCAI >3, remission: HBI < 5, SCCAI <3, steroid free) at 6 months. ΔFCAL was calculated as (FCALpost induction – FCALpre induction) *100/FCAL pre induction.

**Results** At 6 months, 23 (72%) CD and 10 (56%) UC patients had responded. In remission were 17 (53%) and 5 (28%) respectively. Comparing non-responders to combined response and remission groups, the area under the curve of ΔFCAL to predict outcomes at 6 months was 0.97 for CD and 0.96 for UC. Using ROC analysis, a decrease of 70% returned a sensitivity and specificity of 99% and 96%, respectively (likelihood ratio, LR = 23) in CD. For UC a a decrease of 70% had a sensitivity and specificity of 88% and 86%, respectively (LR = 6).

**Conclusion** A drop in FCAL < 70% after induction predicts primary non-response to anti-TNFα in both CD and UC.

**Disclosure of Interest** None Declared

## PWE-025 SERUM CALPROTECTIN – A NOVEL DIAGNOSTIC AND PROGNOSTIC MARKER IN INFLAMMATORY BOWEL DISEASES

[1]R Kalla*, [1]NA Kennedy, [1]NT Ventham, [1]R Boyapati, [1]AT Adams, [1]E Nimmo, [2]M Visconti, [1]H Drummond, [1]GT Ho, [3]R Pattenden, [1]DC Wilson, [1]J Satsangi. [1]*Gastroenterology*; [2]*Rheumatology, University of Edinburgh*; [3]*Clinical Biochemistry, NHS Lothian, Edinburgh, UK*

10.1136/gutjnl-2016-312388.270

**Introduction** There is an unmet need for novel blood based biomarkers that offer timely and accurate diagnostic and prognostic testing in Inflammatory Bowel Diseases (IBD). We aimed to investigate the diagnostic and prognostic utility of serum calprotectin (SC) in IBD

**Methods** A total of 156 patients (82 IBD and 74 non-IBD) were sampled within 90 days from diagnosis (median 0 days; IQR 0–7). A multibiomarker diagnostic and prognostic model was derived using multivariable logistic regression analysis. Treatment escalation was defined as the need for escalation and establishment of 2 or more immunomodulatory therapies and/or surgery for disease flare after initial induction of disease remission (criteria previously used by Lee et al) (1). Cox proportional hazards model was derived to assess the contribution of each variable to disease outcomes

**Results** SC correlated strongly with current biomarkers including CRP (rho = 0.60, p = $1.4x10^{-16}$) faecal calprotectin (FC) (rho = 0.51, p = $1.6x10^{-4}$). Paired FC was available within 30 days (median 0 days, IQR: -4 to5 days) of SC in 50 patients (IBD n = 30, non-IBD n = 20).The area under receiver operating characteristic discriminating IBD from controls was similar for FC and SC(0.95, 95% CI 0.87–1.00 and 0.89, 95%CI 0.81–0.98 respectively;p = 0.36). SC was the strongest individual predictor of IBD diagnosis (odds ratio (OR): 12.33 (95% CI 4.48–38.33, p = $3.5\times10^{-6}$) compared with other markers (CRP: OR 4.44, CI 1.58–12.90; albumin: OR 5.65, CI 1.98–17.16).

At follow up (median 342 days; IQR: 88–563),a total of 1 (2%), 16 (47%),23 (51%) patients required treatment escalation in the IBDU, CD and UC group respectively.SC predicted treatment escalation and/or surgery in IBD (HR 2.4, 95% CI: 1.1–4.9), in particular CD (HR 4.1, 95% CI 1.1–14.7).

A model incorporating SC, CRP and albumin has a positive likelihood ratio of 20.03 for IBD.At 1 year, our prognostic model can predict treatment escalation in IBD in 65% of cases (95% CI: 43–79%) and 80% (95% CI: 31–94%) in CD if 2 or more blood marker criteria are met.

**Conclusion** Sampling faeces can be a hurdle for patients and some individuals can decline FC testing. These factors impact on the practical utility of FC.SC shows promise as a diagnostic and prognostic biomarker in IBD. Our findings warrant further exploration and validation within large multicentre cohorts.

### REFERENCE

1 Lee JC, *et al*. Gene expression profiling of CD8+ T cells predicts prognosis in patients with Crohn disease and ulcerative colitis. *J Clin Invest* 2011;**121**:4170–9.

**Disclosure of Interest** None Declared

## PWE-026 7-ALPHA-CHOLESTENONE AND FAECAL CALPROTECTIN IN PATIENTS WITH COLLAGENOUS COLITIS

[1]R Trimble, [2]D Yung*, [1,2]A Koulaouzidis. [1]*University of Edinburgh Medical School, The University of Edinburgh*; [2]*The Royal Infirmary of Edinburgh, Edinburgh, UK*

10.1136/gutjnl-2016-312388.271

**Introduction** Collagenous colitis (CC) causes chronic, watery diarrhoea.[1] Bile acid malabsorption (BAM) often accompanies CC[2,3] and CC can respond to treatment with BA sequestrants.[4] The European Microscopic Colitis Group (EMCG) advises that BAM should be sought in investigation for CC.[1] The selenium-labelled homocholic acid-taurine (SeHCAT) test is considered the gold standard for BAM diagnosis; however, serum 7 alpha-hydroxy-4-cholesten-3-one (7 aC) is simpler and less expensive, with comparable sensitivity.[5] Faecal calprotectin (FC) is well-established as a biomarker of bowel inflammation, but data in CC is scant.[6] We present data from a tertiary referral centre on 7 aC and FC in patients with CC.

**Methods** Pathology records were interrogated for patients diagnosed with CC (2000–2015), extracting results on 7 aC and FC. Results are presented as mean (±SD) or median (range).

**Results** Over 15 years, 399 patients were diagnosed with CC (280 F/119 M). Of these, 164 were excluded from further analysis due to lack of appropriate data. 7 aC was available in 83 (20.8%) patients, mean levels of 11.5 ± 9.70 ng/ml. 11/83 (13.3%) patients had elevated 7 aC . FC levels were measured in 101 (25.3%) patients, mean levels 251.89 ± 282.62 μg/g. Of these, 76/101 (75.2%) had elevated FC ≥ 50 μg/g (FC ≥ 100 μg/g: 63/101; FC ≥ 200 μg/g: 30/101). Of the 101 patients with FC measurement, 76 had FC results ± 30 days from the point of histological diagnosis. In this group, median FC was 165 μg/g, range 20–1375 μg/g.

**Conclusion** This is the first cohort data on 7 aC in CC. Our findings confirm that a significant proportion of CC patients have co-existing BAM; however, the incidence is lower than that reported in other studies using SeHCAT. The high incidence of raised FC in our cohort supports the position that FC is a useful marker of histologic inflammation in CC.

### REFERENCES

1 Münch A, *et al*. Microscopic colitis: current status, present and future challenges: statements of the European Microscopic Colitis Group. *J Crohns Colitis*.**201**;6:932–45.
2 Wildt S, *et al*. Bile Acid Malabsorption in Patients with Chronic Diarrhoea: Clinical Value of SeHCAT Test. *Scand J Gastroenterol* 2003;**38**:826–30.
3 Fernández-Bañares F, *et al*. Bile acid malabsorption in microscopic colitis and in previously unexplained functional chronic diarrhea. *Dig Dis Sci* 2001;**46**:2231–8.
4 Münch A, Langner C. Microscopic colitis: clinical and pathologic perspectives. *Clin Gastroenterol Hepatol* 2015;**13**:228–36.
5 Brydon W G, *et al*. An evaluation of the use of serum 7-alpha-hydroxycholestenone as a diagnostic test of bile acid malabsorption causing watery diarrhea. *Can J Gastroenterol* 2011;**25**:319–23.
6 Wildt S, *et al*. Metabolic and inflammatory faecal markers in collagenous colitis. *Eur J Gastroenterol Hepatol* 2007;**19**:567–74.

**Disclosure of Interest** None Declared

## PWE-027 FEEDING TREGS FOR THERAPEUTIC IN VITRO EXPANSION – RETINOIC ACID NOT SCFA PROVIDES THE BEST DIET

[1,2,3]R Goldberg*, [4]C Scotta, [2]J Canavan, [5]P Irving, [2,5]N Powell, [5]J Sanderson, [6]G Lombardi, [1,2]G Lord. [1]*UK National Institute for Health Research Biomedical Research Centre, Guy's and St Thomas' NHS Trust*; [2]*Department of Experimental Immunobiology, King's College London*; [3]*Gastroenterology, Guys and St Thomas*; [4]*Immunoregulation and Immune Intervention, King's College London*; [5]*Gastroenterology, Guy's and St Thomas' NHS Trust*; [6]*Department of Immunoregulation and Immune Intervention, King's College London, London, UK*

10.1136/gutjnl-2016-312388.272

**Introduction** We have shown that Tregs expanded with rapamycin from FACS-sorted Crohn's Disease (CD) peripheral blood (PB) CD4+CD25hiCD127loCD45RA+ precursors, yield an epigenetically stable FOXP3+ cell population that is resistant to pro-inflammatory cytokine expression.[1] We will utilise this for a first in man clinical trial of Treg therapy for Crohn's disease. We wished to optimise the expression of gut homing molecules on these cells as Tregs are required at the site of action for optimal suppressive ability.

**Methods** Tregs were isolated from peripheral blood of CD patients and healthy controls. Retinoic acid (RA) and Rapamycin supplementation was tested in standard culture conditions as well as the addition of short chain fatty acids (SCFA). The effect of SCFA was assessed on ex-vivo expanded Tregs from CD4+CD25hiCD127loCD45RA+ precursors and induced Tregs (iTreg) from naïve T cell precursors. The expression of gut homing molecules integrin b7 and GPR15 was assessed by flow cytometry. Suppressive ability was tested in vitro using autologous effector T cells (Teff). Parametric and non-parametric data were calculated as the mean±s.d. and median (interquartile range, IQR) respectively. For comparison of parametric and non-parametric data, t- test, one- or two-way ANOVA.

**Results** In comparison to Rapamycin treated cells, the addition of RA significantly increased the expression of integrin beta 7 (38.7%±11.78% Rapamycin alone vs 72.26%±8.98% Rapamycin + RA p = 0.04, N = 7). RA treatment also significantly increased GPR15 expression. Cells treated with RA maintained their superior suppressive ability compared to Rapamycin treated Tregs (95.8%±3.5% vs 91.15%±10.1% p=ns; at Treg:Teff 1:1 ratio). SCFA treatment led to diminished cell viability and did not induce the expression of colonic homing molecule GPR15 in CD4+CD25hiCD127loCD45RA+ Tregs (74.4%±13.2% Rapamycin and RA treated culture vs 43.4%±17% with the addition of SCFA).

**Conclusion** Contrary to existing evidence in mouse, SCFA did not increase the proportion of CD4+FOXP3+ Tregs in human iTreg cultures. In conclusion, the addition of Retinoic acid not SCFA provides the optimal conditions for ex-vivo Treg expansion for cell based therapy of Crohn's disease.

### REFERENCE

1 Canavan JB, Scotta C, Vossenkamper A, Goldberg R, Elder MJ, Shoval I, *et al*. Developing in vitro expanded CD45RA+ regulatory T cells as an adoptive cell therapy for Crohn's disease. *Gut.* 2015.

**Disclosure of Interest** None Declared

## PWE-028 A NOVEL ASSAY FOR THE DIRECT DETECTION OF DEOXYTHIOGUANOSINE (DTG) IN DNA FROM PATIENTS ON AZATHIOPRINE USING LIQUID CHROMATOGRAPHY AND TANDEM MASS SPECTROMETRY (LC-MS/MS)

[1]S Coulthard*, [2]P Berry, [3]S McGarrity, [2]C Redfern. [1]*Institute of Cellular Medicine*; [2]*Northern Institute for Cancer Research, Newcastle Upon tyne, Newcastle upon Tyne, UK*; [3]*Center for Systems Biology, University of Iceland, Reykjavik, Austria*

10.1136/gutjnl-2016-312388.273

**Introduction** The correlation between thiopurine drug metabolite levels in red blood cells (RBC) and clinical response is currently under debate, with some studies reporting a good correlation whereas others report a poor correlation. However, without a suitable alternative assay this is the only method presently available to guide dosing of patients treated with thiopurine drugs: azathioprine (AZA), mercaptopurine (MP) or thioguanine. Biologically, this method is not perfect given that RBC lack the critical drug-metabolising enzyme inosine-monophosphate dehydrogenase, which is central to the bioconversion of MP to thioguanine nucleotides that are then incorporated as fraudulent bases into nucleic acids. To try to get a better indicator of drug response and hence clinical outcome, we have developed a sensitive liquid chromatography-tandem mass spectrometry (LC-MS/MS) assay to measure incorporated dTG in the DNA isolated from peripheral blood mononuclear cells of patients treated with thiopurines

**Methods** DNA was isolated from blood samples collected from IBD patients on thiopurines. DNA was denatured then digested using P1 nuclease followed by treatment with alkaline phosphatase and finally diluted in MilliQ water prior to analysis. A total of 0.2 µg of DNA in 50 µL was injected for chromatographic separation followed by analysis on an API4000 triple quadrupole mass spectrometer. Standard curves and controls were validated and samples analysed to determine number of moles of dTG/$10^5$ moles of dA.

**Results** From a small cohort of 20 AZA treated IBD patients (10 Crohn's Disease and 10 Ulcerative Colitis) with dTG levels of 0.18 to 11.3 moles dTG/$10^5$ moles dA (approximately 5 to 340 femtomoles/µg DNA) were detected with no detectable dTGs in un-treated patients. The intra- and inter-assay variability was below 7.8% and 17.0% respectively with a detection limit of 15.5 pg (54.7 femtomoles) and was quantified in DNA samples relative to endogenous dA.

**Conclusion** This method enables the direct detection of a cytotoxic thiopurine metabolite in an easily obtainable, stable sample and will facilitate a better understanding of the mechanisms of action of these inexpensive yet effective drugs.

**Disclosure of Interest** None Declared

## PWE-029 UTILITY OF MEASUREMENT ANTI TNF DRUG AND ANTI DRUG ANTIBODY LEVELS IN A COHORT OF PATIENTS WITH CROHN'S DISEASE: HOW DOES IT AFFECT CLINICAL PRACTICE?

S Laird*, L Caulfield, LA Smith, JW Winter, DR Gaya, AJ Morris. *Gastroenterology, Glasgow Ryal Infirmary, Glasgow, UK*

10.1136/gutjnl-2016-312388.274

**Introduction** It has been recognised that the measurement of anti-TNF drug concentrations and detection of anti drug antibodies may be useful in aiding decision making and therefore optimising clinical outcomes in patients on anti-TNF drugs in whom there is incomplete clinical response or loss of drug therapy.[1]

**Methods** A total of 45 Crohn's patients attending our tertiary referral IBD clinic had anti TNF drug concentrations and anti-drug antibodies levels measured. The indications for testing were incomplete response or loss of response during therapy.

We measured drug levels and Anti Drug Antibody levels using the ELISA assay (Immunodiagnostik). Reference ranges for Infliximab >2.0 ug/ml therapeutic and Adalimumab >5.0 ug/ml therapeutic. Total drug antibody levels >10 AU/ml positive.

**Results** We present the patient demographics in **Table 1.**

**Abstract PWE-029 Table 1** Patient demographics

| Crohn's cohort | N = 45 |
|---|---|
| Female, n (%) | 25 (55%) |
| Male | 20 (45%) |
| Median age at time of testing, years | 36.5 (18–75) |
| Smoking status, n (%) | 7 (16%) |
| Current | 38 (84%) |
| Non-smokers | |
| Panenteric | 18 (40%) |
| Ileocolonic | 9 (20%) |
| Ileal | 8 (18%) |
| Perianal | 6 (13%) |
| Colonic | 4 (9%) |
| Anti-TNF treatment | 26 (58%) |
| Infliximab | 19 (42%) |
| Adalimumab | |
| Anti TNF monotherapy | 22 (49%) |
| Thiopurines | 19 (42%) |
| Methotrexate | 2 (4.5%) |
| Corticosteroids (>20mg/daily) | 2 (4.5%) |

**Drug and ADA levels:** 44% (n = 20) had therapeutic levels and negative antibodies, 18% (n = 8) had therapeutic levels and positive antibodies, 22% (n = 10) had sub-therapeutic levels and negative antibodies and 16% (n = 7) had sub-therapeutic levels and positive antibodies.

**Impact of results:** meaurement of drug and ADA led to change in management in 28/45 (62%) patients. 6 (13%) patients switched therapy,17 (38%) had dose escalation,17 (38%) no treatment change,5 (11%)other outcome.

**Conclusion** Measurement of anti-TNF drug concentrations and antibody status in our patients on Anti TNF resulted in change of management in 28/45 (62%) patients.

In the 17 patients with dose escalation in whom outcome was assessed 13 (76%) patients have responded.

Measurement of drug concentration and antibody status presents an possible option in the management of patients on anti-TNF who present with loss of response or incomplete response of treatment

## REFERENCE

1 Vande Casteele N, *et al.* The relationship between infliximab concentrations, antibodies to infliximab and disease activity in Crohn's disease. *GUT* 2015 Oct;**64** (10):1539–45.

**Disclosure of Interest** S. Laird: None Declared, L. Caulfield: None Declared, L. Smith Conflict with: cook, boston and allergan, almirall, J. Winter Conflict with: almirall, reckitt-Benckisaer, ferring, shire, D. Gaya: None Declared, A. Morris Conflict with: Falk,Vifor

## PWE-030 THE INFLAMMATORY BOWEL DISEASE (IBD) AUDIT PROGRAMME AT THE ROYAL COLLEGE OF PHYSCIANS REPORTS ON 10 YEARS OF ACHIEVEMENTS AND DEMONSTRATES IMPROVEMENTS IN CARE OF PEOPLE WITH IBD

[1]SM Murray, [2]K Mortier* on behalf of Aimee Protheroe, Kajal Mortier, Jessica Watts. [1]*Clinical Effectiveness Unit;* [2]*Royal College of Physicians, London, UK*

10.1136/gutjnl-2016-312388.275

**Introduction** The IBD audit programme, first established in 2004 has conducted several rounds of audit. The programme's aim is to improve the care of people with IBD by; facilitating the collection of key aspects of data on patient care and organisational services, analysing and disseminating the results, providing recommendations for improvements based on the key findings in the analyses.

**Methods** Since 2006 the programme has facilitated up to 4 rounds of data collection on adults and children for inpatient care, organisation of IBD services and administration of biological therapies. We also collected data on patients experiences of care and the provision of care in primary care services. In 2015 the programme team hosted 8 regional workshops and proactively helped hospital IBD teams to develop action plans on key aspects of care that required improvements in their local areas.

**Results** Over the 10 years of the programme's work - a high level of participation in the audit has been achieved, >90% participation rate from IBD hospital teams across the UK. There have been many improvements in patient care, the most notable since 2006 to date, are a reduction in mortality during admissions, reduction in unplanned surgery, increased patient contact with an IBD nurse, improved rates of prescribing heparin and bone protection. From the biological therapies audit, results clearly demonstrate biological therapies for IBD are effective and safe treatments. Patterns of prescribing are changing with earlier use in patients with less severe disease suggesting doctors have become more familiar with the treatment.

Despite the positive improvements, the most recent audit, reported in 2014, identified that there were still aspects of care requiring improvements including treatment of anaemia, access to dietetic support and management of people attending out patient care. Also, the two audits on patient experience between 2010 and 2012 showed no improvements in patient's experiences of care.

The 8 regional workshops hosted in 2015 across the UK proved to be a successful initiative. They were attended by 84 trusts and healthcare boards. 74% of delegates surveyed at 6 months agreed that these had helped them to improve their service.

**Conclusion** 10 years of intensive working and engagement with the IBD community, the programme could not boast of its achievements without acknowledging the support of the community. However further and continued improvements in patient care for people with IBD are necessary. In 2016 the

IBD audit programme will be transitioning to the UK IBD Registry. There will be a continued emphasis to help hospital teams to make continued improvements in the quality of care of people with IBD through a number of initiatives.
**Disclosure of Interest** None Declared

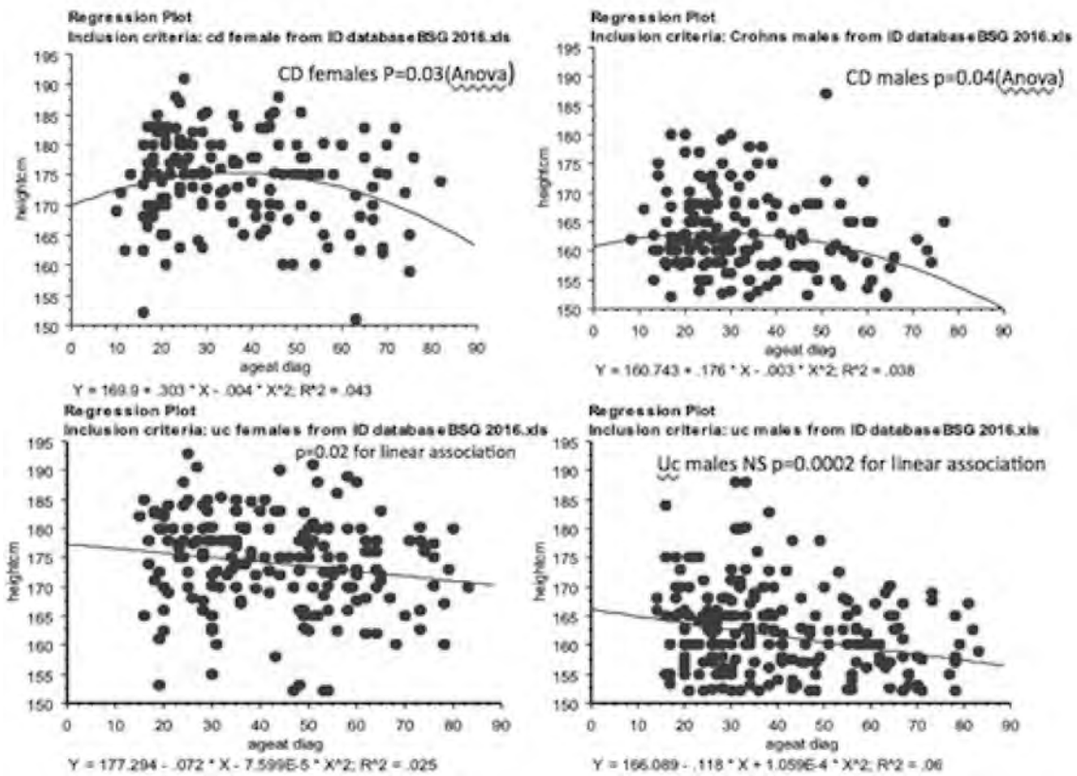
## PWE-031 HOW LONG IS THE PRE-CLINICAL PHASE OF CROHN'S DISEASE: CLUES FROM ADULT HEIGHT MEASUREMENTS

J Clough*, M Mendall, D Braim, A Hong. *Croydon University Hospital, London, UK*

10.1136/gutjnl-2016-312388.276

**Introduction** Inflammatory bowel disease (Crohns disease more than ulcerative colitis) is known to affect growth and final adult height when diagnosed before the end of puberty. Onset after the growth period has stopped would not be expected to have an effect on peak adult height unless there were pre-clinical changes in host physiology pre-dating the onset of disease. This question has never been addressed. Adult height progressively increased during the last century. A clue therefore to the duration of pre-clinical changes in IBD could be obtained by studying at what age peak adult height is reached and by how much this differs from the end of the growth period (approximately 18 yrs of age for women and 22 for men).

**Methods** An IBD database was established at Croydon University Hospital in 2002. 717 subjects had adult height recorded. Adult height was modelled against age at diagnosis, and age at diagnosed squared to ascertain the inflexion point of the age at diagnosis vs. adult height. Significance tests were performed using ANOVA. The distance of this inflexion point from the end of puberty would give a guide to the latency period of IBD. Men and women, UC and CD were analysed separately and analyses were adjusted for age of the subject by December 2015.
**Results** Regression plots of age at diagnosis squared modelled against adult height were curvilinear for patients with CD, with an inflexion point at 34 years of age for females and 28 years of age for males, indicating that patients diagnosed below these ages did not reach peak expected adult height. The same effect was not seen for patients with UC in whom there was a constant trend towards shorter adult height throughout the range from younger to older.
**Conclusion** As predicted, patients diagnosed with CD during the pubertal period failed to reach expected peak adult height. However reduced peak adult height was also seen in patients diagnosed in young adulthood (up to 34 years in females; 28 years in males). This suggests that CD has a latent period lasting up to 20 years prior to the manifestation of symptoms, during which changes in host physiology could be acting to reduce growth in childhood. UC did not exert the same effect on peak adult height.
**Disclosure of Interest** None Declared




**Abstract PWE-031 Figure 1**

## PWE-031a EXPLORING FATIGUE IN INFLAMMATORY BOWEL DISEASE – A DESCRIPTIVE PHENOMENOLOGICAL STUDY

[1]WJ Czuber-Dochan, [1]J Armes, [2]E Ream, [1]C Norton, M Artom*. [1]*Florence Nightingale Faculty of Nursing & Midwifery, King's College London, London,*; [2]*School of Health Sciences, University of Surrey, Guildford, UK*

10.1136/gutjnl-2016-312388.277

**Introduction** Fatigue is frequently reported by people with active (86%) and quiescent (41%) inflammatory bowel disease (IBD).[1] It is considered a complex and multifaceted symptom; it affects many aspects of individuals' lives. To date, limited research has investigated IBD-fatigue;[2] little is known about specific areas of life affected by it or how people with IBD manage it.

**Methods** Descriptive phenomenology with unstructured, in-depth interviews.[3] Twenty participants with IBD and reporting fatigue were purposively selected and interviewed face-to-face. Interviews were audio-recorded, transcribed verbatim and analysed using Moustakas' method. Data were analysed at individual and composite (group) level, and provided a description (texture) and an explanation (structure) of the studied phenomenon.

**Results** A wide range of terminology, including metaphors and similes, were used to describe fatigue reflecting its complex nature. Fatigue was presented as invisible, unpredictable, with constantly fluctuating daily patterns and severity. This made reporting fatigue difficult and at times lead to participants being challenged about its authenticity. The array of physical, psychological, cognitive and situational factors were perceived to contribute to fatigue, and different methods (e.g. sleep and rest, pacing, energy preservation, exercise, stress reduction, asking for help) were attempted by participants to manage fatigue. Most methods were not used systematically, possibly resulting in their apparently limited effectiveness. Impact of fatigue was perceived as negative, with participants constantly comparing their life and themselves as they were before fatigue and how much they have lost. They felt that fatigue is in control of their life and each day they had to fight another battle to defeat fatigue. Participants felt imprisoned in their fatigued unreliable body leaving them frustrated, isolated and lacking self-confidence. They reported loss of self and self-identity, resisting to accept the 'new fatigued me'.

**Conclusion** Fatigue is a major and debilitating symptom for individuals diagnosed with IBD, reducing their quality of life. The complex, invisible and fluctuating nature of fatigue makes difficult for patients to describe it to others. Patients need to be informed that fatigue is part of IBD and they should be encouragement to report and to seek help from health professionals.

### REFERENCES

1 Czuber-Dochan W, Ream E, Norton C. Review article: description and management of fatigue in inflammatory bowel disease. *APT* 2013;**37**:505–16.
2 Czuber-Dochan W, Dibley L, Terry H, Ream E, Norton C. The experience of fatigue in people with inflammatory bowel disease: an exploratory study. *JAN* 2013;**69**:1987–99.
3 Van Manen M. Researching lived experience. 1997. The Althouse Press, London.

**Disclosure of Interest** None Declared

## PWE-032 FATTY LIVER INDEX (FLI), WHICH IS AN ACCURATE PREDICTOR OF NONALCOHOLIC FATTY LIVER DISEASE (NAFLD), IS A BETTER PREDICTOR OF CARDIOVASCULAR DISEASE RISK IN TYPE 2 DIABETIC PATIENTS THAN THE UK PROSPECTIVE DIABETES STUDY (UKPDS RISK ENGINE V 2.0)

[1]D Caroli, [2]A Nogara, [1]E Rosa-Rizzotto*, [3]F De Lazzari, [2]A Boscolo Bariga, [2]R Valle. [1]*Specialized Medicine, St Anthony Hospital, Padova*; [2]*Chioggia Hospital, Chioggia (Venice)*; [3]*St Anthony Hospital, Padova, Italy*

10.1136/gutjnl-2016-312388.278

**Introduction** NAFLD, which is increasingly and rapidly becoming the cause of liver disease in Western countries, is characterised by higher serum triglyceride and LDL levels, lower HDL levels, insulin resistance, and glucose intolerance, all crucial risk factors for the development of atherogenesis. The UK Prospective Diabetes Study (UKPDS risk engine v 2.0) and the Fatty liver index (FLI) are both validated prognostic scores for cardiovascular disease (CVD) risk and NAFLD in diabetic patients.

**Methods** We retrospectively analysed 1902 patients attending our Diabetes Ambulatory in 2012–2013. The UKPDS risk engine and the FLI were calculated for each of these patient. Ninety-nine (19.2%) of these patients resulted at high CVD risk according to their UKPDS evaluation and underwent a complete CVD assessment (ergometric/ecostress test (EET), coronarography (CORO)). A two tailed t-test, Person's Chi square test, and analysis of variance (ANOVA) were carried out.

**Results** Sixty-six (59 M, mean age 68.1 y, mean disease duration 16.1 y, HbA1c > 7 prevalent) pts presented UKPDS positive/FLI > 60, 8/66 CORO+ (5 percutaneous transluminal coronary angiopathy-PTA, 3 cardiac bypass sugery-CABG, 1 peripheral transluminal angioplasty-PTA AAII) and 5 (4 M, mean age 68.6 y, mean duration disease 18.4 y, HbA1c > 7 prevalent) pts presented UKPDS positive/FLI < 20,1/5 CORO + (1 PTCA; 1 CABG; 0 PTA, AII). In the light of this analysis, were able to pinpoint a FLI cutoff that is better able to identify, with respect to UKPDS, patients who will result positive at CORO (FLI > 52 detected 9/14 pts positive at CORO with $p < 0.05$). Ninety-nine pts UKPDS positive(EET negative 69.6% > 69/99) (100% > 14/14 CORO+) vs 81 pts FLI > 52 (EET negative 92.5% > 75/81) (64.2% > 9/14 CORO+). As expected, we found a significant association between CORO+ and FLI+ patients and microalbuminuria ($p < 0.048$), cholesterol ($p < 0.020$); triglycerides ($p < 0.001$), and LDL ($p < 0.005$). The only drug associated to CV risk was cardioaspirn ($p < 0.003$).

**Conclusion** Study results demonstrate that FLI can be used as a marker to predict CVD risk in patients with FLI > 52. The number of patients who undergo CVD screening with a low percentage of positivity can thus be reduced. An early and aggressive treatment and monitoring program can instead be begun for type 2 diabetic patients with FLI > 52 and a reasonable suspicion of NAFLD because this population has higher risk of developing CVD events with respect to patients with FLI < 20.

**Disclosure of Interest** None Declared

## PWE-033 PROMOTER REGION VARIATIONS IN THE GLUTAMINASE GENE AS A RISK FACTOR FOR THE DEVELOPMENT HEPATIC ENCEPHALOPATHY IN PATIENTS WITH CIRRHOSIS

[1]ET Goh*, [2]MJ Way, [3]SR Atkinson, [2]A McQuillin, [1]MY Morgan. *[1]UCL Institute for Liver & Digestive Health, Division of Medicine, Royal Free Campus,University College London, Hampstead; [2]Molecular Psychiatry Laboratory, Division of Psychiatry, University College London; [3]Department of Hepatology, Division of Surgery and Cancer, Imperial College London, London, UK*

10.1136/gutjnl-2016-312388.279

**Introduction** Hepatic encephalopathy (HE) is the commonest complication of cirrhosis but its development is not invariable; thus approximately 20% of individuals remain free of neuropsychiatric complications and patients with minimal HE do not invariably develop overt HE. It is possible that genetic factors, most likely resulting in deregulation of ammonia metabolism, might determine an individual's susceptibility to develop this complication. In 2010, Romero-Gomez and colleagues,[1] identified a functional microsatellite consisting of GCA repeats near the promoter region of the glutaminase gene, *GLS1,* and proposed that patients with cirrhosis who were homozygous for the long microsatellite allele were more likely to develop overt HE. The aim of this study was to further investigate the association between *GLS1* promoter microsatellite variants and HE.

**Methods** The study population comprised 110 patients with cirrhosis, of British/Irish ancestry, in whom neuropsychiatic status had remained stable during monitoring for a minimum of 5 years, except in those treated for overt HE. Patients were classified using clinical, neurophysiological and neuropsychometric variables as: unimpaired (51; 46%) or as having minimal (24; 22%) or overt (35; 32%) HE. The control population comprised 325 ancestrally-matched healthy controls. DNA was genotyped using gel electrophoresis and verified by Sanger sequencing. Alleles were stratified as long (≥14 GCA repeats) or short (<14 GCA repeats). Genotype distributions and allele frequencies were compared between groups.

**Results** There were no significant differences in allele frequencies or genotype distributions between cases and controls. The proportion of long-short heterozygotes was significantly higher in the unimpaired patients (62.7%) than in those with either minimal HE (37.5%) or overt HE (37.1%) (p = 0.029; Table).

**Abstract PWE-033 Table 1**

| Genotype | Controls (n = 325) | All Patients (n = 110) | Unimpaired (n = 51) | Minimal HE (n = 24) | Overt HE (n = 35) | Intergroup significance (p) |
|---|---|---|---|---|---|---|
| | n (%) | | | | | |
| Long-long | 103 (31.7) | 39 (35.5) | *15 (29.4)* | *9 (37.5)* | *15 (42.9)* | 0.428 |
| Long-short | 163 (50.2) | 54 (49.1) | *32 (62.7)* | *9 (37.5)* | *13 (37.1)* | **0.029** |
| Short-short | 59 (18.2) | 17 (15.5) | *4 (7.8)* | *6 (25.0)* | *7 (20.0)* | 0.106 |

**Conclusion** There was no evidence that the long-long genotype is a risk factor for HE in the present study. However, there was evidence of possible heterozygote advantage resulting in significant protection against the development of this syndrome. More studies are needed to confirm or refute these findings.

### REFERENCE

1 Romero-Gomez M, *et al*. Variations in the promoter region of the glutaminase gene and the development of hepatic encephalopathy in patients with cirrhosis: a cohort study. *Ann Intern Med* 2010;**153**:281–8.

**Disclosure of Interest** None Declared

## PWE-034 HOSPITALISATION FOR PBC: A UK-PBC ANALYSIS OF HOSPITAL EPISODES

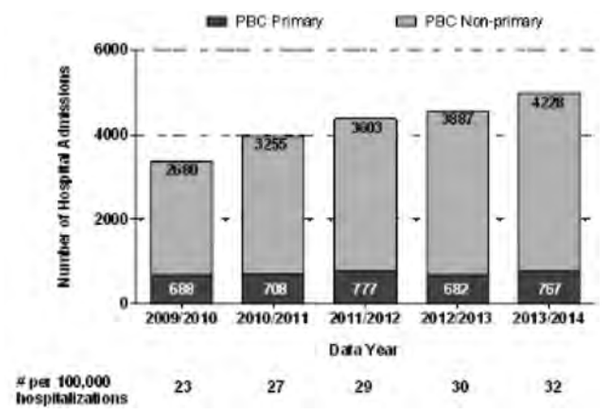
[1]G Hirschfield*, [2]L Vale, [3]G Mells, [4]D Shapiro, [5]D Jones. *[1]University of Birmingham, Birmingham; [2]Newcastle University, Newcastle Upon Tyne; [3]Division of Gastroenterology and Hepatology, Department of Medicine, University of Cambridge, Cambridge, UK; [4]Intercept Pharmaceuticals, Inc., San Diego, United States; [5]Institute of Cellular Medicine, Newcastle University Medical School, Newcastle Upon Tyne, UK*

10.1136/gutjnl-2016-312388.280

**Introduction** The advent of new therapies for patients with primary biliary cirrhosis (PBC, also known as primary biliary cholangitis) highlights the need to understand the current health burden of PBC. This analysis assesed the frequency and nature of hospitalisations associated with PBC.

**Methods** UK-PBC analysed all records from 2009 through 2014 in the Hospital Episodes Statistics database, containing information on all hospitalisation across the National Health Service in England, where the ICD-10 code for PBC (K74.3) appeared as a primary or secondary diagnosis. We characterised primary diagnosis for each hospitalisation.

**Results** There were 21,275 admissions with a PBC code over the 5 year observational period covering 1631 unique ICD-10s listed as the primary hospitalisation code. PBC was the primary code for 17% of admissions. The number of relevant hospitalisations increased from 3368 in 2009/2010 to 4995 in 2013/2014. The number per 100,000 hospitalisations increased from 23 to 32 over this period (Figure). The increase was almost completely driven by hospitalisations for which PBC was a secondary diagnosis. Liver transplants represented 5–10% of admissions with PBC as a primary code, and 1–2% of any PBC-related admission. The top 20 primary diagnoses when PBC is secondary included known sequelae of PBC: ascites (1.9% of total admissions), varices (1.3%), and liver cancer (1.3%). Remaining codes included: anaemia (iron




**Abstract PWE-034 Figure 1**

deficiency and unspecified; 2.9%); respiratory (pneumonia, COPD and lower respiratory infections; 3.0%); osteoporosis and fractures (1.9%); and various abdominal (unspecified abdominal pain, gastritis and gastroenteritis; 1.5%).

**Conclusion** Our UK-PBC data confirms a significant clinical need for patients with PBC, including a rising healthcare burden attributed to disease. The increase in PBC-related diagnoses may be due to more accurate coding, greater co-morbidity as the result of increased longevity, or may represent the true impact of disease. New therapies preventing the progression of PBC to end-stage cirrhosis, and its complications, may help to reduce this rising burden.

**Disclosure of Interest** None Declared

## PWE-035 THE ENDOSCOPY AND ENDOSCOPIC THERAPY IN BLEEDING AND HYPOTENSION STATE OF UPPER GASTROINTESTINAL HAEMORRHAGE

[1]H Zhao*, [2]L Chen, [1]J Cheng. *[1]Department of Digestive Diseases, The First Affiliate Hospital of Wenzhou Medical University, Wenzhou; [2]Department of Digestive Diseases, Shanghai Public Health Clinical Centre, Shanghai, China*

10.1136/gutjnl-2016-312388.281

**Introduction** The mortality of the cirrhotic patients with shock induced by esophageal varices (EV) rupture haemorrhage remains high despite all medical advances. The clinical study aims to exhibit the efficacy of endoscopic therapy using esophageal varicose ligation (EVL) in treating hypotension caused by upper gastrointestinal haemorrhage, as well as compare the long-term difference in effectiveness of single-band and multi-bands techniques for the patients.

**Methods** sixty-seven patients with clinical diagnosis of cirrhosis were hospitalised in an emergency for massive hematemesis. The blood pressure (Bp) of the patients was between 60–82/30-55 mmHg, and the haemoglobin (Hb) was in the range of 50–87 g/L. As well as preparing blood protects, we take fluid resuscitation and apply somatostatin or terlipressin to reduce portal vein pressure of the patients, whose Hb was lower than 60 g/L were taken blood transfusion. When their Bp could stabilise between 78–86/50-55 mmHg and the Hb between 55–60 g/L, the emergency endoscopy examination and treatment were performed without narcosis. The patients with EV bleeding were randomly divided into single-band and multi-band ring ligation groups, while accompanying GV treated by injecting in the bleeding gastric varicose vein with sequential sclerosing agent, tissue adhesive, sclerosing agent, which is named sandwich method of GV injection therapy. The sixty-seven patients were found EV by gastroscoy, in whom there were fifty-three accompanying GV. In multi-bands treatment group with thirty-five patients, two, three, or four bands were applied on the varices according to the severity of EV. The single-band treatment group was consisting in thirty-two patients.

**Results** Sixty-six cases were rescued successfully by emergency endoscopic treatment within 24 h of bleeding. Unfortunately, one person was still bleeding although EVL and sclerotherapy both being applied the bleeding oesophagus because it had been more than 24 hours since the bleeding and he had been treated with Sengtaken-Blakemore tube for three days, causing the erosion and ulcer of oesophagus. Two days after the endoscopic therapy, the patient died for the poor control of haemorrhage as he continually accepted comprehensive treatment. In the multi-bands ligation group, the number of patients with EV completely eradicated and mostly eradicated was eight and twenty-one respectively. The disappearance percents of varicose veins were 82.8%. In the single-band ligation group, the number of people with EV completely eradicated and mostly eradicated were five and fourteen, respectively, which the disappearance percent of the varicose veins was 59.4%. There were great significant differences between the two groups ($p < 0.05$). During one year of follow-up the EV recurrence percent of the multi-bands ligation group was 5.7%, which was lower than that of the single-band ligation group 18.7% ($p < 0.05$). No esophageal stenosis was observed in both two groups.

**Conclusion** The patients with EV and (or) GV rupture haemorrhage in bleeding and hypotension state can be rescued successfully by endoscopy and endoscopic therapy. The long-term efficacy of the multi-band ligation is superior to single-band EV ligation (EVL).

**Disclosure of Interest** None Declared

## PWE-036 THE USE OF AMINO TERMINAL OF TYPE III PRO-COLLAGEN PEPTIDE (P3NP) TO MONITOR METHOTREXATE ASSOCIATED LIVER FIBROSIS

[1]I Haq, [1]R Sikafi*, [2]GP Aithal. *[1]NIHR Nottingham Digestive Diseases Biomedical Research Unit, Nottingham University Hospitals; [2]NIHR Nottingham Digestive Diseases Biomedical Research Unit, Nottingham University Hospitals and University of Nottingham, Nottingham, UK*

10.1136/gutjnl-2016-312388.282

**Introduction** Methotrexate (MTX) is an important immunosuppressive drug commonly used to treat psoriasis and rheumatoid arthritis. Concern related to the potential of the drug to induce liver fibrosis has led to numerous guidelines on monitoring patients on methotrexate therapy. The amino terminal of type III pro-collagen peptide (P3NP) is an extension peptide that is cleaved and liberated into extracellular fluid and hence is a biomarker for collagen turnover. Increased levels occur during tissue repair and fibrosis, hence in principle P3NP has been used to monitor patients for potential adverse effect of hepatic fibrosis.

**Methods** We reviewed all requests for P3NP received by clinical biochemistry service at Nottingham University Hospitals between 2010 and 2015. We assessed how the results of P3NP were acted upon, what further tests and investigations were performed on patients where raised P3NP were reported. A total of 7319 assays were analysed corresponding to 495 patients. The data were analysed to see what proportion of positive results went on to have a Fibroscan, liver biopsy and to see whether histological findings correlate with P3NP level. As well as basic demographic data, we looked at co-morbidities, imaging, transient elastography and other risk factors for liver disease.

**Results** Of the 495 patient records examined 185 (37.3%) had a raised P3NP levels (>8 microg/L); of these, 33 (17.8%) were referred to hepatologists leading to 27/33 (69.7%) investigated with transient elastography and 8 (24.2%) having liver biopsy. Of those who had liver biopsy 6/8 (75%) showed NASH with early fibrosis and 25% showed advanced fibrosis from NAFLD; in addition to methotrexate therapy, all of these patients had one or more risk factors for NAFLD. A mean P3NP value of 11.4 correlated with NASH with any fibrosis and 16.4 microg/L correlated with advanced fibrosis.

**Conclusion** Despite wide spread use of P3NP, raised P3NP are not investigated adequately. Although small number of patients undergoing liver biopsy had significant histological abnormality ranging from NASH to advanced fibrosis, all had additional risk factors for NAFLD indicating that MTX treatment could therefore be stratified according to co-morbid risk factors.
**Disclosure of Interest** None Declared

## PWE-037 RELIABILITY OF ARFI SHEAR VELOCITY CUT-OFF FOR DIAGNOSIS OF CIRRHOSIS IN CHRONIC HEPATITIS C: A "REAL WORLD" TWO CENTRE SIMULTANEOUS BIOPSY-CONTROLLED STUDY IN THE UK

[1]N Gandy*, [1]P Lung, [2]O Jaffer, [3]P Tadrous, [4]K Agarwal, [4]M Heneghan, [1]P Shorvon, [2]P Sidhu, [5]D Sherman. *[1]Radiology, London North West Healthcare Trust; [2]Radiology, King's College Hospital; [3]Histopathology, London North West Healthcare Trust; [4]Institute of Liver Studies, King's College Hospital; [5]Gastroenterology & Hepatology, London North West Healthcare Trust, London, UK*

10.1136/gutjnl-2016-312388.283

**Introduction** Non-invasive assessment of liver fibrosis with elastography is increasingly used as the sole diagnostic method to assess patients with HCV infection for suitability for new anti-viral therapies. Currently patients with cirrhosis form the majority of those funded for some oral treatments in England. A large proportion reside in London and the South East region. As shear velocity cut offs for Metavir F4 fibrosis with the ARFI technique (virtual touch quantification, VTq™) are based upon historical studies, which may have been subject to sources of bias, there is a need for disease specific, population adjusted data. We report the results of a biopsy controlled study from two centres, designed to investigate optimal ARFI cut-offs for determining cirrhosis in our population.
**Methods** Our database of 96 patients with HCV infection obtained from two centres was interrogated. ARFI shear velocity (SV) estimation was performed with 10 right lobe measurements. Fibrosis stage was confirmed in 84 by right lobe liver biopsy within 2 hours of ARFI, and cirrhosis was confirmed by B-mode US imaging criteria in the remaining 12. Ultrasonic and histopathological data was collated retrospectively. Diagnostic performance of ARFI was determined by ROC analysis, using a) reference SV cut-off values for Metavir stage, and b) optimal SV thresholds for cirrhosis derived from our local data, including subgroup analysis.
**Results** Three subgroups were analysed: 1) all 96 cases, including 20 patients with co-pathology (HBV, NAFLD, or ALD); 2) 76 cases with HCV only; 3) 84 cases who had simultaneous biopsy. Cirrhosis was present in 26, 20 and 14, respectively. Predictive accuracy for Metavir F4 using the reference threshold of 1.75 m/sec was 90%, 92% and 88% in groups 1, 2 and 3, respectively. Using new thresholds and ARFI mean SVs required a higher cutoff of 1.99 in group 1 compared with 1.64 in groups 2 and 3 to achieve accuracies of 87%–93%, whereas more consistent performance across all groups was achieved with median SVs at a cutoff of 1.89, achieving accuracies of 93%, 96% and 92%, respectively.
**Conclusion** These "real world" data confirm the high predictive accuracy of ARFI for Metavir F4 cirrhosis in our local HCV cohort. Optimal performance was seen for median SV cutoff of 1.89 m/sec. However, adjustment of diagnostic thresholds may be necessary when making treatment decisions for less selected populations and in those patients with co-existent pathology.
**Disclosure of Interest** None Declared

## PWE-038 VALIDATION OF MULTIPARAMETRIC MRI IN THE ASSESSMENT AND STAGING OF NON-ALCOHOLIC FATTY LIVER DISEASE

[1]P Eddowes*, [2]N McDonald, [3]N Davies, [4]S Semple, [5]S Hübscher, [6]T Kendall, [7]C Kelly, [7]M Mavar, [7]A Herlihy, [1]P Newsome, [8]S Olliff, [2]J Fallowfield, [1]G Hirschfield. *[1]Centre for Liver Research, University of Birmingham, Birmingham; [2]MRC Centre for Inflammation Research, University of Edinburgh, Edinburgh; [3]Medical Physics, University Hospitals Birmingham, Birmingham; [4]Clinical Research Imaging Centre, University of Edinburgh, Edinburgh; [5]Department of Cellular Pathology, University Hospitals Birmingham, Birmingham; [6]Department of Pathology, University of Edinburgh, Edinburgh; [7]Perspectum Diagnostics, Oxford; [8]Imaging department, University Hospitals Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.284

**Introduction** Hepatic fibrosis is an important determinant of outcome in non-alcoholic fatty liver disease (NAFLD). The severity of non-alcoholic steatohepatitis (NASH) has relevance to clinical follow up intensity and assessment of the effectiveness of treatment interventions. Magnetic resonance imaging (MRI)-acquired T1 measurement has been shown to correlate with hepatic fibrosis and is also increased by inflammation, indicating potential as a tool to stratify NAFLD.
**Methods** Patients undergoing liver biopsy (LB) were invited for MRI and blood sampling prior to LB. Iron accumulation has been shown to reduce T1 independent of fibrosis, so an iron corrected hepatic T1 (cT1) was calculated using LiverMultiscan (Perspectum Diagnostics, Oxford). Histology was graded by two expert liver histopathologists according to the NASH-CRN system.
**Results** 50 patients had complete data sets following exclusions (1 inadequate biopsy, 3 MRI data unavailable). 28 (56%) patients were male. Median age 54 years. 26 (52%) patients had type-2 diabetes. Mean (±SD) body mass index was 33.6 (±5.1) Kg/m2. Median (IQR) of ALT, fasting glucose and cholesterol were 54 (52) u/L, 6.2 (4.0) mmol/L and 4.8 (1.5) mmol/L, respectively. 38 (76%) LBs demonstrated NASH and the remainder simple steatosis (SS).

Mean(±SD) cT1 for NASH and SS were 1007(±95) milliseconds (ms) and 907(±120) ms, respectively ($p = 0.004$). The correlation between cT1 and NAS was highly significant (Rho = 0.51, $p < 0.0001$). To differentiate NASH from SS, cT1 had an AUROC (95%CI) of 0.71 (0.53–0.89). To diagnose significant (>F1) and advanced (>F2) fibrosis cT1 had an AUROC (95% CI) of 0.65 (0.48–0.83) and 0.62 (0.47–0.78), respectively. To identify patients with SS and no significant fibrosis cT1 had an AUROC (95%CI) of 0.75 (0.56–0.93).
**Conclusion** Multiparametric MRI using LiverMultiscan has the ability to non-invasively stage fibrosis in patients with NAFLD. The additional benefit of this novel technology is the ability to concurrently establish the severity of NASH. The correlation of cT1 and NAS suggests that multiparametric MRI has potential for monitoring the effectiveness of treatment interventions in NAFLD.
**Disclosure of Interest** P. Eddowes: None Declared, N. McDonald: None Declared, N. Davies: None Declared, S. Semple: None Declared, S. Hübscher: None Declared, T. Kendall: None Declared, C. Kelly Employee of: Perspectum

**Abstract PWE-038 Table 1**

| Distribution of Kleiner fibrosis stage | | | Total NAFLD activity score (NAS) | | |
|---|---|---|---|---|---|
| | n | % | | n | % |
| 0 | 6 | 12 | 0 | 0 | 0 |
| 1 | 10 | 20 | 1-2 | 9 | 18 |
| 2 | 9 | 18 | 3-4 | 16 | 32 |
| 3 | 20 | 40 | 5-6 | 22 | 44 |
| 4 | 5 | 10 | 7-8 | 3 | 6 |

Diagnostics, M. Mavar Employee of: Perspectum Diagnostics, A. Herlihy Employee of: Perspectum Diagnostics, P. Newsome: None Declared, S. Olliff: None Declared, J. Fallowfield: None Declared, G. Hirschfield: None Declared

## PWE-039 THE INTERACTION BETWEEN THE HYPOXIA INDUCIBLE FACTOR-1A (HIF-1A) AND ERBB SIGNALLING PATHWAYS IN COLORECTAL LIVER METASTASES (CRLM)

[1,2]PN Siriwardana*, [3]JE Barrett, [4]T Luong, [4]J Watkins, [5]S Singh, [5]P Kim, [3]D Hochhauser, [6]A Harris, [3]T Ng, [1,2]BR Davidson. [1]*Division of Surgery and Interventional Sciences, University College London*; [2]*Department of HPB Surgery, Royal Free Hospital*; [3]*UCL Cancer Institute, University College London*; [4]*Department of Pathology, Royal Free Hospital, London, UK*; [5]*Prometheus Laboratories Inc., San Diago, United States*; [6]*Department of Oncology, University of Oxford, Oxford, UK*

10.1136/gutjnl-2016-312388.285

**Introduction** Tumour hypoxia is associated with reduced survival by activating multiple molecular pathways such as, but not exclusively, HIF-1α and mTOR/AKT/PI3K pathways. It is also known to cause overexpression of Epidermal Growth Factor (EGFR)/HER1 in human cancer. HER2 (neu) signalling increases the rate of Hypoxia-Inducible Factor 1α (HIF-1α) synthesis. Overexpression of Erbb3/HER3 and Erbb4/HER4 is associated with a higher recurrence rate of stage 2 and 3 colorectal cancer. The aim of this study was to analyse the relationship between the expression of HIF-1α and members of the ErbB pathway in CRLM utilising a novel proteomic based collaborative Enzyme Enhanced Reactive (CEER) immunoassay.
**Methods** Protein lysates of from fresh frozen biopsies and formalin fixed paraffin sections of CRLM from 18 patients who had not undergone neoadjuvant chemotherapy prior to a potentially curative hepatectomy for CRLM were analysed. When multiple metastases were present biopsies and sections were obtained from the largest metastasis. CEER immunoassay was performed on the protein lysates to quantify the phosphorylated and non-phosphorylated forms of receptors; ErbB family receptors (HER1/EGFR, HER2/c-neu, HER3, HER4) and cMET, and phosphorylated downstream ErbB pathway factors AKT, PRAS, RSP6, ERK, and RSK, and CK. Immunostaining was performed on formalin-fixed-paraffin-embedded CRLM sections for HIF-1α. ErbB pathway factor quantification was segregated according to the HIF-1α expression status; HIF-1α +ve and HIF-1α -ve
**Results** HIF-1α was expressed in 15 (83%) of tumours. There was no significant difference between the expression of phosphorylated 'receptors', and phosphorylated forms AKT, PRAS, RSP6, ERK, MEK, and PI3K between the HIF-1α +ve and HIF-1α –ve groups. HER3 and IGF1R were higher; (median μm: range; 87 [74–344] vs 222 [60–404]) and (115 [85–206] vs 186 [90–285]) respectively in the HIF-1α +ve group, HER1, HER2, PI3K and CK levels were lower; (108 [40–316] vs 36 [22–46]), (698 [523–870] vs 481 [288–709]), (5338 [3334–6689] vs 2719 [1790–4193]), (5383 [1826–9799] vs 2719 [1789–4193]) respectively in the HIF-1α +ve group. Although a trend was observed, the difference did not reach statistical significance.
**Conclusion** HIF-1α may have a role in the overexpression of HER3 and IGF1R overexpression in CRLM. More research is needed to establish this interrelationship which would help in molecular based therapeutics for CRLM.
**Disclosure of Interest** None Declared

## PWE-040 NATURAL HISTORY OF CIRRHOSIS IN A COHORT OF PATIENTS UNDERGOING STRUCTURED SURVEILLANCE FOR HEPATOCELLULAR CARCINOMA: RESULTS FROM THE ABERDEEN SURVEILLANCE COHORT

[1]S Lalwani*, [2]A Mukhopadhya, [2]A Fraser, [3]GL Hold, [2]L Bailey, [2]B Vijayan, [2]S English, [2]L Mcleman. [1]*School of Medicine, University of Aberdeen*; [2]*Digestive Disorders Department, Aberdeen Royal Infirmary*; [3]*Gastroenterology Research Group, Institute of Medical Sciences, University of Aberdeen, Aberdeen, UK*

10.1136/gutjnl-2016-312388.286

**Introduction** Cirrhosis is the end-stage of chronic liver disease due to a variety of different aetiologies with the natural history of this condition characterised by a variable asymptomatic phase of compensation followed by a rapid 'decompensated' phase marked by ascites, jaundice, variceal bleeding, encephalopathy and development of hepatocellular carcinoma (HCC). The cornerstone of management for cirrhotic subjects includes 6 monthly surveillance to detect development of HCC. Aberdeen Royal Infirmary is one of the few centres in the UK to have a structured HCC screening program where patients are followed up in a nurse led clinic. The aim of this study was to determine rates of decompensation and development of HCC in a cohort of cirrhotic patients undergoing structured surveillance.
**Methods** The electronic records of 231 patients who were initiated on surveillance between the years 2010–2015 were reviewed. Only patients who attended the clinic on at least 2 occasions were included. Those with a prior history of HCC or had an HCC discovered at their first ultrasound were excluded. Primary end-points studied were the time to develop ascites, variceal haemorrhage, hepatic encephalopathy, jaundice, HCC and mortality. Data analyses were conducted using SPSS version 23. Statistical methods used include Cox regression and Kaplan Meier survival analyses.
**Results** The 231 patients included in the study were mostly male (61.5%) with alcohol being the predominant aetiological factor (33.3%). The mean age at entry into the cohort was 58.1± 11.2 years, with a mean MELD of 8.6±2.9 and UKELD of 48.2± 3.1. The median follow-up duration was 26 months (range 6–60) giving a total cohort follow up of 522 patient years. Most patients had compensated and Childs-Pugh A cirrhosis at the time of entry (62.8% and 60.2% respectively). Of the 145 patients with compensated cirrhosis at entry, 26 (19.9%) developed jaundice or other signs of decompensation during follow up. Mean time to first decompensation episode was 49 (95% CI; 45–52) months, giving a rate of 8.7 /100 patient years. During follow-up, 7 patients developed HCC giving a detection rate of 1.36/100 patient-

years. Mean age at detection of HCC was 71.6 ± 7.3 years. Mortality rate in the entire cohort was 3.6/100 patient years.
**Conclusion** The results from our surveillance cohort outline the natural history of a large group of cirrhotic patients systematically followed up in a structured nurse-led clinic. The rates of decompensation and HCC highlight the importance of pursuing the strategy of active surveillance.
**Disclosure of Interest** None Declared

## PWE-041 REDUCED EXPRESSION OF TJP-2 IS ASSOCIATED WITH CHRONIC LIVER DISEASE AND HEPATIC MALIGNANCY

SK Kamarajah*, DA Patten, JCR Wadkin, C Coldham, RH Bhogal, S Shetty, CJ Weston. *NIHR Centre for Liver Research, Institute for Immunology and Immunotherapy, University of Birmingham, Birmingham, UK, University of Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.287

**Introduction** Tight Junction Protein–2 (TJP-2) belongs to a family of proteins that are predominantly expressed at the junctions between epithelial cells. TJP-2 has been implicated in the progression of breast and pancreatic cancer through regulation of downstream signalling pathways responsible for invasion and metastasis. Recently, gene alterations in TJP-2 have been discovered in patients with progressive familial intrahepatic cholestasis leading us to hypothesise that TJP-2 might be differentially regulated in chronic liver disease and liver cancer. Our aim was to characterise the expression of TJP-2 in liver disease with a particular focus on malignancy.
**Methods** The cellular localization and expression of TJP-2 in human liver tissue sections was studied using immunohistochemistry, multi-colour confocal immunofluorescence and immunocytochemistry. TJP-2 mRNA expression was quantified by qRT-PCR and protein expression was determined by western blotting of tissue lysates prepared from pathological control and diseased liver samples. Image J analysis was used to quantify expression of TJP-2 in chronic liver disease and liver cancers.
**Results** TJP-2 expression in human tissue sections was significantly downregulated in chronic liver disease and liver cancer, specifically hepatocellular carcinoma (HCC) and cholangiocarcinoma (CCA), when compared to pathological control tissue. The majority of TJP-2 protein was restricted to cellular junctions of biliary epithelial cells and hepatocytes in both pathological control and chronically diseased livers. In HCC and CCA tissue sections the protein was also found to adopt a characteristic perinuclear distribution, consistent with previous studies on pancreatic cancer cell lines. Western blotting and qRT-PCR studies revealed a significant decrease in TJP-2 expression in both chronic liver disease and primary liver cancer when compared to pathological control livers. Preliminary analysis of tissue samples taken from patients who had undergone hemihepatectomy for intrahepatic cholangiocarcinoma, and who were matched for anatomical location and tumour histology, suggested a correlation between TJP-2 expression and overall survival.
**Conclusion** This is the first report on TJP-2 expression in liver disease. TJP-2 was expressed on epithelial cells, with reduced mRNA and protein levels detected in chronic liver disease and liver cancer, suggesting that progressive loss of this molecule may contribute to altered epithelial function in hepatic injury and malignancy. Our data suggest that measurement of TJP-2 expression might have utility in the staging of liver cancer.
**Disclosure of Interest** None Declared

## PWE-042 INCIDENCE AND RISK FACTORS OF POST LIVER TRANSPLANT COLORECTAL MALIGNANCY IN PSC

[1]VM Sagar*, [1]PJ Trivedi, [1]G Aidoo-Micah, [2]BK Gunson, [1]G Hirschfield. *[1]Queen Elizabeth Hospital Birmingham Liver Unit; [2]National Institute for Health Research Birmingham Liver Biomedical Research Unit, Birmingham, UK*

10.1136/gutjnl-2016-312388.288

**Introduction** Patients with primary sclerosing cholangitis (PSC) and co-existing colonic inflammatory bowel disease (IBD) have an increased lifetime risk of developing colorectal cancer (CRC); a risk that persists after liver transplantation.

Aim: Assess the incidence rate (I.R.) of colonic dysplasia and/or cancer in patients transplanted for PSC, and determine any factors specific to post-transplant care associated with an increased CRC risk.
**Methods** The cohort included all patients transplanted from 1987 to 2015 for PSC with concomitant colitis. Time zero was set as the point of first liver transplant. The study endpoint was the time to first dysplasia or any higher lesion. Patients were censored at time of colectomy (for a non-CRC indication), death or last date of CRC-free follow up. Statistical methods employed for determining potential risk factors included Cox-proportional hazards and Kaplan-Meier estimates.
**Results** Overall, 306 patients were transplanted during this time period. 202 patients (66%) had underlying IBD and of this group 191 patients (95%) had co-existing colitis. The final study population was 163 patients who had colitis with an intact colon.

The I.R. of developing colonic dysplasia or higher lesions was 18.9 cases per 1,000 patient years and of colonic high grade dysplasia (HGD) or neoplasia was 10.4 cases per 1,000 patient years. There has been an increase in incidence rates by year of transplant (Table 1). No risk factors for the development of colonic dysplasia or above post liver transplantation were statistically significant. These risk factors included the number of colitis flares (>0, >1, >2), the use of cyclosporine (versus tacrolimus), the use of azathioprine (versus mycophenolate mofetil), thiopurine use, use of ursodeoxycholic acid, advancing age and male gender.

**Abstract PWE-042 Table 1** Incidence rates by year of transplant

| | Incidence rate from year 2000 | Incidence rate from year 2009 |
|---|---|---|
| Low grade and above | 23.3 cases per 1,000 patient years | 33 cases per 1,000 patient years |
| High grade and CRC | 10.8 cases per 1,000 patient years | 32.4 cases per 1,000 patient years |

**Conclusion** The incidence of colonic dysplasia in the PSC post-transplant population is rising. Further review of specific colitis findings need to be evaluated in order to aid in any potential risk factors for CRC development.
**Disclosure of Interest** None Declared

## PWE-043 THE UK MULTICENTRE AUDIT OF MANAGEMENT AND OUTCOME OF AUTOIMMUNE HEPATITIS (AIH). PREDNISOLONE OR BUDESONIDE (OR NEITHER) – AND FOR HOW LONG?

VM Gordon* on behalf of UK Autoimmune Hepatitis Audit Group. *Hepatology, UHCW NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.289

**Introduction** Standard treatment of AIH is corticosteroid-based. However there is no consensus regarding optimal dose or duration of steroid therapy. Budesonide had similar short-term efficacy to Prednisolone in a large randomised trial; but data are lacking on its longer term efficacy. We conducted an audit on management of AIH in 28 UK centres of varying size and report outcomes in relation to type, dose and duration of steroid treatment in this cohort.

**Methods** We aimed to collect all prevalent cases since 2000 and all incident cases since 2007 by searching electronic patient letters, histology databases and hospital coding. Validation was by 1999 IAIHG diagnostic criteria. Information, on diagnosis, severity, treatment and outcome was entered into a web-based system.

**Results** 1267 patients (80% female age (mean (range) 55 years (8–86)) were followed up for 4 (0–14) years. Initial treatment was Prednisolone in 1091 patients, Methyl-Prednisolone/ Hydrocortisone in 20 patients (pooled with Prednisolone as outcomes similar) and Budesonide in 61 patients. 984 patients also received a steroid sparing agent (962 Thiopurines). The remaining 95 patients did not receive steroids (12 received Thiopurine monotherapy). Of these 95, 10 required liver transplantation, 3 of these >1 year after diagnosis. Compared to the 1172 patients receiving steroids, the 95 who did not were older (58 vs 50 years $p < 0.001$) but had similar prevalence of cardio-respiratory comorbidity, cirrhosis and decompensation at presentation. They had a higher all-cause and liver-related death/transplant rate ($p < 0.001$), which persisted in multivariate analysis, and also (all-cause only) when patients with decompensation at presentation (n = 282) were excluded. All-cause and liver-related death/transplant rate were also associated with shorter duration of steroid therapy ($p = 0.001$ and 0.008) and with its discontinuation after initial normalisation of transaminases ($p = 0.007$ and 0.016), but not associated with initial dose of Prednisolone.

Of the 61 patients initially receiving Budesonide, treatment was changed to Prednisolone in 13 after 8 (0.2–29) months. Compared to those initially receiving Prednisolone, those receiving Budesonide had (a) similar age and gender distribution (b) lower peak serum ALT (c) surprisingly, a similar frequency of cirrhosis (26% vs 25%) at presentation (d) similar serum ALT values and percentages achieving normal values after 6 (64% vs 68%) and 12 months (78% vs 75%) treatment (e) similar all-cause and liver-related death/transplant rate.

**Conclusion** In this Multicentre UK Audit (a) 7% of patients with AIH did not receive steroids and had higher mortality than those receiving steroids (b) 5% of patients received Budesonide (one quarter with cirrhosis) and had similar mortality to those receiving Prednisolone.

**Disclosure of Interest** None Declared

## PWE-044 INTER-TUMOUR HETEROGENEITY IN HEPATITIS C VIRUS (HCV) RELATED MULTI-FOCAL HEPATOCELLULAR CARCINOMA (HCC)

[1,2] [3,4]W Fateen*, [3]H Wood, [3,5]S Berri, [6]J Wyatt, [4]M El- Meteini, [1,7]C Millson, [3]P Quirke. *[1]Hepatology department, Leeds Teaching Hospitals NHS Trust, Leeds; [2]NIHR NDDC Biomedical Research Unit, University of Nottingham, Nottingham; [3]Leeds Institute of Cancer and Pathology, University of Leeds, Leeds, UK; [4]Ain Shams Centre for Organ Transplant, Ain Shams University, Cairo, Egypt; [5]Illumina, Cambridge; [6]Histopathology department, Leeds Teaching Hospitals NHS Trust, Leeds; [7]Hepatology department, York Teaching Hospitals NHS Foundation Trust, York, UK*

10.1136/gutjnl-2016-312388.290

**Introduction** Curative therapies improve overall survival by more than 60 months on a small proportion of patients with HCC however the majority of patients are diagnosed with non curable, mostly multi-focal HCC.

There are two theories for the development of multifocal HCC. First is intrahepatic metastasis where the new cancer would inherit genetic properties from the index cancer. Second is de novo development of HCC where both cancers are expected to have genetically diverse properties.

We aimed to evaluate the presence and frequency of intrahepatic metastasis versus de novo carcinogenesis in HCV related multi-focal HCC.

**Methods** We studied DNA copy number profiles of 70 HCV-related hepatocellular cancers found in 19 surgically removed liver specimens from 18 patients.

Differences in copy number patterns were objectively analysed using Pearson's correlations between normalised, non-smoothed, non-segmented ratios (n = 27,180 per each sample). Fisher r to z to r transformation was used in calculation of the average coefficients.

**Results** Livers containing 2 or 3 nodules (n = 10 livers) had an average cancer correlation coefficient of 0.395 and only 20% of them (n = 2/10) harboured cancers with coefficients >0.5. Livers containing 4 or more nodules (n = 9 livers) had an average cancer correlation coefficient of 0.620 and 89% of them (n = 8/9) harboured cancers with coefficients >0.5.

The higher correlation coefficient may indicate that livers with a larger number of nodules are more likely to harbour genetically similar cancers then liver with a smaller number of nodules. This implies that intrahepatic metastasis starts to occur at a more advanced stage of liver disease and that de novo carcinogenesis takes place at an earlier stage.

**Conclusion** This study confirms that both processes exist. The occurrence of de novo carcinogenesis leads to emergence of genetically diverse cancers within the same liver. Our data suggests that this occurs at an earlier stage of multifocal spread. Intrahepatic metastasis leads to occurrence of genetically similar cancers within the same liver. This possibly occurs when HCC's are more established. More cases are needed to validate the sequence of events in hepatocarcinogenesis. This is knowledge is clinically relevant as cancers with diverse genetic profiles are practically more difficult to manage.

**Disclosure of Interest** W. Fateen: None Declared, H. Wood: None Declared, S. Berri Employee of: Illumina, J. Wyatt: None Declared, M. El- Meteini: None Declared, C. Millson: None Declared, P. Quirke: None Declared

## PWE-045 A STRONG CORRELATION EXISTS BETWEEN MORPHOLOGIC AND GENOMIC HETEROGENEITY IN HEPATOCELLULAR CARCINOMA (HCC)

[1,2 3]W Fateen*, [2]H Wood, [2,4]S Berri, [2,5]H Thygesen, [6]J Wyatt, [3]M El- Meteini, [7,8]C Millson, [2]P Quirke. *[1]NIHR NDDC Biomedical Research Unit, University of Nottingham, Nottingham; [2]Leeds Institute of Cancer and Pathology, University of Leeds, Leeds, UK; [3]Ain Shams Centre for Organ Transplant, Ain Shams University, Cairo, Egypt; [4]Illumina, Cambridge, UK; [5]Netherlands Cancer Institute, Amsterdam, Netherlands; [6]Histopathology department, Leeds Teaching Hospitals NHS Trust, Leeds; [7]Hepatology department, York Teaching Hospitals NHS Foundation Trust, York; [8]Hepatology department, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.291

**Introduction** Morphological intra-tumour heterogeneity is well recognised in HCC. Genomic intra-tumour heterogeneity has recently been reported on a small number of cases. In this study we aim to correlate morphological and genomic heterogeneity in HCV related HCC to inform the need for multiple biopsies

**Methods** We investigated DNA copy number profiles of 12 HCV induced nodules with morphological heterogeneity and 8 morphologically homogeneous nodules.

Histologically homogenous nodules (n = 8) were sequenced at 29 areas. 5/8 nodules were divided into 4 equal quadrants and DNA was extracted from each of the quadrants. The remaining 3/8 nodules were embedded into several paraffin blocks (range 2–5) upon routine processing post operatively. One DNA sample was extracted from each paraffin block

All grades of differentiation were included as well as dysplastic nodules. A total of 35 correlations were performed between DNA sequences from different areas in this group.

Morphologically heterogeneous nodules (n = 12) were sampled from morphologically distinct areas showing variability in either differentiation, cytological or morphological patterns within the same tumour. A total of 16 correlations were performed from different areas in this group.

Differences in copy number patterns were objectively analysed using Pearson's correlation between normalised, non- smoothed, non-segmented ratios (n = 27,180 per each sample).

**Results** Pearson's correlation coefficients were consistently >0.85 (mean = 0.92 after Fisher r to z to r transformation) indicating a strong positive linear correlation between the studied sequences in the morphologically homogenous group.

Marked genomic heterogeneity existed in morphologically heterogenous samples. Mean correlation coefficient was 0.62 for tumours that were exclusively HCC (n = 7) and and 0.48 for tumours where an area of dysplasia was engulfed within the nodule (n = 5) respectively.The difference between correlations coefficients of morphological homogenous versus heterogenous groups was statistically significant (P = 0.01).

**Conclusion** We therefore confirm the presence of intra-tumour heterogeneity in a number of HCV related HCC. However, we only identified intra-tumour heterogeneity in morphologically heterogeneous samples but not in those that harbour uniform morphology. Confirmation that morphologically homogenous samples are genetically homogenous is highly relevant clinically especially with rising doubts about the role of liver biopsy in HCC.

**Disclosure of Interest** W. Fateen: None Declared, H. Wood: None Declared, S. Berri Employee of: Illumina, H. Thygesen: None Declared, J. Wyatt: None Declared, M. El- Meteini: None Declared, C. Millson: None Declared, P. Quirke: None Declared

## PWE-046 COMPARISON OF TRANSIENT ELASTOGRAPHY, THROMBOCYTOPENIA AND SPLENOMEGALY IN RISK ASSESSMENT FOR THE PRESENCE OF OESOPHAGEAL VARICES

W On*, R Angelescu, A Abelidis, B Gurung, R Saravanan, G Berrisford, K Koss. *Department of Gastroenterology, Macclesfield District General Hospital, Cheshire, UK*

10.1136/gutjnl-2016-312388.292

**Introduction** The usage of transient elastography (TE) as a predictor of oesophageal varices has been widely studied. The formation of varices is the sequelae of portal hypertension (PH) which also manifest as splenomegaly leading to thrombocytopenia. We aim to establish the utility of TE in conjunction with PH in predicting varices.

**Methods** Patients who underwent TE with the FibroScan® between June 2010 and January 2016 in our trust were identified. Only patients with a liver stiffness measurement (LSM) of >11.5 kPa which is indicative of cirrhosis and had undergone an endoscopy were included. Thrombocytopenia was defined as a platelet count of $<150 \times 10^9$/L and the presence of splenomegaly was identified from radiological investigations. A TE measurement of >25 kPa has been regarded as the optimum cut-off value for predicting varices and is used in this study.

**Results** 2,643 patients underwent TE during the time period. 372 patients had a LSM of >11.5 kPa and of these patients, 157 patients underwent a gastroscopy. 41 patients (26.1%) had evidence of varices on gastroscopy. The sensitivity and specificity of TE in various combinations of PH in predicting varices are outlined in the table below.

**Abstract PWE-046 Table 1**

| | Sensitivity | Specificity |
|---|---|---|
| LSM > 25 kPa | 83% | 53% |
| Thrombocytopenia | 59% | 60% |
| Splenomegaly | 61% | 70% |
| LSM > 25 kPa AND thrombocytopenia | 45% | 85% |
| LSM > 25 kPa AND thrombocytopenia AND splenomegaly | 31% | 94% |
| LSM > 25 kPa OR thrombocytopenia | 95% | 20% |
| LSM > 25 kPa OR thrombocytopenia OR splenomegaly | 97% | 14% |

In total 46 out of our 157 patients with cirrhosis had TE < 25 kPA, normal platelets and normal sized spleen on ultrasound scanning. Only 1 patient in that group (TE = 16.7 kPA) had early borderline oesophageal varices.

**Conclusion** In our cohort of patients, a cut-off value of >25 kPa on TE is a better predictor of varices (sensitivity 83%) than thrombocytopenia or splenomegaly. Assessment of LSM using TE in conjunction with thrombocytopenia and splenomegaly improves sensitivity further to 97%. Limiting screening endoscopy in patients with liver cirrhosis to those with any of those 3 criteria: TE > 25 kPA, thrombocytopenia or splenomegaly, may reduce demand for endoscopy in that group of patients by 30%.

**Disclosure of Interest** None Declared

## PWE-047 METRONIDAZOLE IS A LESS EFFECTIVE THERAPY FOR SMALL INTESTINAL BACTERIAL OVERGROWTH

A El Habishi*, J McLaughlin, W Johns, E Leitao, P Paine. *Salford Royal Foundation Trust, Salford, UK*

10.1136/gutjnl-2016-312388.293

**Introduction** Choice of antibiotic treatment in patients who test positively for Small Intestinal Bacterial Overgrowth (SIBO) can be difficult. No controlled trial has examined the clinical efficacy of antibiotics in SIBO. This study aimed to identify which antibiotics are the most effective in treating SIBO in a real world retrospective cohort.

**Methods** 520 adult patients (360 female, 160 male, mean age 49) who underwent hydrogen and glycocholate-methane breath tests for a suspicion of SIBO between the dates 01/01/2010 and 31/12/2013 were evaluated. The clinical information of patients who tested positively in both tests was recorded. Information was also gathered as to the antibiotic they were prescribed and whether they received symptomatic benefit from their treatment.

**Results** A total of 90 patients who tested positive were prescribed antibiotics (59 female, 31 male, mean age 56). 69 (76.7%) of these patients benefitted from their management. 32 patients who tested positive were given cyclical antibiotics. The efficacy of cyclical antibiotics compared with the combined efficacy rates of other antibiotic regimes in treating patients with a positive breath test result was 93.8%. (93.8% vs 67.2%, Chi-square = 8.1, p = 0.004). 15 patients who tested positive were given rifaximin. The efficacy of rifaximin in treating patients with a positive breath test result compared with the combined efficacy of other antibiotic regimes was 80%. (80% vs 76% Chi-square = 0.112, p = 0.738). 18 patients who tested positive were given metronidazole. The efficacy of metronidazole in treating patients who tested positive in the breath tests compared with combined efficacy rates of other antibiotics was much lower at 50% (50% vs 83%, Chi-square = 8.9441, p = 0.0028).

**Conclusion** Metronidazole appeared inferior to rifaximin monotherapy for treating SIBO. Cyclical antibiotics appeared most effective. These findings should be explored further in randomised controlled prospective trials to determine the optimal treatment regime.

**Disclosure of Interest** None Declared

## PWE-048 SMALL INTESTINAL BACTERIAL OVERGROWTH IS INCREASED IN GASTRIC BYPASS, SMALL BOWEL RESECTION AND SHORT BOWEL SYNDROME

A El-Habishi*, J McLaughlin, W Johns, E Leitao, P Paine. *Salford Royal Foundation Trust, salford, UK*

10.1136/gutjnl-2016-312388.294

**Introduction** Small intestinal bacterial overgrowth (SIBO) testing is confounded by transit time, which can be increased in a number of surgical conditions. This study aims to evaluate whether patients who have undergone a gastric bypass, small bowel resection or who have been diagnosed with short bowel syndrome have a higher prevalence of SIBO than patients who have not, and whether they respond to antibiotic treatment

**Methods** In total, 520 adult patients (360 female, 160 male, mean age 49) who underwent hydrogen and glycocholate-methane breath tests for a suspicion of SIBO between the dates 01/01/2010 and 31/12/2013 were evaluated. Their clinical information including their test results, working diagnosis, management and outcomes of management were recorded.

**Results** 84 patients had undergone a gastric bypass (31), small bowel resection (27) or had been diagnosed with short bowel syndrome (26). 40 of these patients tested positive in both hydrogen and glycocholate-methane breath tests (48.2%). 437 patients with normal anatomy were also tested over the same period, of which 61 tested positive (14.0%). (48.2% vs 14.0%, Chi-square statistic = 50.8911, p = 0). 34 patients who had undergone a gastric bypass, small bowel resection or had been diagnosed with short bowel syndrome who tested positive were treated with antibiotics. 28 (82.4%) benefitted from this. 56 patients who tested positive in the other group were given antibiotics, 41 (73.2%) of whom benefitted from this.

**Conclusion** Patients who had undergone a gastric bypass, small bowel resection or have been diagnosed with short bowel syndrome have a much higher rate of positive SIBO test results compared to patients who have not, and have a similar response rate to antibiotic therapy. This suggests these post-surgical patients have a higher incidence of true SIBO than those with normal anatomy and benefit from antibiotics. This implies these are true positive cases and not false positives due to shortened transit times. Future studies controlling for transit would help clarify these findings further.

**Disclosure of Interest** None Declared

## PWE-049 SMALL-BOWEL CAPSULE ENDOSCOPY WITH 360° PANORAMIC-VIEW: RESULTS OF THE FIRST MULTICENTER, OBSERVATIONAL, STUDY

[1]GE Tontini, [2]F Wiedbrauck, [3]F Cavallaro, [4]R Marino, [5]L Spina, [6]ME McAlindon*, [7]A Koulaouzidis, [8]E Rondonotti, [9]L Pastorelli, [5]M Vecchi. *[1]Gastroenterology & Digestive Endoscopy Unit, RCCS Policlinico San Donato, Milano, Italy; [2]Klinik für Gastroenterologie/GI-Onkologie, Allgemeines Krankenhaus Celle, Celle, Germany; [3]Gastroenterology & Digestive Endoscopy Unit, IRCCS Policlinico San Donato, Milano; [4]Gastroenterology & Digestive Endoscopy Unit, AO Lodi, Lodi; [5]Gastroenterology & Digestive Endoscopy Unit, IRCCS Policlinico San Donato, Milano, Italy; [6]Department of Gastroenterology, Royal Hallamshire Hospital, Sheffield; [7]Centre for Liver & Digestive Disorders, The Royal Infirmary of Edinburgh, Edinburgh, UK; [8]Gastroenterology Department, Ospedale Valcuce, Como; [9]IRCCS Policlinico San Donato, Milano, Italy*

10.1136/gutjnl-2016-312388.295

**Introduction** CapsoCam®SV (CapsoVision Inc, Saratoga, USA) is a new small bowel capsule (SBC) with "panoramic view", wire-free technology, and a long-lasting battery life. It is equipped with 4 high-frame rate cameras resulting in a high number of acquired frames. In previous studies, CapsoCam®SV showed comparable operative and diagnostic performance with frontal view SBCs.[1,2]

**Methods** First multicenter study to assess the performance of CapsoCam®SV1 and SV2. Between January 2011 and November 2015, all consecutive patients undergoing SBC with CapsoCam® in 4 Italian, 2 British, and 1 German Institution(s) were included. Findings were classified according to their clinical significance, in line with Saurin classification, as P0: low probability; P1: intermediate probability; P2: high probability.[3] We defined SBC as "positive" when at least one P2 finding was identified.

**Results** We enrolled 172 patients (94 M; median age±SD: 68 ±17 years, range: 9–97 years). Of them, 142 were referred for obscure GI bleeding (32 overt/110 occult OGIB) and 28

for suspected (17) or established (2) Crohn's disease (CD). Median battery life was 16.4 h (range 3.7–23.4 h). System failure occurred in 4 (2%) cases for technical problems; incomplete enteroscopy in 16/168 (9%), including two structuring disorders (i.e. stricturing CD & SB adenocarcinoma) with spontaneous capsule excretion and one stricturing SB carcinoid with capsule retrieval at time of surgery.The ampulla of Vater was clearly identified in 34% cases. The overall diagnostic yield (DY; rate of positive tests) was 41%; 43% in OGIB and 30% in suspected CD. In a per-lesion analysis, overall 560 findings were detected (P0: 55, P1: 253, P2: 252). Most lesions were located in the small bowel (448/560: 80%); 48% of them were P2. Interestingly, 95/560 (17%) and 17/560 (3%) lesions were detected in the upper and in the lower GI tract, 34 and 12 of them being classified as P2, respectively.

**Conclusion** The first multicenter study conducted in the everyday clinical practice with CapsoCam®SV, and based on the largest series so far collected, showed that SBC with 360° panoramic-view is easy to use, reliable, and has comparable DY and safety profile to forward view SCE.

## REFERENCES

1 Friedrich K, *et al*. *J Gastroenterol Hepatol* 2013;**28**(9):1496–501.
2 Pioche M, *et al*. *Endoscopy* 2014;**46**(6):479–84.
3 Saurin JC, *et al*. *Endoscopy* 2003;**35**(7):576–84.

**Disclosure of Interest** None Declared

## PWE-050 IS SEHCAT SCANNING NECESSARY? AN ANALYSIS OF SEHCAT SCANS AND RISK FACTORS FOR BILE ACID DIARRHOEA IN A SERIES OF 262 PATIENTS WITH DIARRHOEA

[1]B Arms-Williams*, [1]P Mylan, [1]C Woodward, [1]J Green, [2]E Jones, [1]M Khan. *[1]Department of Gastroenterology; [2]Department of Medical Physics, University Hospital of Wales, Cardiff, UK*

10.1136/gutjnl-2016-312388.296

**Introduction** Bile acid diarrhoea (BAD) is an under-diagnosed cause of diarrhoea and there is a suggestion that up to a third of patients with previously diagnosed diarrhoea-predominant irritable bowel syndrome have BAD diagnosed by a tauroselcholic [$^{75}$selenium] acid (SeHCAT) scan.[1] BAD risk factors include ileal resection (IR), right hemicolectomy (RH), radiotherapy (RT), cholecystectomy and Crohn's (CD) but it is unclear whether SeHCAT scans add value to these patient groups.[1] This single-centre retrospective study evaluates SeHCAT scans in patients with/without risk factors and their responses to bile acid sequestrants (BAS).

**Methods** We retrospectively evaluated the clinical data of all 269 patients who had a SeHCAT scan from February 2011 to December 2014. Patients with cholecystectomy, CD, RH/IR or previous pelvic RT were compared to those without BAD risk factors. Clinic correspondences were evaluated for presenting symptoms and BAD risk factors, treatment with BAS and their tolerance/effectiveness. Response was measured as good or absent according to patient report to physician. Seven cases were excluded due to absence of clinical data. Statistical analyses were calculated for each individual case group versus the control group with no risk factors for BAD. P-values were adjusted with Bonferroni correction.

**Results** Average age at time of scan was 53.8. M:F was 1:2.74. 115/262 had BAD confirmed with a SeHCAT scan of <11%. Table 1 shows the scan results for each case group and analyses comparing each to the control group. Three groups were identified as having increased risk of BAD: cholecystectomy, quiescent CD (ileal and colonic) and RH/IR. Colestyramine was trialled in 100 BAD cases, 84% had a good response but 38% tolerated therapy. Colesevelam was trialled in 64 BAD cases, 84% had a good response and 48% tolerated therapy.

**Abstract PWE-050 Table 1** Comparative SeHCAT results

| | Positive | Negative | Total | Corrected *p*-value | Odds ratio | Lower 95% CI | Upper 95% CI |
|---|---|---|---|---|---|---|---|
| **No risk factors** | 33 | 78 | 111 | | | | |
| **Cholecystectomy** | 39 | 19 | 58 | <0.0006 | 4.85 | 2.45 | 9.60 |
| **CD** | 20 | 6 | 26 | 0.0006 | 7.89 | 2.90 | 21.40 |
| **RH/IR** | 28 | 3 | 31 | 0.0006 | 22.06 | 6.27 | 77.64 |
| **RT** | 27 | 41 | 68 | 0.6759 | 1.56 | 0.83 | 2.93 |

**Conclusion** We demonstrate that a history of cholecystectomy, CD or RH/IR with chronic diarrhoea is highly suggestive of BAD. Of the six CD patients without BAD, four had isolated colonic disease. Pelvic RT did not increase risk of BAD. A SeHCAT scan can cost £486[2] whilst a month's trial of either BAS costs <£40[3] and have high response rates in BAD. Given the high probability of a positive scan in cases of RH/IR we suggest trials of empirical BAS could be used instead of SeHCAT for diagnosis in these patients.

## REFERENCES

1 L Wedlake, *et al*. *AP&T* 2009;**30**:707–717.
2 NICE. Diagnostic guidance DG7, 2012.
3 BNF 2012;**64**.

**Disclosure of Interest** None Declared

## PWE-051 SMALL BOWEL ADENOCARCINOMA: SINGLE CENTRE EXPERIENCE OVER 6 YEARS

[1]F Moroni*, [2]G Murray, [1]G Bain. *[1]Digestive Disorders Unit; [2]Pathology Department, Aberdeen Royal Infirmary, Aberdeen, UK*

10.1136/gutjnl-2016-312388.297

**Introduction** Small bowel (SB) cancer is a rare condition (<5% of all gastrointestinal cancers). Small bowel adenocarcinoma (SBA) accounts for 40% of SB cancers. Incidence is rising, with an estimated 3600 cases per year in Europe, led by an increasing number of sporadic duodenal cases.[1,2] Besides known predisposing conditions (i.e. Coeliac, Crohn's and familial diseases), alcohol consumption and smoking have been identified as environmental risk factors for SBA.[3]

We reviewed cases of SBA in Aberdeen Royal Infirmary from 2010 to 2015 and compared with the available literature.

**Methods** We obtained all histology confirming SBA over the past 6 years from our Pathology Department. Patient case notes and electronic records were reviewed and relevant data as per literature review collected.

**Results** 28 cases of SBA were confirmed during 6 years: 17 male and 11 female (1.5:1 ratio). Mean age at diagnosis was 65 (46–82).19 cases (68%) from duodenum, 8 (28%) jejunum and 1 ileum. Majority were sporadic (22, 79%), 3 had Crohn's Disease, 2 genetic conditions (FAP and HNPCC) and

1 Coeliac disease.16 cases were diagnosed via radiology (57%), 10 (36%) via endoscopy and 2 incidentally at surgery. The commonest presentation was bowel obstruction (11, 39%), followed by melaena (6, 21%) and jaundice (3, 11%). Disease was advanced at time of diagnosis: 19 (68%) had at least T4N1 disease or metastasis. 17 patients (61%) died during this period with 76% mortality at 1 year. Average survival was 216 days.We found positive correlation between alcohol consumption and both staging and mortality in sporadic cancers (Pearson 0.8). The 3 youngest patients had Crohn's disease for >15 years with small bowel involvement, 2 had previous surgery and had been on Azathioprine for over 10 years, in 1 case this was discontinued for 12 years at time of cancer diagnosis. 1 Coeliac disease patient was diagnosed in his 7 th decade and developed duodenal cancer 6 years later.

**Conclusion** Our population findings are comparable to current literature. We confirm a high number of sporadic duodenal adenocarcinomas. Late presentation with bowel obstruction and an advanced stage of disease results in a high mortality, We demonstrated correlation between alcohol consumption and both mortality and disease severity. Smoking did not appear to be an environmental risk factor in our population. This may be due to our small sample size. Multi-centre collaboration would allow formation of larger registries and facilitate research in this area.


**REFERENCES**

1 Shenoy S, *et al*. J Gastrointest Cancer. 2014 Dec;**45**(4):421–30.
2 Chow JS, *et al*. International Journal of Epidemiology 1996;**25**:722–8.
3 M. Bennett, *et al*. Cancer Epidemiol 2015 Jun;**39**(3):265–73.


**Disclosure of Interest** None Declared

## PWE-052 AUDITING THE DIAGNOSTIC PROCESS OF COELIAC DISEASE IN PAEDIATRICS


H Jarad*, S McCann. *Stockport NHS Foundation Trust, Stockport, UK*



10.1136/gutjnl-2016-312388.298


**Introduction** The management of coeliac disease (CD) is clear, however agreement on paediatric diagnosis is debated. NICE dictates that TTG testing should be used front line, with EMA added if TTG is borderline, and referral to a specialist for a final diagnosis. ESPGHAN states that symptomatic patients with TTG > 10 times the upper limit (ULN) will most likely have villous atrophy and recommends the use of HLA DQ2/DQ8 as a rule in test to obviate the need for a biopsy. This audit reviewed our adherence to these guidelines over 4 years and investigated the reliability of serological and genetic testing as indicators of CD.

**Methods** TTG positive data (>7.0 kU/L) in those <16 years was collected from the Telepath Database System, from 02/11/11 to 11/11/15. Only data on newly suspected CD patients was used, n = 34. Monitored CD patients or those managed elsewhere were excluded. TTG testing was carried out on the Thermo Fisher ImmunoCAP 250. HLA results, biopsy results, and referral times were collated from the Advantis Document System.

**Results** Of the 34 patients, 28 were diagnosed with CD. 13 underwent a biopsy; 12 were positive and 1 was negative, most likely due to a GFD. 11 nonbiopsied patients underwent HLA testing; all 11 were positive. 4 had neither biopsy or HLA testing; 2 were diagnosed on positive TTG and EMA results, 1 was diagnosed on symptoms and a high TTG, and 1 was diagnosed on TTG alone, due to a biopsy refusal. The average dietician referral time post initial TTG was 164 days; 122 days for those undergoing HLA testing and 220 days for those undergoing a biopsy. Of the remaining patients, 4 were not diagnosed with CD and their average TTG = 13.4 kU/L; 2 had normal EMA results, 1 had a negative biopsy, and 1 had a normal repeat TTG. Of all patients, 24 had TTG > 10 ULN; 22 were diagnosed with CD, and 2 had early CD, but a GFD was not instigated. 1 was asymptomatic and did not consent to a biopsy, and 1 had a positive EMA and was awaiting HLA testing. 10 patients had TTG < 10 ULN; 2 were tested for EMA, 1 tested for HLA, and 5 had a biopsy.

**Conclusion** TTG was always used front line, but EMA was not assessed in all borderline cases. Symptomatic patients with TTG > 10 ULN, regardless of biopsy or HLA testing, were diagnosed with CD or early CD. HLA testing was not always utilised, with 46% of cases having a biopsy, however in all instances of HLA testing this occurred to obviate a biopsy. There is no indication of a minimum referral time to a dietician in the guidelines, but referral times are longer in those who underwent a biopsy, with the need to maintain a normal diet. The diagnostic process of CD is becoming streamlined as more consultants opt for serological and genetic testing, allowing for quicker management.

**Disclosure of Interest** None Declared

## PWE-053 MULTICENTRE EUROPEAN STUDY OF DOUBLE BALLOON ENTEROSCOPY IN PATIENTS WITH CARDIOVASCULAR DISEASE: A RELATIONSHIP WITHOUT HEARTBREAK?


[1]H-L Ching*, [2]F Branchi, [3]DE Yung, [3]A Koulaouzidis, [3]J Plevris, [4]L Elli, [1]DS Sanders, [1]R Sidhu. *[1]Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK; [2]Pathophysiology and Transplantation, Fondazione IRCCS Ca' Granda, Milan, Italy; [3]Centre of Liver and Digestive Disorders, Royal Infirmary of Edinburgh, Edinburgh, UK; [4]Gastroenterology and Endoscopy Unit, Fondazione IRCCS Ca' Granda - Milano, Milan, Italy*



10.1136/gutjnl-2016-312388.299


**Introduction** Double balloon enteroscopy (DBE) is a relatively invasive and lengthy procedure necessitating careful consideration of patients' comorbidities. We aim to assess the safety of DBE in patients with cardiovascular disease (CVD).

**Methods** Between June 2006 and January 2016, 568 consecutive patients undergoing DBE were reviewed across 3 teaching hospitals in the UK and Italy. Demographic and clinical data were collected and patients were categorised by age (elderly: ≥70 years and young: <70 years) and the presence or absence of CVD. Comparisons were made of diagnostic and therapeutic yields and complications rates.

**Results** CVD was present in 185 patients (mean age 70±9.7, 51% male) who underwent DBE for iron deficiency anaemia (54%) overt gastrointestinal bleeding (25%), suspected Crohn's disease (10%), small bowel strictures (6%) and suspected coeliac disease complications (4%). CVD (elderly vs young) included ischaemic heart disease (59% vs 68%, p = 0.2), valve replacement (23% vs 16%, p = 0.3), atrial fibrillation (31% vs 11%, **p < 0.05**) and congestive cardiac failure (21% vs 8.5%, **p < 0.05**). The 2 groups (elderly vs young) had similar propofol requirements (1320 mg vs 999 mg, p = 0.5), but midazolam (4 mg vs 5.5 mg, **p < 0.05**) and fentanyl (36.5 mcg vs 75 mcg, **p < 0.05**) use was less in the elderly. The most common abnormalities (elderly vs young) were

ulcers (5.5% vs 10%, p = 0.4), strictures (3% vs 3%, p = 1.0), tumours (2% vs 7%, p = 0.2) and angioectasias (43% vs 27%, **p < 0.05**). Diagnostic yield (67% vs 64%, p = 0.8) and complication rates (5.5% vs 2%, p = 0.3) were comparable. However, therapeutic yield was higher in the elderly (50.5% vs 33%, **p < 0.05**).

All CVD patients were compared to 383 patients without CVD (mean age 50±14.1, 44% male). Diagnostic yield was higher in those with CVD compared to those without (65% vs 50%, p < 0.05), as was therapeutic yield (42% vs 17%, p < 0.05). Irrespective of age, angioectasias were commoner in patients with CVD compared to those without (34.6% vs. 8.4%, p < 0.05). The difference seen in complications between both groups was not significant (2.7% vs 0.8%, p = 0.12). Complications seen in the CVD group included 2 cases of systemic infections, 2 cases of respiratory compromise and 1 case of myocardial infarction.

**Conclusion** We report the first multicentre study attesting the safety of patients with CVD undergoing DBE. Moreover, patients with CVD have higher diagnostic and therapeutic yield at DBE and thus with careful selection, these patients are most likely to benefit from the procedure.

**Disclosure of Interest** None Declared

## PWE-054 DOES DOUBLE BALLOON ENTEROSCOPY HAVE A ROLE IN THE YOUNG WITH IRON DEFICIENCY ANAEMIA? A MULTICENTRE EUROPEAN STUDY

[1]H-L Ching*, [2]F Branchi, [3]DE Yung, [3]A Koulaouzidis, [3]J Plevris, [4]L Elli, [1]DS Sanders, [1]R Sidhu. *[1]Gastroenterology, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK; [2]Pathophysiology and Transplantation, Fondazione IRCCS Ca' Granda, Milan, Italy; [3]Centre of Liver and Digestive Disorders, Royal Infirmary of Edinburgh, Edinburgh, UK; [4]Gastroenterology and Endoscopy Unit, Fondazione IRCCS Ca' Granda, Milan, Italy*

10.1136/gutjnl-2016-312388.300

**Introduction** Double balloon endoscopy (DBE) has been reported to have a high diagnostic yield in obscure overt gastrointestinal bleeding (OGB). There is paucity of studies of DBE for the indication of iron deficiency anaemia (IDA) alone particularly in the young. We investigated the utility of DBE in patients referred with IDA according to age.

**Methods** All consecutive patients undergoing DBE for IDA and OGB, between June 2006 and January 2016, across 3 teaching hospitals in the UK and Italy were included in the study. Demographic and clinical data were collected and patients were categorised by age (≥55 and <55 years) and those undergoing DBE for IDA or OGB. Diagnostic and therapeutic yields as well as complication rates were determined and compared. A secondary comparison was made between patients with IDA and overt bleeding in similar age groups.

**Results** 213 patients underwent DBE for IDA. 142 (66.7%) were age ≥ 55 years (mean age 69.6±8.6, 49.3% male) and 71 (33.3%) age <55 years (mean age 42.7±9.2, 66.2% male). The most common pathologies found at DBE (≥55 vs <55 years) were angioectasias (45.1% vs 18.3%, **p < 0.05**), tumours (4.9% vs 5.6%, p = 1), and ulcers (4.9% vs 8.5%, p = 0.37). Diagnostic yield was higher in those aged ≥55 years (≥55 vs <55 years; 64.1% vs 39.4%, **p < 0.05**). Therapeutic yield and complication rates on the other hand were comparable across both groups (30.3% vs 21.1%, p = 0.19 and 2.1% vs 4.2% p = 0.40 respectively).

Further comparisons between young patients aged <55 years with IDA and those in the same age group with OGB (n = 23, mean age 43.5±8.8, 47.8% male) revealed similar frequencies of angioectasias (18.3% vs 13%, p = 0.75), tumours (5.6% vs 8.7%, p = 0.63) and ulcers (8.5% vs 0%, p = 0.33). There was no difference in the rate of positive capsule endoscopy findings preceding DBE between the two groups (59.2% vs 47.8%, p = 0.47). Diagnostic yield (39.4% vs 47.8%, p = 0.63) and therapeutic yield (21.1% vs 17.4%, p = 1) were also comparable while the difference in complication rates did not reach statistical significance (4.2% vs 0%, p = 1) between young IDA and OGB patients.

**Conclusion** We present the first multicentre study evidencing the safety and high diagnostic yield of DBE in patients with IDA. Although the diagnostic yield is lower in the young, significant pathology is detected including tumours and ulceration, supporting the role of DBE in young patients with IDA.

**Disclosure of Interest** None Declared

## PWE-055 COELIAC DISEASE IS MORE COMMON IN SUBJECTS WITH POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME COMPARED TO HEALTHY CONTROLS

[1]HA Penny*, [1]I Aziz, [2]M Ferrar, [1]J Atkinson, [3]N Hoggard, [4]M Hadjivassiliou, [2]JN West, [1]DS Sanders. *[1]Academic Department of Gastroenterology; [2]Department of Cardiology; [3]Department of Radiology; [4]Department of Neurology, Sheffield, UK*

10.1136/gutjnl-2016-312388.301

**Introduction** Patients with the postural tachycardia syndrome (PoTS) have anecdotally reported symptom improvement on a gluten-free diet (GFD) but there has been no association study between PoTS and coeliac disease. Therefore, we aimed to evaluate the prevalence of coeliac disease and self-reported gluten sensitivity in a cohort of patients with PoTS and compare this with local population data.

**Methods** 100 PoTS patients were recruited from the syncope clinic to complete a validated questionnaire which screened for gluten sensitivity and related symptoms. Case notes were reviewed for relevant GI diagnoses. For comparison, the local coeliac prevalence was determined from a total of 1200 controls (Control Group 1) and a further 400 controls (Control Group 2; frequency matched for age and sex) filled out the same questionnaire.

**Results** Four out of a hundred (4%) patients with PoTS had serology and biopsy-proven coeliac disease. This was significantly higher than the prevalence of coeliac disease in Control Group 1 (12/1200, 1%; OR 4.1, 95% CI 1.3 to 13.0; p = 0.02). In comparison with Control Group 2, patients with PoTS had a higher prevalence of self-reported gluten sensitivity (42% versus 19%; p < 0.001), coeliac disease (4% versus 1%; p = 0.04) and IBS (36% versus 9%; p < 0.0001).

**Conclusion** There is a high prevalence of coeliac disease and self-reported gluten sensitivity in patients with PoTS. We advocate screening for the gluten-related disorders in patients with PoTS. Further studies are required to ascertain the nature of this relationship.

**Disclosure of Interest** None Declared

## PWE-056 URINARY METABOLOMIC PROFILING IN PATIENTS WITH ULCERATIVE COLITIS (UC)

[1]D Watson, [2]DR Gaya, [3]IA Alothaim*. [1]1. Strathclyde Institute of Pharmacy and Biomedical Sciences, 161 Cathedral Street, Glasgow G4 0RE; [2]Glasgow Royal Infirmary, 2. Gastroenterology Unit, Glasgow Royal Infirmary, Castle Street, Glasgow G4 0SF; [3]Pharmaceutical Analysis, Strathclyde University, Glasgow, UK

10.1136/gutjnl-2016-312388.302

**Introduction** Metabolomic profiling is a technique which can be used for the discovery of biomarkers which could be used for the non-invasive diagnosis and monitoring of disease by sampling bodily fluids. We investigated urinary metabolomic profiles of patients with active UC, quiescent UC and controls with IBS attending the GI clinic at Glasgow Royal Infirmary.

**Methods** After obtaining written informed consent, urine samples were collected from 51 patients attending the GI clinic with a confirmed diagnosis of either active UC (12), quiescent UC (26) controls with IBS (14). The samples were analysed by liquid chromatography interfaced with an Orbitrap mass spectrometer. The data generated were modelled by using Simca P 14.

**Results** Figure 1 shows comparison of profiles from 12 patients with active UC in comparison with 14 controls based on ten metabolites listed in table 1 with their *p* values and ratios.

**Figure 1** Orthogonal partial least squares discriminant analysis model comparing patients with active IBD (AM) and controls (CF). $R^2X$(cum) 0.985, $R^2Y$ (cum) 0.889, $Q^2$ (cum) 0.782.

**Table 1** Markers used in the model (Figure 1) separating controls and active UC.

**Conclusion** Separation between active UC and control samples is clear based on ten metabolites. N-methyl histidine has been observed as a marker of increased protein turnover in IBD[1] and is elevated in active UC samples in the current dataset along with its metabolite N-methylimidazolone acetate. Glutamine is higher in the IBD samples and is essential for the preservation of gut integrity,[2] although how this relates to elevated levels of glutamine in urine is not clear. In addition levels of rhamnose, arabinoate and mannonate which are derived from dietary fibre are altered. Overall there are strong indicators of metabolic changes in the urine of patients with active UC. Some of the putative markers e.g. glutamine are relatively abundant and may be suitable for a simple urinary test. The next stage will be to quantify these markers, validate the findings in a larger cohort and to determine whether they are also present in saliva (also collected from this cohort).

**Disclosure of Interest** None Declared

## PWE-057 DOES RESTRICTION OF GLUTEN-FREE PRESCRIPTION FOODS AFFECT PEOPLE WITH COELIAC DISEASE?

M Kurien*, WL White, N Trott, DS Sanders. *Academic Unit of Gastroenterology, Royal Hallam Shire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.303

**Introduction** A gluten-free diet (GFD) is the mainstay of treatment for coeliac disease (CD). Since the late 1960 s prescriptions for gluten-free foods have been widely available, helping CD patients maintain dietary adherence and reduce complications. In Scotland and Wales GF foods are widely prescribed in accordance with the National Prescribing Guidelines. In England however, whilst the vast majority of Clinical Commissioning Groups (CCGs) are following this guidance some have chosen not to. This has lead to the reduction or removal of prescriptions in certain parts of England. This cohort study examines the influence restriction or removal of GF prescriptions may have on CD patients.

**Methods** Between September and October 2015, CD patients and carers of CD patients were approached from 4 differing CCG areas (North Norfolk, West Suffolk, Oxfordshire, Vale of York). These CCG areas were specifically selected as areas where CCGs had either restricted or removed GF prescriptions. All participants were asked to complete an online questionnaire, with information requested pertaining to prescriptions, availability of GF foods, costs incurred and what influence changes to prescriptions have had on health. Findings from this work were then compared to a previous study assessing primary care trusts, undertaken in 2013 (n = 1000).[1] Statistical analyses was performed using SPSS version 20.0, with $X^2$ statistics used to compare categorical data.

**Results** 25.0% (894/3586) of invited individuals completed the online questionnaire (632 F: 262 M, mean age of 59.2 years). Compared to the 2013 cohort, there was a significant reduction in the number of patients receiving gluten-free prescriptions (63% versus 70%, $p < 0.001$). Nearly 60% (514/894) of respondents felt less supported in the management of their CD due to changes in their prescription, with only 37.2% (333/894) currently meeting national guideline standards by having an annual follow-up appointment. Although only 6.7% (n = 60) felt that the prescription changes had directly affected their health, costs incurred to them had increased (median weekly cost = £8.62). Although not statistically significant, the greatest detriment to health was noted in those having complete removal of their GF prescriptions (North Norfolk 9.1%).

**Conclusion** Although this study is confined to only 2% (4/209) of all CCGs in England, it raises concerns as to how the restriction and removal of gluten-free prescriptions can affect patients with CD. Given these findings, further work should now aim to establish whether prescription restriction is a false economy, as detriment may ensue due to poor dietary adherence and the development of serious long-term complications.

### REFERENCE

1 The impact of the restrictions to gluten-free prescription foods on people with Coeliac Disease. *BSNA*. 2013.

**Disclosure of Interest** None Declared

## PWE-058 THE ROLE OF A POINT OF CARE TEST, SIMTOMAX, IN PREDICTING HISTOLOGICAL REMISSION IN COELIAC DISEASE ON A GLUTEN FREE DIET

MS Lau*, PD Mooney, WL White, M Burden, SH Wong, M Kurien, DS Sanders. *Academic Department of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.304

**Introduction** Coeliac disease (CD) is a chronic inflammatory enteropathy treated with a gluten free diet (GFD). Clinical symptoms and complications of CD are thought to be associated with ongoing duodenal inflammation due to continued gluten exposure, hence the optimal assessment of response to a GFD is histological remission. However, there is little

consensus in the UK on routine re-biopsy during follow up. Duodenal biopsy requires a gastroscopy which is invasive and can be poorly tolerated. Coeliac serology and dietetic evaluation have been used as surrogate markers for histological remission, but the correlation has been shown to be poor. We aimed to assess the role of an IgA/G-deamidated gliadin peptide (DGP) based point of care test (POCT), Simtomax, in predicting histological remission in CD.

**Methods** We prospectively recruited patients with known CD attending for a gastroscopy with duodenal biopsy for the assessment of disease remission. All patients underwent a blood test for IgA-endomysial antibodies (EMA), IgA-tissue transglutaminase antibodies (TTG), total IgA levels and Simtomax at the point of endoscopy. They also completed a validated GFD adherence questionnaire (Biagi) which gives a 5 point score (0–4), with the highest score indicating strict adherence to a GFD. Patients with an adherence score of 3 or 4 were considered to follow a strict GFD. A gastroscopy was then performed with quadrantic biopsies taken from the second part of the duodenum and one biopsy taken from the duodenal bulb. We compared all surrogate markers to the gold standard of duodenal histology.

**Results** 145 (74% female, median age 53) patients with CD on a GFD were recruited from 2013–2015. 52 (36%) patients had persistent villous atrophy. Simtomax was the most sensitive in predicting villous atrophy (78.8%). The sensitivities of EMA, TTG and the GFD adherence score were significantly lower than that of Simtomax. Simtomax had the best negative predictive value (NPV) for villous atrophy at 82.5%.

**Abstract PWE-058 Table 1**

| Surrogate marker | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) |
|---|---|---|---|---|
| Simtomax | 78.8 (78.5–79.2) | 55.9 (55.6–56.2) | 50 (49.7–50.3) | 82.5 (82.2–82.8) |
| TTG | 51.9 (51.5–52.4) | 80.6 (80.4–80.9) | 60 (59.5–60.5) | 75 (74.7–75.2) |
| EMA | 36.5 (36.1–37.0) | 83.9 (83.6–84.1) | 55.9 (55.3–56.4) | 70.3 (70.0–70.5) |
| Adherence score | 23.1 (22.7–23.4) | 82.8 (82.6–83.0) | 42.9 (42.3–43.4) | 65.8 (65.5–66.1) |

**Conclusion** Simtomax exceeds all other available surrogate markers in predicting the presence of villous atrophy. Simtomax could be used to aid informed decision making in patients who require but are reluctant to undertake a gastroscopy for duodenal biopsy to assess for disease remission. It could also act as a useful adjunct to identify patients who may require further dietetic support.

**Disclosure of Interest** M. Lau: None Declared, P. Mooney: None Declared, W. White: None Declared, M. Burden: None Declared, S. Wong: None Declared, M. Kurien: None Declared, D. Sanders Grant/research support from: Tillotts Pharma for investigator led studies in coeliac disease. None of the funding sources had any input in the study design, access to study data, interpretation of the findings or drafting of the abstract.

## PWE-059 NOROVIRAL 3C PROTEASE: A TARGET FOR DEVELOPMENT OF AN EFFECTIVE ANTIVIRAL AGENT

N Tan*, JJ Tan, JB Cooper. *Wolfson Institute for Biomedical Research, Division of Medicine, University College London, London, UK*

10.1136/gutjnl-2016-312388.305

**Introduction** Norovirus is the most common cause of viral gastroenteritis in man. It affects approximately 267 million people/annum and, although usually self-limiting, infection is still associated with around 200,000 deaths/annum. Norovirus infection has a significant, detrimental impact on societal infrastructure; it is the leading pathogen responsible for forced-ward closures in the NHS. There are no specific treatments available; the most promising target for antiviral therapy is noroviral 3 C protease (3 CLpro) which processes the polyprotein essential for the production of viral proteins. Inhibiting 3 CLpro would stop viral replication. This study focused on the function of 3 CLpro, especially the cleavage sites from its precursor.

**Methods** The wild-type (WT) 3 CLpro sequence was altered with a cysteine to alanine base substitution to create a 3 CLpro mutant with greatly reduced catalytic activity. The mutant was expressed in *E.coli* and purified using ion exchange and size-filtration chromatography. Protein expression was confirmed by gel electrophoresis and Western blotting. The specificity of 3 CLpro was studied using a spectrophotometric assay and the rates of reaction of mutant and WT 3 CLpro with substrate were compared. The chemical composition of mutant and WT 3 CLpro were examined using mass spectroscopy.

**Results** Western blot analysis showed multiple bands indicating that both WT and mutant 3 CLpro appeared to be cleaved out of their precursor. Enzyme kinetic studies, however, confirmed that mutant 3 CLpro had negligible catalytic activity; the WT 3 CLpro's turnover rate of catalytic activity was 25 times faster than that of mutant 3 CLpro. Mass spectrometry of mutant 3 CLpro generated a mass spectrum and transformed to a protein mass of 18,747.5. This confirmed the identity of noroviral 3 CLpro, which is 19 kDA.

**Conclusion** Mutant 3 CLpro was still cleaved out of its precursor despite the fact that it has negligible catalytic activity. The most likely explanation is that the cleavage was effected by an *E.coli* protease, possibly a metalloprotease, acting at the upstream and downstream boundaries thereby releasing the processed mutant 3 CLpro. The fact that mutant 3 CLpro can be cleaved out of its precursor by host-cell proteases raises the possibility that WT 3 CLpro could also be processed by exogenous proteases, rather than cleaving itself from its precursor. If this action by host cell proteases occurs *in vivo*, then it might indicate that the norovirus 3 CLpro is only needed for the cleavage of polyproteins within the newly formed virions, which do not have access to host cell proteases. This has significant implications for future research.

**Disclosure of Interest** None Declared

## PWE-060 CAPSULE ENDOSCOPY IN THE INVESTIGATION AND MANAGEMENT OF SMALL BOWEL CROHN'S DISEASE

N Zuhra*, S Sartain, J Gordon, D Lloyd. *Department of Gastroenterology, Royal Hampshire County Hospital, Winchester, UK*

10.1136/gutjnl-2016-312388.306

**Introduction** Capsule endoscopy (CE) is increasingly being used to visualise the small intestine in patients with known or suspected Crohn's disease. The aim of this study was to review the use of CE for this purpose over a two year period in a medium sized DGH following the creation of a new CE service.

**Methods** Electronic records of all patients undergoing CE between 1st April 2013 and 31st March 2015 were reviewed. Patients who underwent the procedure to investigate for possible small bowel Crohn's disease (based on clinical, biochemical and/or endoscopic suspicion) or to assess previously diagnosed Crohn's disease we identified. Record was also made of contemporaneous faecal calprotectin results and ileal appearances at colonoscopy.

**Results** Twenty-four patients underwent CE to investigate possible small bowel Crohn's disease. Of these, 11 (46%) had CE findings supportive of Crohn's disease. 5 of these 11 patients had contemporaneous faecal calprotectin measurement of which 4 (80%) were positive. Eight of these 11 patients had contemporaneous ileal intubation of which 7 (88%) showed evidence of ileitis. Of the 13 patients with normal CE findings, 8 had faecal calprotectin measurement of which only 1 (12%) was positive. Eleven of the 13 patients had contemporaneous ileal intubation of which 4 (36%) showed mild ileitis.

Ten patients underwent CE to assess known small bowel Crohn's disease. CE was normal in 4 cases and showed evidence of active small bowel Crohn's in 6 cases. Of the 4 patients with normal CE findings, 2 had faecal calprotectin measurement of which both were normal and 3 had ileal intubation which showed no evidence of inflammation in all cases. Of the 6 patients with CE findings suggestive of active small bowel Crohn's, 5 had faecal calprotectin measurement of which 4 (80%) were normal and all 6 had ileal intubation which showed ileitis in 4 (67%).

**Conclusion** In patients with suspected small bowel Crohn's disease CE findings supported this diagnosis in nearly half of patients and CE findings correlated well with faecal calprotectin measurement and ileal appearances at colonoscopy. However, in patients undergoing CE to assess known small bowel Crohn's, CE showed active disease in 57% of patients with normal faecal calprotectin measurement although there was better correlation between CE findings and ileal appearances at colonoscopy. This suggests that CE is an informative test in both the investigation and ongoing management of small bowel Crohn's disease, and may be a more sensitive test of small bowel Crohn's disease than faecal calprotectin.

**Disclosure of Interest** None Declared

## PWE-061 DYSBIOSIS IN PATIENTS WITH BILE ACID DIARRHOEA (BAD) DEMONSTRATED USING 16S RNA GENE SEQUENCING

[1]N Sagar*, [2]G Kay, [3]N O'Connell, [3]C Nwokolo, [4]K Bardhan, [2]C Quince, [2]M Pallen, [4]R Arasaradnam. *[1]School of Medicine; [2]School of Microbiology, University of Warwick; [3]Gastroenterology, University Hospitals Coventry and Warwickshire; [4]Clinical Sciences Research Institute, University of Warwick, Coventry, UK*

10.1136/gutjnl-2016-312388.307

**Introduction** The gastrointestinal tract harbours a diverse community of approximately $10^{14}$ microorganisms comprising 500 to 1000 bacterial species.[1] Dysbiosis occurs when pathological imbalances in the gut bacterial community precipitate disease and has been linked to the dysmetabolism of bile acids (BAs) in the gut. 1–2% of primary BAs escape the enterohepatic circulation and undergo microbial biotransformation in the large bowel to form the secondary BAs, deoxycholic acid (DCA) and lithocholic acid (LCA).[2] BA metabolites as a result of microbial transformations act as signalling molecules via the Farnesoid X receptor (FXR). Activation of the ileal FXR stimulates expression of Fibroblast Growth Factor 19 (FGF-19), which binds hepatic FGF-4 and activates JNK1/2 and ERK1/2 to impede the physiological feedback of BA synthesis and maintain a functional BA pool.[3] The degree of activation of BA receptors is influenced primarily by the gut microbiota and therefore dysbiosis may result in abnormal BA modification leading to the development of gastrointestinal disease.

To enhance our understanding of gut dysbiosis in patients with BAD, 16 S rRNA gene sequencing was undertaken to investigate bacterial communities from faecal samples in patients with BAD and IBS.

**Methods** 35 patients (20 with BAD and 15 with IBS) were recruited from the nuclear medicine department at University Hospitals Coventry and Warwickshire NHS Trust after referral from the gastroenterology clinic for a SeHCAT scan to investigate chronic diarrhoea. The patients with BAD had either Type 1 with a diagnosis of Crohn's disease, type 2 or type 3 post cholecystectomy. Stool samples were stored at -80ºC within two hours of collection and then defrosted for 45 minutes at room temperature prior to analysis. 16 s RNA sequencing was undertaken by isolating DNA from stool samples using the QIAamp Fast DNA Stool Extraction kit. V3-V4 primers and extensor ready mix (Thermo scientific) were used to amplify the 16 s rRNA gene sequences from isolated metagenomic DNA. The eluted DNA was then quantified using the broad-range Qubit kit. DNA was analysed by electrophoresis on 1% agarose gels and purified post-PCR. The DNA was then denatured and sequenced on a MiSeq using the Illumina Miseq V2 2x250 bp paired end protocol. Bioinformatic statistical analysis was undertaken using QUIIME and the UPARSE pipeline.

**Results** The rarefaction plots showed reduced diversity in BAD patients compared with IBS; $p = 0.0007216$. This was also confirmed using the Shannon's diversity index. The abundance of certain taxa namely Lachnospiraceae ($p = 0.00134$), Rumiinococcus ($p = 0.0034$) and Prevotella ($p = 0.0046$) were reduced in patients with BAD.

**Conclusion** We have shown that diversity in those with BAD is significantly reduced compared to those with IBS with certain phyla predominating.

### REFERENCES

1 Gérard P. Metabolism of Cholesterol and Bile Acids by the Gut Microbiota. *Pathogens* 2014;**3**:14–24.
2. Vlahcevic ZR, Heuman DM, Hylemon PB. Physiology and pathophysiology of enterohepatic circulation of bile acids. In D. Zakim and T. Boyer, editors. Hepatology: A Textbook of Liver Disease. 1996, 3rd edition. Vol. 1. Saunders, Philadelphia, PA. 376–417
3 Tsuei J, Chau T, Mills D, *et al*. Bile acid dysregulation, gut dysbiosis, and gastrointestinal cancer. *Exp Biol Med (Maywood)*. 2014 Nov;**239**(11):1489–504.

**Disclosure of Interest** None Declared

## PWE-062 FRUCTOSE INTOLERANCE IN PELVIC RADIATION DISEASE; IS IT MORE COMMON THAN WE REALISED?

[1]R Stacey*, [2]N Langasco, [1]H Ludlow, [1]J Turner, [1]J Green. [1]*Gastroenterology, University Hospital Llandough*; [2]*Cardiff University, Cardiff, UK*

10.1136/gutjnl-2016-312388.308

**Introduction** Guidelines have recently been published regarding the management of Pelvic Radiation Disease (PRD) and late effects of cancer care.[1] The guidelines have been shown in peer reviewed studies to be effective in the management of PRD.[2] The guidelines include a number of investigations for certain symptoms and include carbohydrate tolerance tests for substrates such as fructose. That said there are currently no published case series or studies evaluating the prevalence and diagnostic yield of fructose breath testing in PRD. We have recently set up a dedicated late effects of cancer care and pelvic radiation disease clinic in Cardiff and audited the results of our fructose tolerance breath tests. Patients with diarrhoea, bloating or abdominal pain were investigated with fructose breath testing as per these guidelines.

**Methods** We audited the results for all fructose breath tests in 2014 in patients with suspected PRD via a database search and correlation with clinical notes. Total of 82 patients were identified as having a fructose breath tests in the 1 year period) 20 of which were being investigated for suspected PRD. (10 Male, 10 female, median age 65.5)

**Results** 45% of fructose breath tests in patients with suspected PRD were positive (n = 9) All of these patients were referred with either diarrhoea, bloating or abdominal pain. Of these patients with positive tests, 44% were found to have a dual pathology (n = 4) with other diagnoses including small intestinal bacterial overgrowth, lactose intolerance and bile acid diarrhoea.

**Conclusion** Fructose intolerance is common in patients with diarrhoea, bloating and abdominal pain in PRD. The diagnostic yield of testing is high and should be considered as a differential diagnosis in these patients. It is important to recognise that dual pathology frequently occurs and that an algorithmic approach is useful in these patients.

### REFERENCES

1 Andreyev HJN, Muls AC, Norton C, Ralph C, Watson L, Shaw C, *et al*. Guidance: The practical management of the gastrointestinal symptoms of pelvic radiation disease. Frontline Gastroenterology [Internet]. BMJ Publishing Group Ltd; 2014 Jun 17;flgastro–2014–100468. Available from: http://fg.bmj.com/content/early/2014/06/17/flgastro-2014-100468.abstract

2 Andreyev HJN, Benton BE, Lalji A, Norton PC, Kabir M, GaugeGage PH, *et al*. ArticlesAlgorithm-based management of patients with gastrointestinal symptoms in patients after pelvic radiation treatment (ORBIT): a randomised controlled trial. Lancet. Elsevier Ltd; 2013 Sep 20;1–9.

**Disclosure of Interest** None Declared

## PWE-063 ANNUAL REVIEW OF PATIENTS WITH COELIAC DISEASE IN THE COMMUNITY? – A PATIENT SURVEY

[1]E Copeland, [2]J Smith, [1]K Eaton, [3,3]S Gupta*. [1]*Dietetics, Croydon University Hospital*; [2]*Representative, Coeliac UK*; [3]*Gastroenterology, Croydon University Hospital, Croydon, Surrey, UK*

10.1136/gutjnl-2016-312388.309

**Introduction** Patients with stable coeliac disease in Croydon are discharged back to their General Practitioners with a yearly follow-up protocol. We conducted a patient survey to evaluate its uptake and to ascertain the views of patients about their follow-up.

**Methods** An online survey was designed and sent to all patients registered with Croydon group of Coeliac UK and had an e-mail address in February 2015. A reminder was sent to all members after 6 weeks. The responses were computed in May 2015, presented to Croydon Coeliac UK members and sent to the CCG. Paper copies were also given out at a group meeting.

**Results** Of the 233 registered members, the survey questionnaire was sent electronically to about 200 patients at 9 post codes in Croydon. There were 101 responses of which 82 were complete. 94% responders were over 18 years of age. 60% patients never received an appointment from their GP for an annual follow-up (n = 84). Only 50% patients had a follow-up in the previous year. Most recent review was conducted by GP in 37% cases, GP practice nurse in 8%, Deititian in 20%, local gastroenterologist 32% (n = 76). Overall 80% patients had seen a dietitian (n = 85). 70% (n = 87) had been offered DEXA scan for bone mineral density. About 65% had a blood test in the last year (n = 87). Calcium, haematinics, vitamin D, coeliac antibodies were checked in about 40–50% patients (n = 34) with 66% receiving feedback on the results (n = 47). Apart from enquiry about gluten free diet in 78% cases, all other questions relating to coeliac disease were discussed in less than 40% cases (n = 60). Vaccinations were discussed in only 8% cases and membership of Coeliac UK in 18%. Only 43% of patients were offered a yearly follow-up while 7% were referred to the hospital gastroenterologist (n = 57).

When asked about the expectations of patients, 90% wanted an annual follow-up (n = 78) with 37% preferring to see their GP, 9% GP practice nurse, 21% dietitians, 27% gastroenterologist (n = 75). Of the 77 respondents, 46% said they would be happy to attend dietitian led group sessions, 38% preferred not to while 17% had no opinion.

**Conclusion** The annual follow-up of patients with coeliac disease in the community is patchy. The quality of this appointment is also inadequate. If these results can be replicated more widely, there may be a place for specialist community clinics with links between GP, dietitians and local gastroenterologists.

**Disclosure of Interest** None Declared

## PWE-064 THE UTILITY OF AN ENTERIC BACTERIAL PCR PANEL IN EVALUATING PATIENTS WITH DIARRHOEA AND RAISED FAECAL CALPROTECTIN

[1]S Kumar, [2]J Taylor, [2]T Planche, [1]C Alexakis*, [1]A Soubriere, [1]A Poullis, [1]R Pollok. [1]*Department of Gastroenterology*; [2]*Department of Microbiology, St George's University Hospitals NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.310

**Introduction** Faecal calprotectin (FCP) assay has an important role in identifying potential cases of inflammatory bowel disease (IBD). However, a significant proportion of patients presenting with diarrhoea and raised FCP do not prove to have IBD following investigation of whom a proportion have an acute self-limiting gut infection. Enteric pathogens are alternative causes of a raised FCP. Alleviating the need for endoscopy in the patients will save money and reduce patient anxiety. However, conventional laboratory methodologies are time consuming and insensitive in detecting gut infection. Commercial

nucleic acid amplification test (NAAT) technology now makes it possible to test stool for a panel of gut pathogens quickly and relatively cheaply. In this pilot study, we evaluated this technology in detecting gut infection amongst patients with a diarrhoeal illness and raised FCP, presenting in the community.
**Methods** Ninety patients with diarrhoea had stool samples submitted from the community to the laboratory for FCP measurement. Samples were anonymised before testing with NAAT (BD MAX™ Enteric Bacterial Panel). The targets of this assay are *Salmonella spp.*, Campylobacter spp. Shigella (*Shigella spp*. and enteroinvasive *E. coli*) and verotoxigenic *E coli*. Samples were stratified by FCP level into sub-groups (n = 30): <50, 50–150, >150 μg/g stool and analysed for the presence and type of gut infection found. All samples were also cultured using standard media.
**Results** 2/30 samples tested (7%, 95% CI 8–23%) with FCP > 150 μg/g tested positive by NAAT for Campylobacter. No patients with FCP below 150 μg/g had a detectable pathogen. No samples were positive by conventional culture methods.
**Conclusion** This pilot study supports a role for the use of multiplex NAAT in detecting enteric pathogens amongst patients with diarrhoea and raised FCP. Prospective studies are required to evaluate this approach further which offers the potential to refine the IBD referral pathways from primary care and reduce the need for endoscopic and radiological tests.
**Disclosure of Interest** None Declared

## PWE-065 SMALL BOWEL MALIGNANCIES DIAGNOSED AT ENTEROSCOPY: AN IMPROVED OUTCOME?

S Sidhu*, HY Lee, R Willert. *Department of Endoscopy, Manchester Royal Infirmary, Manchester, UK*

10.1136/gutjnl-2016-312388.311

**Introduction** Small bowel malignancies are uncommon worldwide and account for only 1–2% of all gastrointestinal malignancies.[1] However there is evidence of the rising incidence of small bowel malignancies through the last decades, with increases as high 2.3 per 100 000 population from 1973 to 20042.[2-3] We sought to investigate the number of small bowel malignancies diagnosed by double balloon enteroscopy (DBE) and the 1 year outcomes at our institution.
**Methods** We retrospectively reviewed all the DBEs performed at our UK tertiary centre from 2009 to 2015. Demographics, indications for DBE investigation, prior investigations, DBE findings and 12 month mortality were analysed.
**Results** 294 DBEs were performed where 19 small bowel cancers were discovered. The original symptoms were anaemia (83.3%, n = 15), vomiting (11.1%, n = 2), and weight loss (5.6%, n = 1). All patients had undergone radiological imaging (76.5%, n = 13) or capsule endoscopy (58.8%, n = 10) prior to DBE. In 33.3% (n = 6) both radiological imaging and capsule endoscopy had been performed. The indication for DBE was abnormal capsule (41.2%, n = 7), abnormal imaging (52.9%, n = 9) and abnormal capsule and imaging (5.9%, n = 1). The histology findings were jejunal adenocarcinoma in 52.9% (n = 9), distal duodenal adenocarcinoma in 29.4% (n = 5), jejunal GIST in 11.8% (n = 2) and enteropathy associated T cell lymphoma in 5.9% (n = 1). 11 patients (57.9%) had capsule endoscopy prior to DBE, capsule endoscopy failed to diagnoses a malignancy in 3 patients (27.3%) who were subsequently found to have a malignancy on DBE (2 patients with Jejunal GIST and 1 patient with jejunal adenocarcinoma). In these 3 patients the capsule finding was reported as showing angiodysplasia. All the malignancies were deemed suitable for therapy by a multidisciplinary team. The treatment was surgery alone in 52.9% (n = 9), surgery and chemotherapy in 23.5% (n = 4) and chemotherapy alone in 17.6% (n = 3). The survival rate at 3 months was 88.2% and 66.7% at 1 year. In the patients with a diagnosis of adenocarcinoma the 1 year survival rate was 85.7%.
**Conclusion** The 1 year survival of 85.7% is significantly higher than previous reports (survival rate of 30% at 1 year from small bowel adenocarcinoma)[4] and may reflect the improved outcomes from earlier diagnosis using capsule and DBE. DBE also aided in the diagnosis of tumours not seen on video capsule endoscopy, as described in literature.[5]

### REFERENCES

1 Chow JS, *et al*. Int J Epidemiol 1996;**35**:722–728
2 Haselkorn T, *et al*. Cancer Causes Control. 2005;**16**:781–7.
3 Shack LG, *et al*. Aliment Pharmacol Ther. 2006;**23**:1297–306.
4 MH Fargat, A Shamseddine and K Barada. Small Bowel Tumours: Clincial presentation, prognosis and outcomes in 33 patients in a tertiary care centre. *Journal of Oncology* 2008.
5 Chong AK, *et al*. Gastrointest Endosc. 2006;**64**:445–9.

**Disclosure of Interest** None Declared

## PWE-066 IMPACT OF A CAPSULE ENDOSCOPY SERVICE ON THE MANAGEMENT OF IRON DEFICIENCY ANAEMIA

S Sartain*, N Zuhra, D Lloyd. *Department of Gastroenterology, Royal Hampshire County Hospital, Winchester, UK*

10.1136/gutjnl-2016-312388.312

**Introduction** Capsule endoscopy (CE) is increasingly being used to investigate iron deficiency anaemia (IDA) when bidirectional endoscopy does not find a cause although current guidelines do not recommend routine small intestinal investigation unless symptoms or recurrent/refractory IDA.[1] The aim of this study was to review the use of CE in the investigation of IDA over a two year period in a medium sized DGH following the creation of a new CE service.
**Methods** Electronic records of all patients undergoing CE between 1st April 2013 and 31st March 2015 were reviewed. Indication for CE was recorded along with the result of the investigation. Clinic letters were reviewed to assess the impact of CE on patient management.
**Results** Over the study period 97 CE procedures were performed. Fifty (52%) procedures were performed to investigate IDA, 34 (35%) for investigation of possible or known Crohn's disease; 4 (4%) for polyposis and 9 (9%) for other indications.

Of the 50 CE procedures for IDA, 18 (36%) showed abnormalities in the small bowel; these included polyps (28%), vascular lesions (33%) and ulcers (28%). No malignancy was found over the 2 year period although one large (3 cm) polyp exhibited high grade dysplasia. Thirteen procedures (26%) showed gastroduodenal pathology but no small bowel abnormality. There was no difference between the mean ages of patients with normal compared to abnormal small bowel CE findings (56.9 years old vs 57.6 years old).

In 8 of the 18 cases (44%) where small bowel abnormalities were found there was a subsequent change in patient management; this included surgery to remove polyps,

endoscopic treatment of vascular lesions and medication changes. Thirty-eight patients (76%) were discharged from clinical follow up following CE with advice to continue long-term iron supplementation; this included 8 patients with abnormalities seen at CE.

**Conclusion** Over a third of patients undergoing CE to investigate IDA were found to have small bowel pathology. However less than half of these findings resulted in significant management changes. In total CE findings altered clinical management in only 16% of patients although it did allow 76% of patients to be discharged from further clinical follow-up. Clinical factors such as age did not appear to predict the presence of small bowel pathology. As a result, the role and timing of CE in the investigation of IDA remains uncertain.

## REFERENCE

1 Guidelines for the management of iron deficiency anaemia. Goddard, *et al*. on behalf of the British Society of Gastroenterology 2011.

**Disclosure of Interest** None Declared

## PWE-067 THE EFFECT OF BODY POSITION ON BASELINE OESOPHAGEAL IMPEDANCE

[1,2]A Bray*, [1,2]A Davidson. [1]*Medical Physics, County Durham and Darlington NHS Foundation Trust, Durham*; [2]*Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK*

10.1136/gutjnl-2016-312388.313

**Introduction** Our initial experience with 24 hour pH-impedance (pHZ) recording revealed a higher than expected proportion of patients with extended periods of low nocturnal baseline impedance (BImp). Suspecting that this was not always caused by uncleared refluxate, we wished to investigate causes of low BImp. Our aim was to examine the effect of body position on BImp in patients with and without mucosal injury.

**Methods** We conducted a retrospective review of 24 hour pHZ data from all patients who have undergone testing within our facility from October 2013 to December 2015. BImp was calculated by averaging 12 × 30 second windows (one window per 2 hour segment) avoiding swallows, reflux events, meals and beverages.[1] Extent of mucosal injury was determined from gastroscopy.

**Results** Data from 115 patients (75 without mucosal injury and 40 with grade A to C oesophagitis or Barrett's oesophagus) were analysed. Overall BImp was dependent upon both extent of mucosal injury (decreasing with increasing mucosal injury) and distance above the lower oesophageal sphincter (LOS) (decreasing distally). In patients *without* mucosal injury, BImp was only channel-dependent in the upright position. In patients *with* mucosal injury, BImp was channel-dependent, and more so, in both positions. These results are illustrated in Figure 1.

**Conclusion** The difference between upright and supine BImp in patients without mucosal injury at proximal channels may be caused by poorer contact between impedance sensors and mucosa when upright and is therefore unlikely to be clinically significant. The strong dependence of BImp upon channel in patients with oesophagitis suggests that mucosal injury worsens towards the LOS, as expected. One explanation for the difference between upright and supine BImp in these patients at 7 and 9 cm may be more uncleared refluxate at these channels whilst supine.

## REFERENCE

1 Kessing BF, Bredenoord AJ, Weijenborg PW, *et al*. Esophageal acid exposure decreases intraluminal baseline impedance levels. *Am J Gastroenterol* 2011;**106**:2093–7.

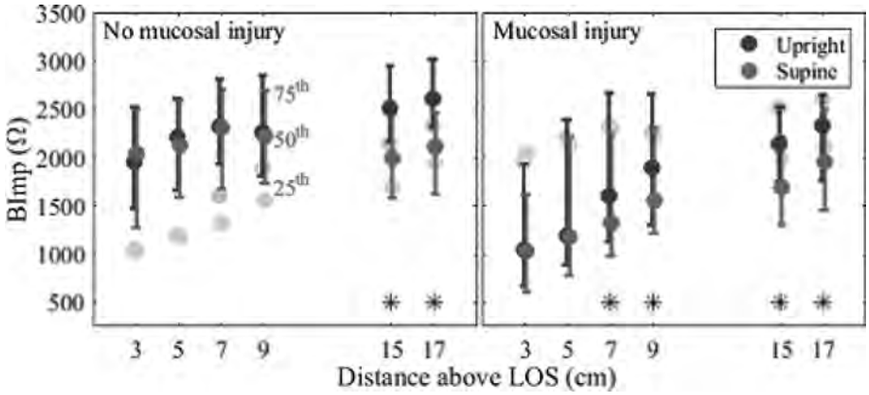
**Disclosure of Interest** None Declared

## PWE-068 HIGHER DIAGNOSTIC YIELD, YOUNGER AGE AND IMPROVED PERFORMANCE STATUS AT DIAGNOSIS ASSOCIATED WITH THE NATIONAL OESOPHAGO-GASTRIC (OG) AWARENESS CAMPAIGN (2015) – A DISTRICT GENERAL HOSPITAL PERSPECTIVE

CA Coombs*, L Pope, M O'Donnell, DS Pearl. *Musgrove Park Hospital, Taunton, UK*

10.1136/gutjnl-2016-312388.314

**Introduction** A retrospective study evaluating the impact of the English national oesophageal and gastric cancer awareness campaign (26/01/2015-22/02/2015) on a large district general hospital (DGH). The campaign involved radio and television broadcasts advising medical assessment for dysphagia or persistent dyspepsia.




**Abstract PWE-067 Figure 1** Upright and supine BImp according to diatance above the LOS for patients without and with mucosal injury. Centiles are as shown in red text. Asterisks denote a significant difference between upright and supine BImp

**Methods** Data from all two week wait (2 ww) OG referrals triaged to gastroscopy (OGD) from January to July in 2014 and 2015, was audited retrospectively. The Somerset Cancer Register (SCR) database was used for data collection. Age and World Health Organisation (WHO) performance status, recorded at point of referral, was retrieved from the SCR.

Number of referrals, cancer diagnoses, age, WHO performance status and treatment intent were compared between an identical 6 month period in 2014 and 2015. Formal statistical analysis was not carried out.

**Results** There was a 26% increase in 2 ww referrals from 2014 to 2015 (530 to 667) and 4% in non 2 ww referrals (477 to 496). The number and percentage (%yield) of OG cancer diagnoses from 2 ww referrals was 27 (5.0%) in 2014 compared to 32 (4.8%) in 2015. The number and percentage (%yield) of OG cancer diagnoses from routes other than 2 ww OG referral was 17 (3.6%) in 2014 compared to 26 (5.2%) in 2015. The mean and median age at diagnosis expressed in years was 77 and 79 (2014) compared with 69 and 75 (2015). Of OG cancer diagnoses, the treatment intent was considered potentially curative in 33% (2014) compared with 34% (2015). Percentage of patients recorded as WHO performance status 0 and 1 combined was 74% (2014) compared to 91% (2015). One year mortality data is not yet available due to early reporting.

**Conclusion** The 26% increase in 2 ww OG referrals is likely to be heavily influenced by the national OG awareness campaign, on the background of an 11% per annum increase in demand for diagnostic endoscopy services. Interestingly the percentage of cancer findings at OGD remained around 5% indicating that the increased diagnostic throughput has translated to OG cancer diagnoses. The mean and median age at diagnosis was 8 and 4 years lower respectively; this may indicate earlier patient directed self-referral to primary care with OG symptoms, suggesting that the campaign has reached its target audience. Unfortunately, there was not been an obvious increase in potentially curative OG cancer diagnoses; however, the younger group and better performance status may support more intense oncological therapy, leading to improved outcomes.

**Disclosure of Interest** None Declared

## PWE-069 SAMPLING OESOPHAGEAL MICROBIAL COMMUNITIES IN BARRETT'S OESOPHAGUS USING MINIMALLY INVASIVE AND ENDOSCOPIC METHODS

[1]DR Fels Elliott, [2]AW Walker, [3]M O'Donovan, [4]J Parkhill, [1]RC Fitzgerald, [1]G Contino*. *[1]MRC Cancer Unit, Hutchison/MRC Research Centre, University of Cambridge, Cambridge; [2]Rowett Institute of Nutrition and Health, University of Aberdeen, Aberdeen; [3]Department of Histopathology, University of Cambridge, Cambridge; [4]Pathogen Genomics Group, Wellcome Trust Sanger Institute, Hinxton, UK*

10.1136/gutjnl-2016-312388.315

**Introduction** Minimally invasive methods for sampling the oesophageal microbiota may be clinically useful for detection and risk stratification of patients with Barrett's oesophagus. The Cytosponge is a non-endoscopic device that samples epithelial cells and bacteria along the length of the oesophagus. This study aimed to determine the utility of the Cytosponge for sampling the oesophageal microbiota, and to assess whether the device could detect altered microbiota in Barrett's oesophagus.

**Methods** 251 samples from 67 patients and relevant negative controls underwent 16 S rRNA gene sequencing (in duplicate) on the Illumina MiSeq platform. A subset of Cytosponge samples (N = 31) was compared with matched fresh frozen endoscopic biopsies (N = 31), endoscopic brushings (N = 31) and throat swabs (N = 13). The microbial DNA yield for the different oesophageal sample types was analysed using quantitative PCR for overall bacterial abundance. 16 S rRNA gene data was further interrogated from patients representing the Barrett's progression sequence, including normal squamous oesophagus (N = 20), Barrett's oesophagus (N = 24), and high grade dysplasia (N = 23).

**Results** 16 S rRNA gene data showed the majority of genera overlapped between Cytosponge samples and endoscopic brushes and biopsies (84%, cut-off >0.0001% abundance; 100%, cut-off >0.1% abundance), but the Cytosponge samples were enriched for genera known to be prevalent in the stomach and oral cavity such as *Campylobacter* and *Fusobacterium*, respectively ($q < 0.05$, Metastats). The Cytosponge yielded higher quantity of microbial DNA in comparison to endoscopic brushes or endoscopic biopsies ($P < 0.001$). Furthermore, the Cytosponge detected decreased diversity in patients with high grade dysplasia, in comparison to normal squamous controls ($P < 0.05$), suggesting that some taxa may have a competitive advantage over others in this disease state. There was also a trend towards decreased diversity in non-dysplastic Barrett's oesophagus compared to normal squamous controls, which reached significance for the Shannon index and inverse Simpson index ($P < 0.05$). There was no difference in microbial diversity between non-dysplastic Barrett's oesophagus and high grade dysplasia.

**Conclusion** The Cytosponge was capable of sampling the microbiota in the oesophagus and proximal stomach, and detected decreased diversity in patients with high grade dysplasia compared to normal squamous oesophagus.

**Disclosure of Interest** D. R. Fels Elliott: None Declared, A. Walker: None Declared, M. O'Donovan: None Declared, J. Parkhill: None Declared, R. Fitzgerald Grant/research support from: RCF developed the Cytosponge™ technology with MRC-Technology, which provided devices for research. The Cytosponge™ has recently been licensed to Covidien, and RCF has no direct financial relationship with Covidien.

## PWE-071 THE MAJORITY OF H. PYLORI INFECTED SUBJECTS HAVE REDUCED INTRAGASTRIC ACIDITY AND PARIETAL CELL DENSITY WHICH IS MOST MARKED CLOSE TO THE GASTROESOPHAGEAL JUNCTION

[1]D Mitchell*, [1]M Derakhshan, [2]A Wirz, [1]C Orange, [1]D Hughes, [2]S Ballantyne, [1]J Going, [1]K McColl. *[1]University of Glasgow; [2]NHS Greater Glasgow and Clyde, Glasgow, UK*

10.1136/gutjnl-2016-312388.316

**Introduction** A negative association exists between *H. pylori* infection and both gastroesophageal reflux disease and oesophageal adenocarcinoma. The great majority of the *H. pylori* infected population are asymptomatic, so we studied healthy volunteers to determine if the infection is associated with changes to the acid secretory capacity of gastric mucosa which may protect individuals from acid reflux.

**Methods** We studied 31 *H. pylori* positive and 29 *H. pylori* negative volunteers, matched for age and gender. Jumbo biopsies were taken at eleven pre-determined gastric locations. High resolution pHmetry (12 sensors at 11 mm intervals) and manometry (36 sensors at 7.5 mm intervals) was performed fasted and after a standardised meal. The position of the squamocolumnar junction, marked with two endoscopically placed radio-opaque clips, was visualised radiologically relative to the probes. The biopsy specimens were scored for inflammation and stained with monoclonal antibody to $H^+/K^+$ATPase for counting parietal cell (PC) density.

**Results** In the fasting period, at all sensors more than 1.1 cm below the peak LES pressure the median pH was less acidic in *H. pylori* positives (Table 1). After a meal, intragastric acidity was less in *H. pylori* positives compared to negatives at sensors 2.2 to 4.4 cm below the peak LES pressure (all $p < 0.05$), which are the sensors closest to the gastroesophageal junction (GOJ).

Median PC density (IQR) at mid-greater curve of gastric body was 233 (96) for *H. pylori* positives and 352 (76) for negatives ($p < 0.001$). PC density was lower in *H. pylori* positives in 10 out of the 11 gastric locations (all $p < 0.01$).

Positive CagA status was associated with reduced intragastric acidity, but had no effect on PC density or mucosal inflammation when compared to CagA negative *H. pylori* positives.

**Abstract PWE-071 Table 1** Median pH (IQR) detected by sensors relative to the peak LES pressure during the 20 minute fasting period

| | *H.pylori* negative | *H.pylori* positive |
|---|---|---|
| **Sensor location** | **Median pH (IQR)** | |
| 1.1 cm proximal | 7.33 (0.78) | 7.37 (0.62) |
| PeakLES pressure. | 7.34 (0.79) | 7.28 (0.51) |
| 1.1 cm distal | 7.06 (1.63) | 7.13 (0.51) |
| 2.2 cm distal | 5.79 (4.26) | 6.94 (1.38) * |
| 3.3 cm distal | 2.27 (2.58) | 6.13 (5.06) ** |
| 4.4 cm distal | 1.70 (1.16) | 4.11 (4.95) ** |
| 5.5 cm distal | 1.68 (0.66) | 2.88 (3.66) ** |
| 6.6 cm distal | 1.62 (3.66) | 2.39 (3.06) * |

*p < 0.01,**p < 0.001

**Conclusion** The majority of *H. pylori* infected subjects have reduced intragastric acidity and PC density compared to the uninfected population and the reduction in acidity is most marked close to the GOJ. This may explain the negative association between *H. pylori* infection and both gastroesophageal reflux disease and oesophageal adenocarcinoma.

**Disclosure of Interest** None Declared

## PWE-072 ESOPHAGEAL ESD PROCEDURE TIME IS DEPENDENT ON THE SIZE AND CIRCUMFERENTIAL EXTENSION OF THE LESIONS AND <50% OF THE TIME IS ACTUALLY SPENT PERFORMING THE RESECTION

[1]M Abdulla, [1]A Alkandari, [1]K Kandiah, [1]F Chedgy, [1]G Longcroft-Wheaton, [2]P Bhandari*. [1]*gastroenterology*; [2]*Ports Mouth Hospitals NHS Trust, Portsmouth, UK*

10.1136/gutjnl-2016-312388.317

**Introduction** Endoscopic submucosal dissection (ESD) is superior to endoscopic mucosal resection(EMR) as it leads to en-bloc resection & reduces risk of recurrence. However, western uptake has been limited due to long learning curve and procedure time.We aim to establish the time required for each component of ESD and identify factors predicting it.

**Methods** A single, experienced, western Endoscopist performed all procedures for suspected Barrett's cancers >2 cm. Procedures were recorded in full on a digital recorder. First 30 procedures were considered as a part of learning curve and not analysed. All subsequent consecutive procedures were analysed by an independent researcher with knowledge of ESD. Lesion area was calculated based on length of the lesion and the percentage of the oesophageal circumference involved. Using the equation area = $2*\pi*$ r * l *% circumferential involvement / 100. Here r = radius and l = length of lesion. The time for every component of the procedure was recorded: lesion evaluation & marking, submucosal (SM) injection, mucosal incison, SM dissection, haemostasis & post-ESD site evaluation.

**Results** 29 consecutive videos were examined. All lesions were Barrett's cancers (25% T-1b, 75% T-1a). The mean length was 30 mm (range:20-70mm), with mean area of 8.2cm$^2$ (range:1.6-23cm$^2$). The mean procedure time was 81 mins (range:45-142min), equating to 9.9 min/ cm$^2$ .The time taken for each component of the procedure is shown in fig. 1. Only 42% of the time was spent in cutting (Mucosal incision and SM dissection). 24% of time was spent in evaluation and marking the margins. 24% of the time spent in changing accessories & injection. Procedure time was related to lesion area: 100 min for lesions >10cm$^2$ vs 72 mins for lesions <5 cm$^2$($p = 0.0056$).Circumferential extension had an effect, with <25% circumference taking 66 min vs 92 mins for lesions with >25% circumferential extension ($p = 0.0025$)

**Conclusion** Our data shows that it takes 9.9 min/ cm$^2$ to perform ESD for Barrett's cancers. Time taken is directly related to the size and circumferential extent of the lesion. We found that only 42% of the time is spent performing the actual resection and rest of the time is spent in supporting acts. This information can help focus the future research in reducing the ESD procedure time and also help plan appropriate time and remuneration for current ESD procedures.

**Disclosure of Interest** None Declared

**Abstract PWE-072 Table 1**

| | Lesion evaluation (min) | SM injection (min) | Mucosal incision (min) | SM dissection (min) | Accessory change (min) | Haemostasis control (min) | Post resection evaluation (min) |
|---|---|---|---|---|---|---|---|
| Mean | 19 | 10.1 | 14.9 | 19.3 | 9.0 | 4.5 | 3.8 |
| Median | 20 | 8.9 | 14.8 | 15.5 | 9.2 | 3.9 | 3.8 |
| Range | 5.7–27 | 4.2–24 | 5.9–26.4 | 3.2–64.3 | 3.3–17.5 | 0.7–20 | 1.5–8 |
| | 24% | 13% | 18% | 24% | 11% | 5% | 5% |

## PWE-073 COMPARISON OF COST-EFFECTIVENESS BETWEEN 96 HOUR WIRELESS BRAVO REFLUX MONITORING AND 24 HOUR PH-IMPEDANCE IN THE DIAGNOSIS OF GASTROESOPHAGEAL REFLUX DISEASE

[1]GN Ho*, [1]TA James, [2]T Wong, [2]J Jafari. [1]*King's College London*; [2]*Oesophageal Laboratory, Guy's Hospital, London, UK*

10.1136/gutjnl-2016-312388.318

**Introduction** 24 hour pH-impedance reflux monitoring is considered the gold standard in diagnosing pathological gastroesophageal reflux (GOR). Alternative method is catheter-free Bravo capsules (96 hours). To date, their cost-effectiveness has yet to be compared. At Guy's Hospital, London, UK, the cost of Bravo is estimated to be £1,200 (including endoscopy) and pH-impedance to be £800 (including high resolution manometry). It is generally assumed that the higher cost of Bravo monitoring is justifiable as it is thought to have a higher diagnostic yield due to better patient compliance and a longer monitoring time.

**Methods** Patients who had a Bravo or pH-impedance study during May-November 2015 were selected. The more cost-effective method was defined as the technique with lower cost (including cost of non-diagnostic results) per diagnostic procedure. To identify non-diagnostic results, the patients with pathological GOR, patients with positive symptom-reflux associations, patients with supragastric belching and patients who were adequately symptomatic (therefore having negative symptom-reflux association) were removed. Positive symptom-reflux association was considered as symptom association probability (SAP) $\geq$95% and/or symptom index (SI) $\geq$50%.

**Results** 81 Bravo patients and 145 pH-impedance patients were analysed. 50 (61.7%) Bravo patients and 69 (47.5%) pH-impedance patients were diagnosed with pathological GOR, 14 (17.3%) Bravo and 44 (30.3%) pH-impedance patients had hypersensitive oesophagus, 3 (2.1%) pH-impedance were patients diagnosed with supragastric belching causing symptoms, and 10 (12.3%) Bravo and 14 (9.7%) pH-impedance patients experienced symptoms unexplained by reflux events (negative symptom-reflux association). The remaining 7 (8.6%) Bravo and 15 (10.3%) pH-impedance entries therefore represent the proportion of non-diagnostic investigations. Cost calculations revealed that each Bravo with diagnostic yield costs £1313.5 whilst each pH-impedance with diagnostic yield costs £892.3 (Table 1). This means that for each diagnosis made by Bravo there is an additional cost of £421.2.

**Abstract PWE-073 Table 1**

| | Bravo | pH-impedance |
|---|---|---|
| Total cost | £1,200 x 81 = £97,200 | £800 x 145 = £116,000 |
| Total cost spent on non-diagnostic investigations (losses) | £1,200 x 7 = £8,400 | £800 x 15 = £12,000 |
| Actual cost of each diagnosis including non-diagnostic results | ((74 x £1,200) + £8,400) / 74 = £1,313.5 | ((130 x £800) + £12,000) / 130 = £892.3 |

**Conclusion** The cost-effectiveness of pH-impedance reflux monitoring seems to be superior to Bravo system to make a reflux-related diagnosis. However, this study does not take into account other advantages of each method in clinical use.

**Disclosure of Interest** None Declared

## PWE-074 VARIATION IN THE MANAGEMENT OF BARRETT'S HIGH GRADE DYSPLASIA IN ENGLAND

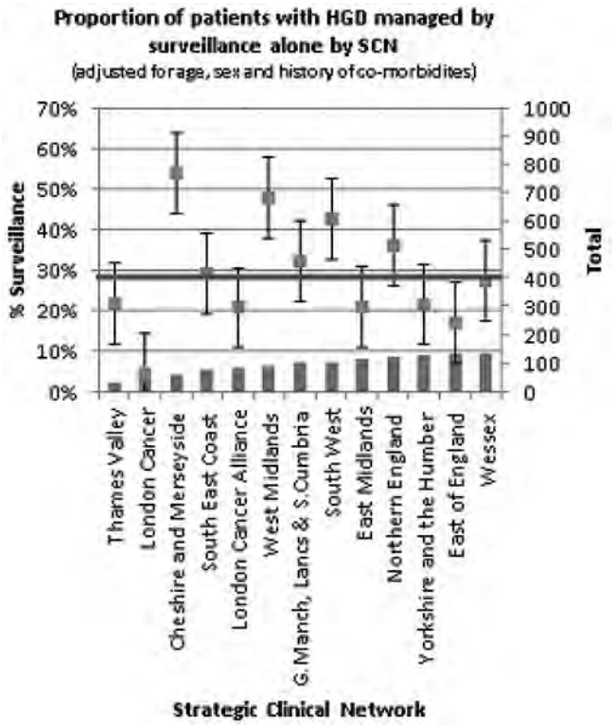
G Chadwick*, D Cromwell, on behalf of NOGCA Audit Team. *CEU, Royal College of Surgeons, London, UK*

10.1136/gutjnl-2016-312388.319

**Introduction** The British Society of Gastroenterology recommend that patients with Barrett's high grade dysplasia (HGD) are considered for active treatment, with endoscopic therapy considered the treatment of choice.[1] We sought to investigate patterns of treatment among patients with newly diagnosed HGD in England.

**Methods** This study used data collected for the National Oesophago-Gastric Audit (NOGCA) on patients diagnosed with HGD in England between 1st April 2012 and 31st March 2015. The study looked at the relationship between patient's initial treatment, and their characteristics and diagnostic process. We also examined patterns of treatment by strategic clinical network (SCN) where the patient was diagnosed. We estimated case-mix adjusted rates of surveillance using logistic regression models.

**Results** There were 1,284 patients diagnosed with HGD over 3 years. Mean (SD) age at diagnosis was 71.1 (±10.6) years; 74.1% were men. 795 (65.7%) were managed endoscopically, 66 (5.4%) had an oesophagectomy, and 350 (28.9%) underwent surveillance alone.




**Abstract PWE-074 Figure 1** Proportion of patients with HGD managed by surveillance alone by SCN

The proportion of patients managed by surveillance increased with age ($p < 0.001$), but was not affected by a history of comorbidities ($p = 0.981$). Patients were more likely to receive active treatment if they were referred from a Barrett's surveillance program (84.9% vs 59.4%, $p < 0.001$), or if they had the diagnosis confirmed either by a second pathologist (79.1% vs 57.2%, $p < 0.001$), or repeat biopsy (78.1% vs 62.1%, $p < 0.001$). Active treatment was also more common if patients were discussed at a MDT meeting (75.1% vs 53.6%, $p < 0.001$).

After adjusting for age, sex, and history of comorbidities, we observed significant variation across SCNs in the proportion of patients managed by surveillance alone (Figure 1), ranging from 4% to 54%.

**Conclusion** A substantial proportion of patients with HGD are managed by surveillance alone. Trusts should review their management of these patients, and consider referring cases to specialist centres for treatment.

## REFERENCE

1 Fitzgerald RC, *et al*. BSG guidelines on the diagnosis and management of Barrett's oesophagus. *Gut* 2014;**63**(1):7–42.

**Disclosure of Interest** None Declared

## PWE-075 CHANGING PATTERNS OF MANAGEMENT AND OUTCOMES FOR EARLY OESOPHAGEAL ADENOCARCINOMAS IN ENGLAND AND WALES

G Chadwick*, D Cromwell, on behalf of NOGCA Audit Team. *Clinical Effectiveness Unit, Royal College of Surgeons, London, UK*

10.1136/gutjnl-2016-312388.320

**Introduction** Currently only 1 in 20 oesophageal adenocarcinomas are diagnosed at early stage.[1] Where patients are diagnosed at an early stage, studies have suggested that up to 90% of patients managed with curative surgical intent survive 5 years.[2]

In this study we investigated the changing patterns of management for oesophageal adenocarcinomas in England and Wales, and associated patient outcomes.

**Methods** This study uses data collected for the National Oesophago Gastric Cancer Audit (NOGCA), and compares patients diagnosed in the year following 1st April 2008 (Group 1), with those diagnosed five years later in 2013 (Group 2). The study was limited to patients diagnosed with early stage (T0/1, N0, M0) oesophageal adenocarcinoma.

Outcomes considered included proportion of patients managed with curative intent, curative treatment modality and patient outcomes at 1 year.

**Results** A similar number of patients were diagnosed with early stage cancer over both time frames, Group 1 (n = 202) and Group 2 (n = 193). The proportion of patients managed with curative intent increased over the five years from 77.4% to 83.4% (chi-square test, $p = 0.13$). However the proportion of patients aged $\geq$75 years managed with curative intent increased significantly between 2008 and 2013, from 48% to 67% ($p = 0.02$).

These increases are likely to reflect changes in curative treatment modalities. Over the last five years, there has been a significant increase in the proportion of patients managed with less invasive curative treatment modalities, with the proportion being managed endoscopically increasing from 18% to 34%, while there was a corresponding decrease in the proportion managed surgically from 76% to 61% ($p = 0.007$).

Patients diagnosed with early cancer in 2013 who were managed with curative intent were significantly more likely to survive 1 year than those who had been diagnosed in 2008 (98% vs 93%, $p = 0.05$).

**Conclusion** Outcomes for patients diagnosed with early oesophageal adenocarcinomas have improved over the last five years. Over the same period, the proportion of patients managed with less invasive endoscopic treatment modalities has increased significantly. However, it should be noted that a sizeable minority of patients are still being managed with palliative intent. The NOGCA will continue to monitor the management of this group of patients in future.

## REFERENCES

1 Chadwick G, *et al*. Management and survival of patients with early stage oesophageal adenocarcinomas in England: a population-based cohort study. *British Journal of Surgery*.
2 Wani S, *et al*. Comparison of endoscopic therapies and surgical resection in patients with early esophageal cancer: a population-based study. *Gastrointest Endosc*. 2014;**79**(2):224–32.e1.

**Disclosure of Interest** None Declared

## PWE-076 SPECIALIST CENTRE PATIENT VOLUME DOES NOT IMPACT ON ENDOSCOPIC OUTCOMES FOR TREATMENT OF BARRETT'S DYSPLASIA. RESULTS FROM THE UK REGISTRY

[1,2]G Lipman*, [2]A Gupta, [1,2]M Banks, [2]R Sweis, [3]JM Dunn, [2]D Morris, [4]H Smart, [5]P Bhandari, [6]RP Willert, [7]G Fullarton, [7]AJ Morris, [8]M Di Pietro, [9]P Mundre, [10]C Gordon, [11]I Penman, [12]H Barr, [13]P Patel, [13]P Boger, [14]N Kapoor, [15]BS Mahon, [16]J Hoare, [17]R Narayanasamy, [17]D O'Toole, [18]Y Ang, [19]A Veitch, [20]D Nylander, [21]A Dhar, [22]K Ragunath, [23]A Leahy, [23]M Fullard, [1,2]R Haidry, [1,2]LB Lovat. *[1]Division of Surgery & Interventional Science, University College London; [2]University College Hospital NHS Foundation Trust; [3]Guy's and St Thomas' NHS Foundation Trust, London; [4]Royal Liverpool University Hospital, Liverpool; [5]Queen Alexandra Hospital, Portsmouth; [6]Central Manchester University Hospitals NHS Foundation Trust, Manchester; [7]GRI, Glasgow; [8]Addenbrookes Hospital, Cambridge; [9]Bradford Royal Infirmary, Bradford; [10]Royal Bournemouth Hospital, Bournemouth; [11]Royal Infirmary Edinburgh, Edinburgh; [12]Gloucestershire Hospital NHS Trust, Gloucestershire; [13]Southampton University Hospital, Southampton; [14]Aintree University Hospital, Liverpool; [15]Queen Elizabeth Hospital, Birmingham; [16]St Mary's Hospital, London, UK; [17]St James Hospital, Dublin, Ireland; [18]Salford Royal Foundation NHS Trust, Manchester; [19]Wolverhampton NHS Trust, Wolverhampton; [20]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle; [21]County Durham Hospital, County Durham; [22]Nottingham University Hospital NHS Trust, Nottingham; [23]West Hertfordshire Hospitals NHS Trust, Watford, UK*

10.1136/gutjnl-2016-312388.321

**Introduction** Endoscopic mucosal resection (EMR) followed by Radiofrequency ablation (RFA) is first line treatment for mucosal Barrett's oesophagus (BE) related neoplasia. The UK Registry collects data from patients at 28 sites undergoing RFA/EMR. We examine differences in outcomes between sites by patient volume.

**Methods** All visible lesions were entirely removed by EMR. Patients then underwent RFA every 3 months until all visible BE was ablated. Biopsies were taken at 12 months to assess treatment success with repeat biopsies every 6–12 months thereafter. Centres were grouped by total numbers treated; low <50, medium 50–100 & high >100 patients. Only outcomes of those who had completed treatment were analysed.

**Results** 675 patients completed treatment at 24 centres (median follow up 26 months), 414 at high volume (n = 5),

143 at medium volume (n = 4) & 118 at low volume centres (n = 15). There was no difference in entry criteria or demographics between groups. CR-D & CR-IM at 12 months are no different between the groups (CR-D 86–90%, CR-IM 74–81%). IM recurrence is significantly lower in high volume centres (16.1% vs 20.3% and 19.2%, Log Rank p < 0.001) but dysplasia recurrence is no different (Log Rank p = 0.12). Rescue EMR was performed less frequently in medium volume centres (0% vs high 5.3% and low volume 10%, p = 001).

**Conclusion** Endotherapy for Barrett's dysplasia is highly effective whatever the centre volume. The rescue EMR rate in medium volume centres is unexplained. Despite lower IM recurrence in high volume centres, dysplasia recurrence rates are not significantly different. Caseload volume of a centre in the UK Registry does not appear to affect outcome.

**Disclosure of Interest** None Declared

## PWE-077 RESIDUAL INTESTINAL METAPLASIA AFTER SUCCESSFUL ENDOSCOPIC THERAPY FOR BARRETT'S RELATED NEOPLASIA CONFERS HIGHER LONG TERM RISK FOR DISEASE RECURRENCE, ON BEHALF OF THE UK RFA REGISTRY

[1,2]G Lipman*, [2]A Gupta, [3]JM Dunn, [2]D Morris, [4]H Smart, [5]P Bhandari, [6]RP Willert, [7]G Fullarton, [7]AJ Morris, [8]M Di Pietro, [9]C Gordon, [10]I Penman, [11]H Barr, [12]P Patel, [12]P Boger, [13]N Kapoor, [14]BS Mahon, [15]J Hoare, [16]R Narayanasamy, [16]D O'Toole, [17]Y Ang, [18]A Veitch, [19]D Nylander, [20]A Dhar, [21]K Ragunath, [22]A Leahy, [22]M Fullard, [1,2]R Haidry, [1,2]LB Lovat, on behalf of The UK RFA Registry. *[1]Division of Surgery & Interventional Science, University College London*; *[2]University College Hospital NHS Foundation Trust*; *[3]Guy's and St Thomas' NHS Foundation Trust, London*; *[4]Royal Liverpool University Hospital, Liverpool*; *[5]Queen Alexandra Hospital, Portsmouth*; *[6]Central Manchester University Hospitals NHS Foundation Trust, Manchester*; *[7]Glasgow Royal Infirmary, Glasgow*; *[8]Addenbrookes Hospital, Cambridge*; *[9]Royal Bournemouth Hospital, Bournemouth*; *[10]Royal Infirmary Edinburgh, Edinburgh*; *[11]Gloucestershire Hospital NHS Trust, Gloucestershire*; *[12]Southampton University Hospital, Southampton*; *[13]Aintree University Hospital, Liverpool*; *[14]Queen Elizabeth Hospital, Birmingham*; *[15]St Mary's Hospital, London, UK*; *[16]St James Hospital, Dublin, Ireland*; *[17]Salford Royal Foundation NHS Trust, Manchester*; *[18]Wolverhampton NHS Trust, Wolverhampton*; *[19]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle*; *[20]County Durham Hospital, County Durham*; *[21]Nottingham University Hospital NHS Trust, Nottingham*; *[22]West Hertfordshire Hospitals NHS Trust, Watford, UK*

10.1136/gutjnl-2016-312388.322

**Introduction** Endoscopic resection (ER) followed by Radiofrequency ablation (RFA) is the first line treatment for neoplastic Barrett's oesophagus (BE). Metachronous neoplasia after focal eradication of disease is ~20%. We examine data from the UK registry of 28 centres to establish if residual metaplastic BE carries a risk of disease recurrence.

**Methods** Visible lesions were removed by EMR. Patients then underwent RFA 3 monthly. Biopsies were taken at 12 months to assess treatment success with repeat biopsies every 6–12 months thereafter.. Dysplasia recurrence was compared in patients who had complete reversal of BE and neoplasia (CR-IM) to those in whom dysplasia alone was eradicated (CR-D only). Residual BE was confirmed with visible columnar epithelium proximal to the OGJ with biopsies showing IM.

**Results** 517 patients achieved CR-IM & 96 patients achieved CR-D only after 12 months treatment . Sex & ER rates were not significantly different between groups. The CR-D only group were older (mean age 70 vs 67, p < 0.01) and had longer initial BE (mean length 6.2 cm vs 4.7 cm, p < 0.0001). Mean residual BE length was 1.4 cm. At median follow up 32 months, more patients were disease free in the CR-IM group (96% vs 89%) and Kaplan Meier statistics demonstrated an improved predicted 6 year neoplasia free survival in the CR-IM group (90% vs 84% log rank p 0.0015). Most recurrences occurred within 3 years of follow up.

**Conclusion** Endotherapy should aim to clear neoplasia and underlying metaplastic BE to improve long term outcome. Patients with CR-D but not CR-IM at the end of treatment have an increased risk of neoplasia recurrence. This may have implications for post treatment surveillance intervals.

**Disclosure of Interest** None Declared

## PWE-078 MAGNIFICATION ENDOSCOPY WITH I-SCAN IMAGING AND ACETIC ACID CHROMOENDOSCOPY IN BARRETT'S OESOPHAGUS IMPROVES NEOPLASIA DETECTION

[1,2]G Lipman*, [3]R Bisschops, [4]J Ortiz-Fernández-Sordo, [1]R Sweis, [5]JM Esteban, [1,2]LB Lovat, [4]K Ragunath, [1,2]R Haidry. *[1]Department of Gastroenterology, University College Hospital NHS Foundation Trust*; *[2]Division of Surgery & Interventional Science, University College London, London, UK*; *[3]University Hospitals Leuven, KU Leuven, Belgium*; *[4]Nottingham Digestive Diseases Biomedical Research Unit, Nottingham, UK*; *[5]Hospital Clínico San Carlos, Madrid, Spain*

10.1136/gutjnl-2016-312388.323

**Introduction** Barrett's oesophagus (BE) is the pre-cursor for oesophageal adenocarcinoma. Endoscopic surveillance is performed in BE patients to detect dysplasia as an early treatment target. Current surveillance relies on random quadrantic biopsies every 1–2 cm through the BE with targeted biopsies for areas of suspicion. This strategy samples less than 5% of the BE mucosa. We present a novel endoscopic classification system utilising magnification chromo-endoscopy with *i-Scan* (PENTAX HOYA, Japan) image enhancement technology and acetic acid to improve dysplasia recognition in BE.

**Methods** High definition (HD) video recordings of suspicious lesions were collected from patients with non-dysplastic (ND-BE) and dysplastic (D-BE) BE undergoing endoscopy at a high volume tertiary centre. Lesions were recorded with magnification endoscopy in all *i-Scan* modes both before and after application of 2% acetic acid (ACA) before sampling with biopsy forceps or endoscopic mucosal resection to confirm the histological diagnosis. Six expert endoscopists scored videos using a previously validated mucosal (M) and vascular (V) classification system. Normal mucosa was defined as regular circular or villous pits (M1) and abnormal mucosa defined as distorted or irregular pits or featureless mucosa (M2). Normal vascular pattern was defined as regular and uniform vessels (V1) and abnormal vascular pattern was defined as irregular, dilated corkscrew vessels (V2). Dysplasia was classified if the lesion was felt to be either M2 or V2.

**Results** 63 lesions (36 D-BE, 27 ND-BE) were recorded (30 before ACA and 33 after ACA) for analysis. Experts' average accuracy for dysplasia prediction was 67.8% pre ACA and 75.9% after ACA (p = 0.01). ACA improved the sensitivity of our novel classification system for neoplasia detection from 81% to 88% (p = 0.04). Interobserver Kappa values were 0.253 pre ACA and 0.369 after ACA.

**Conclusion** Experts can diagnose D-BE in up to three-quarters of cases using i-Scan magnification endoscopy with acetic acid.

ACA improves the sensitivity of diagnosing D-BE. The novel classification system for BE neoplasia has fair agreement between expert endoscopists.

**Disclosure of Interest** None Declared

## PWE-079 RAMAN SPECTROSCOPYCANCER DIAGNOSTIC FOR PATHOLOGY OF BARRETT'S OESOPHAGUS

[1]H Barr*, [2]M Isabelle, [1]O Old, [2]G Lloyd, [3]K Lau, [4]J Dorney, [5]A Lewis, [5]T Geraint, [6]N Shepherd, [7]I Bell, [4]N Stone, [8]C Kendall. [1]*Surgery*; [2]*Biophotonics, Gloucestershire Royal Hospital, Gloucester*; [3]*Renishaw PLC, Renishaw PLC, Wotten under Edge*; [4]*Physics, University of Exeter, Exeter*; [5]*Department of Cell and Developmental Biology, University College, London*; [6]*Pathology, Gloucestershire Royal hospital, Gloucester*; [7]*Renishaw, Renishaw PLC, Wotten under Edge*; [8]*Biophonotics Unit, Gloucestershire Royal Hospital, Gloucester, UK*

10.1136/gutjnl-2016-312388.324

**Introduction** Raman spectroscopy has been shown to accurately classify tissue pathology in a variety of conditions and organ systems. Much of this work has been performed using Raman microspectrometers on tissue sections.

Despite the demonstrated potential as an accurate cancer diagnostic tool, Raman spectroscopy (RS) is yet to be adopted by the clinic for histopathology reviews. The Stratified Medicine through Advanced Raman Technologies (SMART) consortium has begun to address some of the hurdles (e.g. tissue sample preparation, data collection, pre-processing and transferability) in its adoption for cancer diagnosis. SMART is a multicentre industry-academic collaboration with the aim of developing a pathology platform for advanced diagnosis, using developments in hardware and software. Renishaw's Streamline™ Raman technology enables collection of Raman spectral much faster without compromising signal to noise.

This study aims to assess the ability of this technique to accurately classify tissue pathology, using an oesophageal model.

**Methods** Specimens were collected from patients with Barrett's oesophagus (BO), dysplasia and adenocarcinoma, and snap frozen in liquid nitrogen. 8μm tissue sections were prepared onto calcium fluoride slides, with contiguous sections stained with haematoxylin and eosin (H&E) for histological comparison. Raman spectra were collected across homogeneous regions of tissue pathology, using Streamline™ acquisitions of 60 seconds/line, at 1.1μm spatial resolution.

**Results** Advanced multivariate statistical analysis tools were used to develop pathology classification models, which were then tested using leave-one-out cross-validation. Each sample was then classified using a 'voting classification' for all pixels from one sample. The sensitivity and specificity of this pathology classification model using Raman Spectroscopy to discriminate dysplasia/adenocarcinoma from Barrett's oesophagus produced sensitivity and specificities >80%.

**Conclusion** By combining multivariate statistical analysis with Streamline™ Raman acquisition of spectral data, we have demonstrated good sensitivities and specificities. This study illustrates the potential of non-invasive rapid Raman spectral mapping measurements and development of a robust and validated oesophageal classification model that are able to classify tissue pathology.

**Disclosure of Interest** None Declared

## PWE-080 EOSINOPHILIC OESOPHAGITIS: IMPROVING DIAGNOSIS AND OPTIMISING THERAPY

[1]I Parisi*, [1]H Saravanapavan, [1]C Bailey, [1]S Mankodi, [1]A Shah, [1]D Grant, [2]M Rodriguez-Justo, [2]M Novelli, [1]R Sweis. [1]*Gastroenterology*; [2]*Histopathology, UCLH, London, UK*

10.1136/gutjnl-2016-312388.325

**Introduction** Eosinophilic oesophagitis (EoE) is a chronic condition of the oesophagus characterised by a dense eosinophilic infiltrate defined as >15 eosinophils/high power field (eos/hpf). The aim of this study was to capture the prevalence of EoE in a tertiary referral centre in London, to identify factors associated with a positive diagnosis and interrogate optimal response to therapy.

**Methods** From February 2013 to November 2015, all patients presenting with solid food dysphagia to University College Hospital had a high resolution white light endoscopy. Those with cancer, achalasia, postoperative stricture or endotherapy for Barrett's were excluded. Endoscopy, histology and clinical data were collected. >15 oes/hpf were defined as positive for EoE. A separate histopathology search identified patients with >15 eos/hpf and no dysphagia. A prospective follow-up was conducted in focusing on therapy and response in those with >15 eos/hpf.

**Results** Out of the 1566 patients with dysphagia, 524 were excluded for reasons stated. 736/1042 (71%) had oesophageal biopsies. Of those, 67 (9.1%) had more than 15 eos/hpf. Another 14 patients with >15 eos/hpf with symptoms other than dysphagia were identified from histology records, making the total number with eosiniphilia 81. The mean number of biopsies taken in those with >15 eos/hpf (6.3) was greater than those with <15 eos/hpf (5.1; $p = 0.003$). EoE patients were more likely to be male (70%) and younger (43±16 years) compared to nonEoE (40% male, $p < 0.0001$; 59±16 years, $p < 0.0001$). Typical endoscopic features were found in 39 (48%) EoE patients; rings/furrows in 26 (32%) and strictures in 15 (18%). 42/81 (52%) were treated with PPIs only of which 19 (45%) clinically responded. 18 (22%) patients had both PPI and topical steroids (12 had steroids after PPI failure) while 8/81 (10%) had steroids only. Clinically 14/26 (54%) responded optimally to topical steroids, 13 of which had dysphagia. Overall, response to steroids occurred in those with a higher eosinophilia (53 vs 24, $p = 0.004$) and all 9 with ≥40 eos/hpf had a complete response. Furthermore, typical EoE findings at endoscopy was more likely to be associated with a poor response to PPIs ($p < 0.0001$).

**Conclusion** A higher number of biopsies taken raises the diagnostic yield; however still up to 1/3 patients in a modern referral centre have no biopsies taken. EoE should be excluded in those with no dysphagia and refractory reflux symptoms. Although PPIs are provided as first-line therapy, a positive response to steroids is more likely in those with higher numbers eos/hpf, while those with fewer numbers and no endoscopic features could be considered for PPI therapy first. Such findings might be a useful tool to help tailor therapy.

**Disclosure of Interest** None Declared

## PWE-081 CLINICAL AND DIAGNOSTIC VALUE OF 96 HOURS WIRELESS REFLUX MONITORING OFF/ON PPIS

[1]I Koumoutsos*, [1]C Chia, [1]I Nasr, [2]I Miah, [2]J Jafari, [1]T Wong. [1]*Gastroenterology*; [2]*Oesophageal Lab, Guys & St Thomas Hospital, London, UK*

10.1136/gutjnl-2016-312388.326

**Introduction** Prolonged catheter-free pH monitoring with Bravo capsule up to 96 hours has become possible and enables extended physiological evaluation of gastroesophageal reflux disease (GERD) and response to therapeutic interventions. Aim of the present study was to determine the feasibility of 96 hrs recordings using Bravo capsule that would encompass time periods both off and on therapy with Proton Pump Inhibitors (PPIs).
**Methods** A total of 432 patients reporting symptoms of GERD refractory to conventional therapy underwent 96 hours of Bravo capsule recordings. Patients identified with abnormal acid exposure during the 1st 48 hrs of recordings (off PPIs) underwent the 2nd 48 hrs of recording on twice daily PPIs. The parameters subjected to analysis were percent of time ph < 4 (total, upright, supine, postprandial), number of refluxes, symptoms reported by the patients and their association with acid reflux (SI+).
**Results** 132/436 (30.3%) of patients had abnormal acid exposure in the 1st 48 hrs (70 males, mean age 49, range 17–81 years) and the second 48 hrs of recordings was performed on PPIs.98/132 (74.2%) had normal acid exposure on PPIs whereas 34/132 (23.5%) had abnormal acid exposure despite high dose of PPIs. The overall number of symptoms reported in the 2nd 48 hrs was reduced by 68.4% (responsive 76.7% vs refractory 49.9%, $p < 0.05$). The number of these symptoms that were actually associated with acid reflux events was reduced by 57.5% (responsive 43.9% vs refractory 39%, $p = 0.094$). In patients refractory to PPIs acid reflux in upright position was identified in 23/34 (67.7%), supine in 18/34 (52.9%) and in both positions in 8/34 (23.5%). Abnormal number of refluxes was identified in (27/34)79.5% of the patients. In total 355 symptoms were recorded by patients during the 96 h of recording. 200/355 (56.3%) of these symptoms were not related to acid reflux (SI-). Prolonged Bravo recordings on PPIs identified 16/355 (4.5%) additional SI(+) symptoms that were SI(-) in the 1st 48 hrs. 139/355 (39.15%) of symptoms were SI(+) in the 1st48h of recordings and 43/139 (30.93%) remained SI(+) despite high dose of PPIs. In patients refractory to PPIs 25/41 had SI(+) symptoms whereas in the responsive 35/98 patients had SI(+) symptoms. Refractory GERD to PPIs was significantly correlated with positive symptom association (SI+) for chest pain ($p = 0.01$), heartburn ($p = 0.043$), and vomiting ($p = 0.015$).
**Conclusion** Extended pH recording improves the detection of abnormal acid reflux. Combined off and on PPI therapy pH testing provides additional information which can be helpful in the management of patients with PPI refractory GERD.
**Disclosure of Interest** None Declared

## PWE-082 AUDIT OF BARRETT'S OESOPHAGUS SURVEILLANCE IN THE LONDON CANCER ALLIANCE – STRUCTURED PROGRAMMES WITH DEDICATED LISTS/DATABASES IMPROVE PRAGUE SCORING AND APPROPRIATE FOLLOW UP INTERVALS

[1]JM Dunn*, [2]P Wilson, [2]S Chatu, [2]C Collins, [2]M Gess, [2]JO Hayat, [2]A Haycock, [2]J Hoare, [2]J Hunt, [2]S Lean, [2]L Pee, [2]G Walker, [2]S Zar, [2]G Hanna. *[1]Gastroenterology, Guy's & St Thomas's NHS Foundation Trust; [2]LCA, London, UK*

10.1136/gutjnl-2016-312388.327

**Introduction** The London Cancer Alliance is a group of 17 hospitals in North West and South London serving an estimated catchment area of 5.7 million. We have previously demonstrated that dedicated Barrett's oesophagus (BE) surveillance lists improve dysplasia detection. LCA guidelines recommend dedicated surveillance lists, Prague reporting, dual pathology reporting of dysplasia and follow up intervals similar to national guidelines.
**Methods** One month 'snap shot' audit of patients undergoing BE surveillance in June 2015. Structure of programme at each site was assessed with questionnaire. All patients undergoing endoscopy for BE were audited using endoscopy reporting software tools. New diagnoses or those referred with dysplasia for endotherapy were excluded. The Prague criteria, dysplasia detection rate and dual pathology reporting were assessed. Analysis was by independent t-tests for continuous variables and chi-squared tests for categorical variables.
**Results** Responses were received from 13/17 sites. 6/13 ran dedicated surveillance lists and 5/6 had an active surveillance database. Dual pathology reporting for dysplasia was confirmed in 11/13 sites and BSG/LCA guidance adhered to in 12/13.

A total of 137 patients underwent surveillance endoscopy. Results are shown in table 1. There was no difference in the mean number of procedures between sites with dedicated vs. non dedicated lists. Only 4/137 patients were diagnosed with dysplasia, with no significant difference between the 2 groups. Prague classification was significantly higher on dedicated lists ($p < 0.0001$). There was a significant difference between appropriateness of follow up between centres with active surveillance database vs. those without ($p = 0.008$).

**Abstract PWE-082 Table 1** Study outcomes

| | Non dedicated lists (n = 69) | Dedicated lists (n = 68) | P value |
|---|---|---|---|
| Mean number of surveillance OGDs (±SEM) | 9.9 (2.1) | 11.3 (2.4) | 0.65 |
| Prague documentation | 68% | 97% | 0.0001 |
| Maximal length (±IQR) | 3.2 cm (0.29) | 3.9 cm (0.30) | 0.122 |
| ≤ C0M2 | 56% (31/55) | 38% (26/68) | 0.17 |
| Dysplasia detection | 2.9% (2) | 2.9% (2) | ns |
| | **Database –ve** | **Database +ve** | |
| Appropriate follow up interval | 28/62 | 68/75 | 0.0001 |

**Conclusion** Approximately half the sites in the LCA have dedicated lists and/or active surveillance databases, with statistically significant higher Prague classification rates and appropriate choice of surveillance interval at follow up. These metrics could be adopted at a national level to assess quality of BE surveillance programmes. A larger national audit assessing utility of dedicated lists is warranted.
**Disclosure of Interest** None Declared

## PWE-083 BEHAVIOURAL GASTRO-OESOPHAGEAL REFLUX DISEASE CAUSED BY SUPRAGASTRIC BELCHING

[1]JJ Neville*, [1]R Fernandes, [2]J Jafari, [2]T Wong, [2]G Sui. *[1]GKT School of Medical Education, King's College London; [2]The Oesophageal Physiology Laboratory, Guy's Hospital, London, UK*

10.1136/gutjnl-2016-312388.328

**Introduction** Supragastric belching (SGB) is considered to be a behavioural phenomenon, thus gastro-oesophageal reflux disease (GORD) caused by SGB can be considered as behavioural GORD. Behavioural GORD may necessitate differential treatment to 'classical' GORD and therefore requires diagnosis as a distinct clinical entity. This study aims to establish the prevalence of GOR events caused by SGB and evaluate the associated demographic features, symptoms and oesophageal motility abnormalities.
**Methods** The Oesophageal Physiology Laboratory, Guy's Hospital, patient database was retrospectively searched for patients diagnosed with GORD in whom SGB was observed. Patient demographic information, symptoms and oesophageal motility abnormalities were collected. The 24 hour pH-impedance studies were analysed for SGB. GORD events closely following SGB (within 6 seconds) were quantified and the acid exposure time and acid/non-acid reflux events occurring after a SGB were calculated when upright and recumbent.
**Results** Forty-six patients with a diagnosis of GORD and SGB were identified (48% female, mean age 50.5 years (range: 29–75), male mean age 52.5 years (29–79)). Ninety-five percent of patients reported heartburn and/or epigastric pain, 81.8% suffered from excessive belching, 63.6% reported regurgitation and 54.5% reported dysphagia. Forty-three percent of patients had a hypotensive lower oesophageal sphincter (LOS). SGB preceded 22.7% of all reflux events (24.9% upright and 6.6% recumbent) and 26.5% of acid reflux events. On average, over 24 hours, 16.3 reflux events were associated with SGB (13.0 acid and 4.1 non-acid) corresponding to a mean acid exposure time of 17.8 minutes. In this cohort SGB accounted for 17% of acid exposure time (22% upright and 7.4% recumbent). SGB had no effect on the total number of reflux events or the total acid exposure time in 3 patients and in 3 further patients SGB had no effect on the total acid exposure time. SGB caused $\geq$50% of the total number of reflux events in 3 patients and $\geq$50% of the total acid exposure time in 5 patients. Patients with a hypotensive LOS did not have a significantly higher total number of reflux events ($p = 0.88$) or total acid exposure time ($p = 0.86$). No relationships were seen between the presence of a hiatus hernia and the total number of reflux events ($p = 0.43$) or acid exposure time ($p = 0.16$) associated with SGB.
**Conclusion** SGB induced a considerable proportion of reflux events and acid exposure time. In 8 patients SGB caused $\geq$50% of the total reflux events or overall acid exposure time, and hence these patients may be considered as having behavioural GORD. Behavioural GORD should be diagnosed and treated separately to 'classical' GORD. Further work is required to elucidate the cause and pathophysiology of SGB.
**Disclosure of Interest** None Declared

## PWE-084 DYSPHAGIA IN PATIENTS WITH NON-EROSIVE GATRO-OESOPHAGEAL REFLUX DISEASE

K Nikaki*, J Ooi, YS Soozandehfar, P Woodland, D Sifrim. *Wingate Institute, QMUL, London, UK*

10.1136/gutjnl-2016-312388.329

**Introduction** Dysphagia is commonly reported by patients with NERD.[1] In the absence of mechanical obstruction or erosions, the mechanism underlying dysphagia in NERD is unclear. Impaired oesophageal motility with delayed bolus clearance, increased resistance at the OGJ or impairment of mucosal integrity could potentially underlie this symptom. The aim of this study was to evaluate these potential causes of dysphagia in NERD patients.
**Methods** All adult patients, presenting to the Upper GI Physiology unit between January 2014 and October 2015, with typical GERD symptoms, normal OGD, acid exposure time > 4.2%, no major manometric abnormalities and no structural, systemic or neurologic abnormalities were included. A composite dysphagia score was prospectively recorded (0–45). Motility was evaluated using HRM and Chicago classification 2015. Bolus clearance was assessed on 24 h pH-MII using bolus exposure time and post-reflux peristaltic wave (PSPW) score. Mucosal integrity was evaluated using Mean Nocturnal Baseline Impedance (MNBI).
**Results** Out of the 76 eligible patients, 17 patients (8 M:9 F) with typical NERD and dysphagia symptoms (Group A) and 26 patients (15 M:11 F) with NERD only symptoms (Group B) fulfilled the inclusion criteria. Mean age for both groups was 49 years. Acid exposure time and number of reflux episodes between groups were similar (NS). The median composite dysphagia score for Group A was 19.5 (range 3.5–45). Minor oesophageal motility abnormalities were identified in 10/17 patients from Group A and 12/26 patients from Group B ($P > 0.05$). The median IRP was 6 mmHg in group A and 7 mmHg in group B (NS). There was no statistically significant difference in the bolus exposure time and PSPW index. Mucosal integrity evaluated with baseline impedance (MNBI) was slightly low in the distal oesophagus, without difference between groups. MNBI in the proximal oesophagus was normal and not different between groups (Table).

**Abstract PWE-084 Table 1**

| | Group A | | | Group B | | | |
|---|---|---|---|---|---|---|---|
| | Mean | SD | Median | Mean | SD | Median | P value |
| AET (%) | 10.13 | 5.8 | 8.3 | 11.34 | 6.6 | 8.6 | 0.54 |
| Number of Reflux episodes | 48.94 | 24.34 | 45 | 61.58 | 27.33 | 54.5 | 0.13 |
| Bolus exposure time (%) | 1.87 | 1.0 | 1.6 | 2.62 | 1.8 | 1.9 | 0.13 |
| PSPW Index (%) | 24.01 | 19.66 | 17.3 | 23.17 | 17.31 | 18.6 | 0.88 |
| Proximal MNBI (ohms) | 2617 | 1193 | 2388 | 2684 | 1002 | 2529 | 0.84 |
| Distal MNBI (ohms) | 1288 | 794.3 | 1128 | 1057 | 615.3 | 984 | 0.29 |

**Conclusion** 40% of NERD patients reported dysphagia; majority reporting moderately severe symptoms. Impairment of oesophageal motility, bolus clearance and mucosal integrity do not seem to explain the pathophysiology of dysphagia in these patients. Esophageal hypersensitivity to mechanical stimulation and/or hypervigilance remained as potential causes of dysphagia in patients with NERD.

### REFERENCE

1 Locke 3rd GR, et al. Prevalence and clinical spectrum of gastroesophageal reflux: A population-based study in Olmsted County, Minnesota. *Gastroenterology* 1997;**112**(5):1448–1456.

**Disclosure of Interest** None Declared

## PWE-085 CHARACTERISING NOCTURNAL AND DAYTIME GORD USING OESOPHAGEAL HIGH RESOLUTION MANOMETRY; A RETROSPECTIVE STUDY

RS Heer*, S Jiang, T Wong, S Alavi, J Jafari. *Oesophageal Laboratory, Guy's Hospital, London, UK*

10.1136/gutjnl-2016-312388.330

**Introduction** Patients suffering from gastro-oesophageal reflux disease (GORD) can be categorised into those suffering from a purely daytime (DAY), purely nocturnal (NOCT) or combined reflux pattern. Despite identifying a dominant pattern of reflux the treatment strategies are not specifically targeting a specific type reflux pattern. This may expose patients to treatments which may not necessarily be beneficial to that particular pattern of reflux. Possible factors affecting different patterns of reflux may include abnormal oesophageal motility, lower oesophageal sphincter (LOS) length, presence of a hiatus hernia or too short of a time gap between meal and sleep. We aimed to determine the mechanisms behind patients suffering from purely nocturnal reflux compared to purely daytime reflux.

**Methods** Patients who underwent High Resolution Manometry (HRM) in an outpatients clinic from December 2014 to November 2015 were retrospectively grouped into those with purely nocturnal reflux and those with purely daytime reflux as measured by 24 hour ambulatory pH-impendance monitoring. Comparisons were made between the two groups using Fisher's exact tests and receiver operating characteristic (ROC) curves for LOS baseline pressure, LOS length, meal-sleep time gap, presence of a hiatus hernia, oesophageal motility disorders, age and gender. A P value $<0.05$ was considered as significant.

**Results** 62 patients with purely nocturnal reflux (median age 46.5, 27 male) and 32 patients with purely daytime reflux (median age 60, 15 male) were included. HRM diagnosis were not significantly different between these two groups (53% ineffective oesophageal motility (IOM) in NOCT and 50% IOM in DAY patients, $P = 0.8$). There was also no significant difference between the two groups in terms of prevalence of a hiatus hernia ($P = 0.4$), LOS length ($P = 0.1$), LOS mean or min baseline pressure ($P = 0.6$ for both). However, the meal-sleep time gap appeared to be significantly different between the DAY and NOCT group ($148 \pm 18$ min in DAY vs $107 \pm 9$ min in NOCT, $P = 0.03$). Also, younger patients showed a significantly higher rate of nocturnal reflux (<48 year old, had more chance of being NOCT, sensitivity 53%, specificity 79.4%, $P = 0.009$).

**Conclusion** In this study we did not find any manometric parameter to be significantly predictive of being a NOCT or DAY patient. Nevertheless, further study is required to explore in more detail the effect of age on pattern of GORD. Previous literature have demonstrated the effect of the meal-sleep time gap which is also confirmed in this study.

**Disclosure of Interest** None Declared

## PWE-086 WHAT MOTIVATES PATIENTS TO ENTER CLINICAL TRIALS INVOLVING ENDOSCOPIC OR SURGICAL TREATMENT? QUALITATIVE INTERVIEWS OF PATIENTS APPROACHED FOR THE BRIDE STUDY (NCT01733719)

[1]S Budihal*, [2]C Jackson, [1]JS deCaestecker. *[1]University Hospitals Leicester, Leicester; [2]Department of Health Sciences, University of Leicester,*

10.1136/gutjnl-2016-312388.331

**Introduction** Poor recruitment is an issue for randomised trials. We aimed to explore patient attitudes towards recruitment in an RCT comparing ablative therapies in Barrett's early neoplasia (BRIDE) & to a proposed trial comparing surgery to endotherapy.

**Methods** Patients sampled from among 100 entering/declining BRIDE in each of 6 UK centres, had telephone interviews by an experienced qualitative researcher using a topic guide developed with patients, audio-recorded, anonymised & transcribed verbatim. Transcript analysis used the constant comparative approach, managed by NVivo software. Scrutiny of initial transcripts during 3–4 intensive readings generated open codes (short descriptors summarising points), grouped into themes. Data from other transcripts contradicting the codes/themes were explored & the coding frame revised, resulting in a set of issues important to patients that can help/hinder recruitment and retention.

**Results** 18 (16 men, age 47–85) were interviewed. Main findings: 1) Gaining informed consent is time-consuming, but necessary as there is potential for misunderstanding. 2) Some patients received information about BRIDE before results of investigations. Recruitment process should be designed to prevent this. 3) Recruiters need a pleasant attitude, honesty, respect for potential participants, & good interpersonal skills. If not their own doctor, the approach should be from someone suitably qualified & introduced by the doctor/their team. 4) Presence of others during recruitment (eg Macmillan nurse or multiple professionals) may frighten patients into interpreting their diagnosis as serious/terminal. 5) Some believed that treatment had been chosen based on individual need, & others that trial participation was the only route to a particular treatment & better follow up, misunderstanding randomisation. 6) The expectation that taking part could benefit people like themselves or their descendants facilitated successful recruitment. 7) Inconvenience/additional costs to patients and their families should be minimised (e.g. many more visits to hospital). 8) Recruitment was facilitated by awareness that outcomes & side effects of the 2 treatments were roughly equivalent. Surgery was not seen as equivalent, but for most was riskier, involving additional suffering & longer recovery. It was seen as less preferable & would need to offer some probability of advantage over endoscopy.

**Conclusion** Communication, openness & trust are key; patients need to understand randomisation does not ensure a particular treatment. Reducing expense/inconvenience assists recruitment. Randomisation to surgery requires clear potential benefits to be acceptable. (NIHR RfPB Grant No PB-PG-0711-25066)

**Disclosure of Interest** None Declared

## PWE-087 ENDOSCOPIC NON-ABLATIVE RADIO FREQUENCY ENERGY TREATMENT (STRETTA®) FOR GASTRO-OESOPHAGEAL REFLUX DISEASE – THE FIRST UK SINGLE CENTRE EXPERIENCE

[1]S Punnoose*, [2]R Sathasivam, [2]O Reece-Bolton, [2]P Thambi, [1]A Dhar, [2]Y Viswanath. [1]*Gastroenterology, County Durham & Darlington NHS Foundation Trust, Co. Durham*; [2]*Surgery, James Cook University Hospital, Middlesbrough, UK*

10.1136/gutjnl-2016-312388.332

**Introduction** Gastro-oesophageal reflux disease (GORD) is usually treated with lifestyle modifications, combined with drug therapy (antacids, alginates and acid suppression drugs such as proton pump inhibitors and H2 receptor antagonists). Patients with inadequate response to lifestyle and medical treatments, or intolerant of medical therapy, are offered anti-reflux surgery with open or laparoscopic fundoplication which remains the gold standard.[1,2] Stretta® is a minimally-invasive endoscopic treatment that delivers non-ablative radiofrequency (NARF) energy to improve and restore the function of the lower oesophageal sphincter muscle, thereby improving symptoms of GORD. The efficacy of the Stretta® procedure in achieving symptom control of GORD has been reported in previous international publications. A systematic review involving 20 studies with 1441 patients having a mean follow-up interval of 15 months showed significant improvements in GORD symptoms including disease-specific and global quality of life.[3] UK data on the outcomes of Stretta® have not been reported, and this is the first report of the Stretta® procedure in the UK, carried out at a single centre since October 2014.

**Methods** Patients with confirmed GORD, unresponsive to medical management with standard or double dose PPI, were offered the Stretta ®procedure based on clinician and patient shared decision. Patients with an associated hiatus hernia of ≤2 cm on their index endoscopy were included. Patients needed to be symptomatic of reflux for at least 3 months on medication and all patients were administered a GERD Health Related Quality of Life (GERD-HRQL) questionnaire pre- and post-Stretta® procedure. The Stretta ® procedure was carried out either under general anaesthesia (early phase) or conscious sedation (later phase) by a single trained endoscopist using the manufacturers protocol. Up to 14 lesion sets or 56 RF applications to the LOS at 1 cm intervals were carried out using an automated generator (Mederi Therapeutics Inc, USA).

**Results** 26 patients underwent the Stretta procedure over a period of 12 months (October 2014 - September 2015).The mean follow-up period was 3.8 months (range 10.5) and there were no recorded procedural complications. All patients completed pre and post procedure GERD-HRQL questionnaires. The median heartburn score (scale 0–30) improved from 18 pre-procedure to 2.5 post-procedure. The overall median regurgitation score (scale 0–30) improved from 19 pre-procedure to 0 post procedure. The overall patient satisfaction was 78%. There was also an improvement in the median overall total GERD-HRQL score (scale 0–75) from 44 pre-procedure to 6 post-procedure. 3 patients had undergone previous anti-reflux surgery. There was again overall improvement of median heartburn scores (18 pre, 0 post), regurgitation scores (1 pre, 0 post) and total GERD-HRQL scores (27 pre, 0 post).

Baseline and post-procedure **GERD-HRQL scores** in **27 patients,** average follow-up of 3.8 months:

**Abstract PWE-087 Table 1**

| Outcome variables | Pre-Stretta | Post-Stretta |
|---|---|---|
| Heartburn score | 18 | 2.5 |
| Regurgitation score | 19 | 0 |
| Patient satisfaction with GORD | 0% | 78% |
| Total GERD-HRQL score | 44 | 6 |

**Conclusion** In this first UK report of Stretta, we demonstrate therapeutic benefit in medically non-responsive GORD, improving patient's heartburn, regurgitation and overall satisfaction scores with low procedural risks. There is also therapeutic benefit in patients with recurrent reflux symptoms after previous anti-reflux surgery, making it a possible treatment option for this group of patients. A larger UK Study is needed to incorporate Stretta into the therapeutic pathway for GORD.

### REFERENCE

1 Kyle A, Perry MD, Ambar Banerjee MD, William Scott Melvin MD. Radiofrequency Energy Delivery to the Lower Oesophageal Sphincter Reduces Oesophageal Acid Exposure and Improves GERD Symptoms: A Systematic Review and Meta-analysis. *Surgical Laparoscopy, Endoscopy and Percutaneous Techniques* 2012;**22**:283–88.

**Disclosure of Interest** S. Punnoose: None Declared, R. Sathasivam: None Declared, O. Reece-Bolton: None Declared, P. Thambi: None Declared, A. Dhar Grant/research support from: Takeda, Shire, Abbvie, Consultant for: Takeda, Abbvie, Y. Viswanath: None Declared

## PWE-088 UK PILOT STUDY OF EUS GUIDED FIDUCIAL MARKER PLACEMENT FOR IMAGE GUIDED RADIOTHERAPY IN OESOPHAGEAL CANCER: INITIAL RESULTS OF FEASIBILITY AND RADIOTHERAPY OUTCOMES

[1]V Mahesh*, [1]S Bangera, [1]E Darling, [2]K Dunn, [2]L Telford, [2]M Sivaramalingam. [1]*Gastroenterology, Blackpool Victoria TeachingG Hospitals NHS Trust, Blackpool*; [2]*Rosemere Cancer Centre, Lancashire Teaching hospitals NHS trust, Preston, UK*

10.1136/gutjnl-2016-312388.333

**Introduction** Fiducial markers (FM) help in radiotherapy planning (RT) by improving target delineation and optimise image guided radiotherapy (IGRT) during RT delivery. It helps in reducing interfraction RT setup uncertainty and improving the accuracy of treatment delivery.

So far there are no studies in the UK that examined this technique with use of FM in Oesophageal cancers. We are hereby reporting the findings of our UK pilot study of FM guided 3 D Conformal RT and IGRT.

**Aim** To evaluate the clinical outcomes of endoscopic ultrasound guided insertion of fiducial markers to demarcate oesophageal cancer for IGRT for Lancashire and South Cumbria cancer network (LSCCN) patients.

**Methods** Institutional research and ethics committee approval was obtained. Our charity Rosemere Cancer Foundation funded this Prospective non-randomised cohort study.

Cook EchoTip Ultra EUS Needles 22-F™ preloaded with 4 gold fiducial markers were used. Each marker measured 10 mm in length and 0.25μ in diameter. Olympus™ linear EUS was used to initially stage the tumour, followed by insertion of FM at the inferior and superior margins of the tumour.

All patients with Oesophageal Squamous cancers at LSCCN from January 2015 to January 2016 considered for chemoradiotherapy were assessed for FM assisted IGRT. Contraindications include non-traversable tumours and patients with Oesophageal stent in situ.

**Results** In total, 13 patients had 47 FM inserted under EUS guidance. Immediate CXR visualisation of FM was seen in 43/49 (88%). EUS guided FM insertion was feasible in all patients, no adverse events reported. Only 11 patients were eventually fit to undergo radiotherapy, of which data was available on 8 patients who received Radical 3 D conformal RT with 50 Gy. Markers were visualised in 21/27 (75%) on CT planning and during IGRT at treatment delivery using cone-beam CTs. Migration of the FM was seen with 2 markers, close to the actual lesion (in 2 patients).

FM derived gross tumour length (GTV) on planning CT was similar to endoscopic tumour length (7.4 cm vs 8 cm). Mean GTV volume was 40.09 cubic cm (range: 18.57–80.1). Mean GTV length was 7.4 cm (range: 3.75–11.3). Mean PTV volume was 252.07 cubic cm (range: 135.4–357.2). Mean V20 for Lung was 19.16% (range: 13.1–28.37). FM assisted significantly in RT planning for tumour delineation.

**Conclusion** FM for oesophageal cancer is technically feasible, safe, significantly improves target delineation for radiotherapy with excellent visibility for IGRT and acceptable stability (7.4% migration rate).

Our completed data comparing FM based IGRT with conventional IGRT will help further clarifying its routine use in RT for patients with squamous cell oesophageal cancers.

**Disclosure of Interest** None Declared

## PWE-088a SHOULD MEALS BE BLOCKED DURING AMBULATORY PH MONITORING?

[1]E Athanasakos*, [1]S Harrington, [1]L Neilan, [1]A Raeburn, [1]N Zarate, [1]A Emmanuel, [1]R Sweis. [1]*Gi Physiology Unit, University College of London Hospital, London, UK*

10.1136/gutjnl-2016-312388.334

**Introduction** The pH sensor cannot differentiate retrograde from anterograde bolus movement. Physiologists often block meals in pH studies to reduce the artefact of acid-containing food/fluids; however there is no clear evidence with regards to the appropriateness of this practice. The aim of this study was to compare results of ambulatory pH monitoring without and with meals blocked in patients being investigated for reflux symptoms.

**Methods** Standard pH parameters were compared without and with meals blocked in consecutive patients presenting to University College London Hospital Oesophageal Unit, a tertiary referral centre. T-test was used for quantitative and chi-square for qualitative variables. Results are presented as mean±standard deviation(SD)

**Results** pH studies for 99 patients with reflux-like symptoms were collected prospectively over 3 months. Under 17 hour recordings (n = 2) or studies ON acid-reducing therapy (n = 6) were excluded. Mean age of the 91 remaining patients (M31:F60) was 50±15 years. Time spent without and with meals blocked was 1388±100 and 1243±114 minutes respectively ($p < 0.001$); 145±111 min difference. There was no difference in the quantitative or qualitative Total reflux (% time pH < 4; TR), Upright reflux (UR) or Supine Reflux (SR) when analysed without and with meals excluded.(Table)

At individual level, meal exclusion changed TR/UR/SR to become negative in 4 and positive in 2 patients; average 5% (range 2.5–23 min) of the mealtime was taken up swallowing acid-containing products. Food diary occasionally provided guidance, although quality of self-reports was widely variable.

**Abstract PWE-088 Table 1**

| | Meal included | Meal excluded | p | # positive meal included | # positive meal excluded | p |
|---|---|---|---|---|---|---|
| Total reflux | 5.95 (7.05)% | 6.09 (7.73)% | 0.461 | 42 | 41 | 1.000 |
| Upright reflux | 6.00 (6.28)% | 6.38 (6.87)% | 0.382 | 33 | 32 | 1.000 |
| Supine reflux | 5.91 (11.58)% | 5.85 (11.61)% | 0.486 | 44 | 43 | 1.000 |

There was no difference in qualitative ($p = 0.538$) or quantitative ($p = 0.338$) Symptom Index (SI) when meals were not blocked (12 positive; mean 16.9±22.6%) compared to when meals were blocked (16 positive; mean 18.4 ±25.4%). Also there was no difference in any pH parameters between the two groups with all symptoms pooled, or with typical (heartburn, regurgitation, chest pain; n = 59) and atypical symptoms (laryngopharyngeal reflux, cough, belch, dysphagia; n = 33) analysed separately (p = NS for all). Furthermore there was no difference in any pH parameter when results were analysed with (n = 43) or without (n = 48) a hiatus hernia (p = NS for all).

**Conclusion** In 93% of patients, routine blocking of meals had no impact on the final report. In a small minority, the artefact of swallowing acidic products as well as shortening of the 24 hour study to exclude meals (average ≥2 hours) can also change results from positive to negative and vice versa.

**Disclosure of Interest** None Declared

## PWE-089 PROGNOSTIC IMPLICATIONS OF SYNCHRONOUS AND METACHRONOUS ADENOMAS IN PATIENTS WITH COLORECTAL CANCER

[1]A Patel, [2]E Spector, [2]R Ranat, [2]O Ali, [1]N Williams, [3]R Arasaradnam*. [1]*Department of Colorectal Surgery, University Hospitals of Coventry and Warwickshire NHS Trust*; [2]*Warwick Medical School, University of Warwick*; [3]*Department of Gastroenterology, University Hospitals of Coventry and Warwickshire NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.335

**Introduction** The prognostic significance of adenoma detection in colorectal cancer (CRC) survivors is poorly characterised. This study aimed to determine if patients with synchronous adenomas (SAs) are more likely to develop metachronous adenomas (MAs) and its impact on locoregional recurrence and survival.

**Methods** Patients with stage I-III CRC undergoing curative surgery at our institution, between 2006 and 2012, were included. The SA group included patients with adenomas at pre-operative colonoscopy or in the resection specimen. SPSS version 21 was used for univariate analysis (chi-squared test) and multivariate analysis (logistic regression/Cox regression modelling).

**Results** In total, 562 patients (M:F 323:239, median age 69 years (62–77)) were included; 197 had SAs. Male gender and

older age were significantly associated with SAs ($p < 0.001$ and $p = 0.020$ respectively). By 60 months, 70/366 (19%) patients undergoing colonoscopic examination developed MA. On univariate analysis, SA patients were more likely to develop MA than non-SA patients (26% versus 16% respectively, Odds ratio 1.91, $p = 0.014$). On multivariate analysis, the only independent predictor of MA by 24 months was SA at presentation. However, by 60 months, male gender and right sided tumours were independent predictors of risk of developing MA. SA patients had a significantly lowerl local recurrence rate compared to non-SA patients (2/188 (1%) versus 18/314 (5%), $p = 0.008$). After correction for age, sex and pathological T stage, no difference in overall (OS) or disease free survival (DFS) between SA patients and non-SA patients was observed (Hazards Ratio (HR) 0.926, $p = 0.687$ and HR 2.367, $p = 0.460$, respectively). Similarly, MA patients had similar OS compared to those that did not have MAs (OS 99 months versus 102 months, $p = 0.504$).

**Conclusion** At 5 years, proximal tumours and male gender were predictors of risk of developing metachronous adenomas. However, there was no difference in overall or disease free survival amongst patients presenting with SAs or MAs compared to patients without such adenomatous lesions. Detection of adenomas in CRC survivors does not indicate adverse prognosis.

**Disclosure of Interest** None Declared

## PWE-090 ARE CANCERS OF THE COLON BIOLOGICALLY DIFFERENT COMPARED TO RECTAL CANCER?

[1]A Patel, [2]F Peters, [2]J Shah, [2]R Ranat, [1]N Williams, [3]R Arasaradnam*. *[1]Department of Colorectal Surgery, University Hospitals of Coventry and Warwickshire NHS Trust; [2]Warwick Medical School, University of Warwick; [3]Department of Gastroenterology, University Hospitals of Coventry and Warwickshire NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.336

**Introduction** Emerging evidence suggests that tumour biology of rectal cancers differs from colonic cancer. This study aimed to determine which clinic-pathological factors affect lymph node yield (LNY) and survival in colonic (CC) compared to rectal cancer (RC).

**Methods** Patients [a1] with stage I-III disease undergoing curative surgery, between 2006 and 2012, were included. Multivariate linear/logistic regression and Kaplan Meier survival analysis with SPSS version 21 were performed.

**Results** 726 patients (M:F-398: 328, median age-70 years(63–78 yrs) were included (median follow up-58 months-(37–78 months)); 205 patients had RC. Male gender and younger age were associated with RC. A higher LNY was detected with RC compared to CC (median LNY:20 (14–27.5) versus 18 (12–25), $p = 0.013$). No differences in locoregional recurrence or distant metastases were found (CC 40/521 versus RC 13/205, $p = 0.635$ and CC 98/521 versus RC 36/205, $p = 0.750$ respectively). Overall survival (OS) was better in CC compared to RC (mean OS 114 months versus 90 months, $p = 0.004$); no difference in disease free survival (DFS) was observed. An inadequate LNY (<12 LN) was associated with poor OS in CC compared to RC patients (mean OS-80 months versus 91.5 months, $p = 0.027$, respectively). On multivariate analysis, T3 stage ($p = 0.003$), N1 stage ($p = 0.016$), tumour size ($p = 0.018$) and mucinous histology ($p = 0.018$) were associated with an inadequate LNY in CC only and not RC.

**Conclusion** An inadequate LNY is related to aspects of the primary tumour and is a marker of poor prognosis for CC patients only. No survival differences are observed for RC patients with an inadequate LNY compared to those with >12 lymph nodes questioning the prognostic significance of number of lymph nodes retrieval in RC.

**Disclosure of Interest** None Declared

## PWE-091 LIMITED IMPACT ON COLORECTAL CANCER DETECTION AND MORTALITY RATES WITH COMPLETE COLONOSCOPY EXAMINATION DESPITE POOR BOWEL PREPARATION

A Masding*, Z Cargill, N Aveyard, S Musa, A Alisa, K Tang. *Gastroenterology, Barnet Hospital, Royal Free Hospitals NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.337

**Introduction** Achieving key quality indicators of colonoscopy are recognised to be associated with quality of bowel cleansing.[1] However, the impact of bowel preparation quality on colorectal cancer (CRC) detection and associated mortality rates is unclear. Limited published studies report conflicting results correlating detection of pre-malignant lesions with quality of bowel preparation and do not report on colorectal mortality.[2] Current guidelines suggest that if bowel preparation is poor, colonoscopy should be repeated within 1 year.[3] Aim: To determine the prevalence of poor bowel preparation in patients achieving complete colonoscopy, and its association with polyp detection, CRC, and mortality rates within a large district general hospital.

**Methods** All patients with poor bowel preparation (Boston Bowel Preparation Scale <5) undergoing colonoscopy by a single endoscopist were identified using the UNISOFT database over 5 years (2006–2010). Electronic records were analysed to identify indication for colonoscopy, completion rates, adenoma detection rate (ADR), diagnosis, 1 and 5 year mortality rates, and number of repeat colonoscopies/completion CT colonography.

**Results** 990 colonoscopies were performed (ADR 26%). 208/990 (21%) had poor bowel preparation (M:F 103:105, mean age 62 years). Of these, 197/208 (95%) had complete colonoscopy to the terminal ileum, caecum or anastomosis and 51/208 (25%) underwent repeat colonoscopy/CT colonography. 86/208 (41%) had indications of anaemia, previous polyps, previous CRC and abnormal imaging. Of these, 9% (n = 8/86) were found to have CRC. There was a 3/86 (3.5%) 1 year mortality rate, and 24/86 (28%) 5 year mortality rate, none from CRC. In a comparison group with the same indications for colonoscopy and good bowel preparation (n = 69), 1 and 5 year mortality rates were 2.9% (2/69) and 7.3% (n = 5/69), respectively, 1 of which resulted from CRC.

**Conclusion** The quality of bowel preparation does not significantly impact on CRC detection or mortality rates if complete colonoscopy examination is achieved. Early repeat colonoscopy/CT colonography within 1 year may not be necessary and subsequent examination could be at the standard recommended surveillance interval.

### REFERENCES

1 Hassan, *et al*. Bowel preparation for colonoscopy: ESGE Guideline. *Endoscopy* 2013;**45**:142–150.
2 Wong, *et al*. Determinants of Bowel Preparation Quality and Its Association With Adenoma Detection. *Medicine (Baltimore)* 2016;**95**(2).

3 Lieberman, *et al*. 2012. Guidelines for colonoscopy surveillance after screening and polypectomy: a consensus update by the us multi-society task force on colorectal cancer. *Gastroenterology* **143**(3):844–57.

**Disclosure of Interest** None Declared

## PWE-093 EARLY OUTCOMES OF BOWELSCOPE SCREENING (BOSS) ENDOSCOPY & THE RESULTING COLONOSCOPIES

A Gaglia, G Fitzgerald*, S Hemer, S Stewart, U Duffy, P O'Toole, S Sarkar. *Liverpool and Wirral Bowel Screening Centre, Liverpool, UK*

10.1136/gutjnl-2016-312388.338

**Introduction** Bowel scope screening (BoSS), a 1 off flexible sigmoidoscopy for 55 year olds, has recently been introduced as part of the Bowel Cancer screening in England. The outcomes & pathways of patients have been modelled around the landmark Atkins study and the long term effectiveness of the program will need time to be confirmed. The aim of this study was to review our early experience of the outcomes from BoSS including adenoma detection rate (ADR) and additional findings from colonoscopies following BoSS.
**Methods** This was a retrospective study reviewing our BoSS outcomes from the start of BoSS programme from March 2015 to January 2016. This included detailed outcomes of the colonoscopies generated from BoSS.
**Results** Over the 10 months of the study 658 BoSS were performed. The ADR was 11%. A total of 29 colonoscopies were generated with a conversion rate of 4.4%.

*Referral Patterns*: When reviewing the referral patterns (21 male patients, 8 females), 7 could be considered inappropriate (24%) either because of over estimation of initial polyp size (n = 3; 10% were actual polyp size below 10 mm) or misdiagnosis of histology (n = 4; 14%> Histology hyperplastic). Of the appropriate referrals, 11 were due to polyps >1 cm (38%)(low risk), 5 (17%) were due to post polypectomy histology -high grade dysplasia and tubovillous (high risk), 4 (14%)were due to polyp >1 cm plus 2 or more adenomas (high risk), one was due to >20 hyperplastic polyps above the rectum and one was due to impossible polypectomy due to poor bowel preparation.

*Colonoscopic Findings*: Of the 7 inappropriate referrals, 6 had only left sided pathology (85%), already diagnosed during BoSS and 1 (15%) had a 4 mm adenoma in the caecum. Of the appropriate referrals 14 of 22 (64%) had only left sided pathology detected. The median size was 6 mm (range 2–45 mm). 8 of 22 (36%) had right sided adenoma; median size 3 mm (range 2–12 mm), of which 4 were referred due to high risk adenomas, 3 due to low risk adenomas, and 1 due to more than 20 hypeplastic polyps above the rectum.

*Advanced Pathology*: Interestingly, the most advanced adenomas in all colonoscopies but one, were the ones visualised at the sigmoidoscopy. One case with a 6 mm tubovillous adenoma in sigmoid had a 12 mm tubulous adenoma in the caecum. 1/22 cases had a 25 mm adenocarcinoma in the rectum.
**Conclusion** Our early experience suggests that whilst ADR within the programme is almost double the recommendation, it is important to remain within the pathway in view of the yield of pathology generated which will improve with ongoing experience and education. No predictive factor was found for right colon lesions. It is reassuring that the most advanced lesions were the one visualised at the sigmoidoscopy.
**Disclosure of Interest** None Declared

## PWE-094 UNDERSTANDING THE EFFICACY OF FAECAL MICROBIOTA TRANSPLANTATION IN CLOSTRIDIUM DIFFICILE INFECTION: RE-ESTABLISHMENT OF GUT MICROBIOTA WITH THE ABILITY TO DEGRADE BILE?

BH Mullish*, JAK McDonald, A Pechlivanis, DN Rees, HRT Williams, JR Marchesi, MR Thursz. *Division of Digestive Diseases, Imperial College London, London, UK*

10.1136/gutjnl-2016-312388.339

**Introduction** Faecal microbiota transplantation (FMT) has recently emerged as a highly-effective therapy for recurrent/refractory *Clostridium difficile* (recently re-named *Peptoclostridium difficile)* infection (CDI); however, the specific mechanisms underlying the efficacy of FMT remain largely unclear. Given that different bile salt metabolites differentially affect *C. difficile*'s ability to germinate and grow both *in vitro* and *in vivo,* we hypothesised that CDI is characterised by perturbed bile acid metabolism, and that FMT may exert its efficacy through re-establishment of gut microbiota that restore this process to normal.
**Methods** Stool samples were collected from healthy volunteer donors participating in an FMT programme, whilst serial stool samples were collected from a patient successfully treated with FMT for refractory CDI both pre- and post-transplantation. Samples were assayed for structure of the gut microbiota using 16 S rRNA gene sequencing, and for bile acid profiling via liquid chromatography mass spectrometry (LC-MS). Presence of bile salt hydrolases (responsible for deconjugation of glycine- and taurine-conjugated primary bile acids within the gut) was assessed via PCR of bacterial DNA extracted from stool.
**Results** A 61 year-old man with refractory CDI was treated with FMT. He demonstrated a modest improvement in diarrhoea after a first FMT, but an immediate, complete and sustained resolution of symptoms after a second FMT from a different donor (performed two weeks after the first). 16 S rRNA gene sequencing demonstrated a pattern of faecal bacterial communities that closely resembled that of the healthy donors by one week after the second FMT. Faecal LC-MS analysis revealed the patient's gut bile acid profile pre-FMT to be enriched sixfold in taurocholic acid (a potent trigger for *C. difficile* spore germination *in vitro*). Post-FMT, the patient's gut bile acid profile resembled that of healthy donors, with loss of taurocholate and enrichment of secondary bile acids (which are recognised *in vitro* as inhibitors of *C. difficile* growth). PCR of bacterial DNA extracted from faeces displayed no detectable BSH genes in the recipient either pre-FMT or by one week following the first FMT, but BSH presence was confirmed in the recipient by one week following the second FMT, as well as in both donors.
**Conclusion** FMT may restore bile-degrading members of the gut microbiota, and consequently restore a normal bile acid metabolism to the gut that protects against *C. difficile* germination.
**Disclosure of Interest** None Declared

## PWE-095 FIT SAMPLE STABILITY FOR HAEMOGLOBIN-POSITIVE FAECES USING TWO ANALYTICAL SYSTEMS OVER SEVEN DAYS

[1]C Piggott*, [2]P McDonald, [1]C John, [1,3]H Bruce. *[1]NHS Bowel Cancer Screening Programme Southern Hub, Guildford; [2]Scottish Bowel Screening Centre, Kings Cross Hospital, Dundee; [3]Blood Sciences (Biochemistry), Surrey Pathology Services, Guildford, UK*

10.1136/gutjnl-2016-312388.340

**Introduction** Automated quantitative faecal immunochemical test (FIT) for haemoglobin (Hb) systems include a faecal sampling device (with preservative buffer), laboratory analyser and reagent kit. In colorectal cancer screening programmes faecal samples are usually collected at home and posted back to the laboratory for testing. We investigated the likely effect of sample return time on Hb concentration using naturally Hb-positive faeces and two FIT systems.

**Methods** Eight Hb-positive faecal samples were taken from stools provided for calprotectin analysis and mixed for two minutes using wooden mixing sticks to distribute Hb. Up to 10 days elapsed before loading into sampling devices. FIT devices were loaded with faeces according to manufacturers' instructions for all eight samples in quadruplicate for the FOB Gold (Sentinel Diagnostics) and OC-Sensor Autosampling Bottle 3 (Eiken Chemical Co.). After mixing and incubation for 2–3 hours at room temperature, Hb was measured using the SentiFIT 270 and OC-Sensor PLEDIA analysers, respectively. Two of the sampling devices for each sample were stored at 19°C (15–23°C) and two at 6°C (4–8°C) for seven days. After mixing and allowing the 6°C samples to warm to room temperature, Hb was re-measured on days 3, 5 and 7. Samples were also prepared using the Extel Hemo Auto MC Collection Picker/HM-JACKarc system (Kyowa Medex Co. Ltd.) but results are not included here due to pre-analytical sample preparation errors.

**Results** The percentage difference of the mean of the duplicate results from day 0 to days 3, 5 and 7 was calculated.

**Abstract PWE-095 Table 1**

| Change in Hb concentration day 0 to 7 | FOB Gold/ SentiFIT 270 | | OC-Sensor Autosampling Bottle 3/PLEDIA* | |
|---|---|---|---|---|
| Decreasing | Samples 2, 3, 4, 7 | | Samples 3 (19°C only), 7, 8 (20°C only) | |
| Increasing | Samples 1, 5, 6 | | Samples 1 (19°C only), 3 (6°C only) 4, 5 | |
| Increasing then decreasing | Sample 8 | | Samples 6, 8 (6°C only) | |
| | 6°C | 19°C | 6°C | 19°C |
| Average % difference | 8.4 | -1.6 | 28.8 | 28.2 |
| Min % difference | -18.8 | -45.4 | 4.0 | -9.6 |
| Max % difference | 32.4 | 20.7 | 79.9 | 117.1 |
| n | 8 | 8 | 7 | 7 |

*sample 2 results below PLEDIA analytical range so excluded

**Conclusion** Changes in Hb concentrations over seven days showed variation for both FIT systems, possibly due to differences in Hb degradation over time, or differences in individual portions of faeces that are loaded into the sampling devices and the time taken for Hb to move from the sampling stick to the buffer. The average, minimum and maximum percentage differences for the FOB Gold/SentiFIT 270 were lower than the OC-Sensor Autosampling Bottle 3/PLEDIA, possibly due detection of different Hb degradation products over time. Further work is needed to assess whether samples prepared sooner after collection would show the same differences.

**Disclosure of Interest** None Declared

## PWE-096 FIT HAEMOGLOBIN CONCENTRATION IN FAECES FOR THREE ANALYTICAL SYSTEMS FROM ONE TO 48 HOURS AFTER SAMPLING

C John, C Piggott*, H Bruce. *NHS Bowel Cancer Screening Programme Southern Hub, Guildford, UK*

10.1136/gutjnl-2016-312388.341

**Introduction** Automated quantitative faecal immunochemical tests (FIT) for haemoglobin (Hb) include a faecal sampling device (with preservative buffer) and analytical system. In colorectal cancer screening programmes faecal samples are usually collected at home and returned to the laboratory for testing. The manufacturers state a minimum of one hour incubation before analysis, to allow time for Hb release from the sample into the buffer. We investigated the Hb concentration from one to 48 hours using Hb-positive faeces using three analysers.

**Methods** Hb-positive faecal samples were taken from stools provided for calprotectin analysis, mixed for two minutes using wooden mixing sticks to distribute the Hb and loaded on to the sampling devices according to the manufacturers' instructions, with wiped tips. Seven samples were set up in duplicate for the Extel Hemo Auto MC Collection Picker (Kyowa Medex Co. Ltd), FOB Gold (Sentinel Diagnostics), and OC-Sensor Autosampling Bottle 3 (Eiken Chemical Co.) and an additional four samples were set up on the latter two analysers as the first was unavailable. Samples were incubated at room temperature (15–23°C) and the Hb was measured at 1, 2, 3, 24, 48 hours using the HM-JACKarc, SentiFIT 270 and OC-Sensor PLEDIA, respectively, ensuring the samples were first mixed and allowed to stand for 15 minutes.

**Results** The percentage difference of the mean of the duplicate results from 1, 2, 3, 24 and 48 hours was calculated.

**Abstract PWE-096 Table 1**

| Change in Hb concentration from 1–48 hrs | SentiFIT 270 Sample ID (n = 11) | OC-Sensor PLEDIA Sample ID (n = 10) | HM-JACKarc Sample ID (n = 7) |
|---|---|---|---|
| Decreasing | 3, 4, A, F | F | - |
| Increasing | H | 1, D, G, H | G |
| Increasing then decreasing | G, E | 3, 4, A, C | B, C, D, H |
| Decreasing then increasing | 1, D | B | E |
| Decreasing, increasing then decreasing | B, C | - | - |
| Increasing, decreasing then increasing | - | - | F |
| Average % diff | -11.5 | 11.4 | 64.0 |
| Min % diff | -60.8 | -22.8 | 11.8 |
| Max % diff | 32.9 | 27.9 | 133.3 |

*Excluded as below analytical range: sample 2 PLEDIA and SENTIFIT, sample E PLEDIA

**Conclusion** Changes in Hb concentration over 48 hours showed variation for all three FIT systems possibly due to the difference in nature of the sample. Overall the Hb

concentration increased to 24 hours then decreased using the SENTIFIT and PLEDIA by which time the faeces appeared to be distributed in the buffer compared with the HM JACKarc for which faeces remained on the sample stick for some samples at 48 hours. The average and minimum percentage differences for the SentiFIT 270 were lower than the PLEDIA with the highest values for HM JACKarc possibly due detection of different Hb degradation products over time. Further work is needed to assess a bigger sample group and whether samples prepared sooner after collection would show the same differences.

**Disclosure of Interest** None Declared

## PWE-097 3D HIGH RESOLUTION MANOMETRY VERSES STANDARD WATER PERFUSED ANO RECTAL MANOMETRY IN THE EVALUATION OF ANORECTAL DISEASE #393

[1]D Solanki*, [2]K Odedra, [3]A Schizas. *[1]Colorectal, St Thoams Hosptial; [2]Colorectal, Nottingham University and St Thomas' Hospita, London; [3]colorectal, St Thomas' Hosptial, UK*

10.1136/gutjnl-2016-312388.342

**Introduction** The aim of this study was to compare standard 8 channel water perfused catheter to a HARM 28 channel catheter in patients with both evacuatory bowel disorders and faecal incontinence.

**Methods** 50 patients referred for WPM testing also underwent simultaneous HRAM testing.

WPM was performed using an 8 channel radial arranged catheter using an automated puller to evaluate vector volume pressure profiles of the anal sphincter complex, and also a station pull through technique to further assess pressure profile.

Rectal sensory function was evaluated using a separate water perfused catheter.

This was compared to a HRAM 28 pressure catheter with 28 circumferential sensors along 6 cm length. A balloon was attached over a rectal sensor which would allow evaluation of rectal pressure change throughout the entire study.

Anal canal resting pressure, squeeze pressure, anal canal length, rectal sensations and presence recto-anal inhibitory reflex were recorded using both catheters.

Comparison of the anal canal pressures using the water perfused catheter were made to the pressure profile from the HRAM studies.

The HRAM also allows for real time pressure measurement of anal canal pressure as a balloon is inflates in the rectum, simulating rectal filling. This in theory give a more physiology sphincter contraction. This was compared to patient symptoms.

**Results** 50 patients with either faecal incontinence symptoms and or evcuatory disorders underwent both water perfused manometry and High resolution ano rectal manometry.

(24 with evcuatory difficulties/ constipation, 21 with faecal incontinence.

The results are summarised in the table below.

Analysing the squeezes pressure during balloon distension showed that there was a significant difference between those patients with faecal incontinence (40 mmHg) and constipation (77 mmHg) ($p = 0.036$).

**Conclusion** There is good correlation between the modalities and the HRAM can obtain substantially greater real time physiological information. HRAM with balloon rectal distension appears to be more sensitive in identifying difference between patients with no faecal incontinence and faecal incontinence though further work is required following this preliminary study.

**Abstract PWE-097 Table 1**

| | Maximum resting pressure (mmHg) | Maximum squeeze pressure (mmHg) | Mean resting pressure (mmHg) | Mean squeeze pressure (mmHg) |
|---|---|---|---|---|
| Water perfused station technique | 64 | 113.5 | 25 | 48.5 |
| Water perfused automated puller technique | 68 | 100 | 28 | 39 |
| Three dimensional high resolution anal | 66 | 128 | 59.5 | 99.5 |

There was good correlation between all three modalities despite the absolute values varying in value.

**Disclosure of Interest** None Declared

## PWE-098 MISSED COLORECTAL CANCER FOLLOWING COLONOSCOPY, CT COLONOGRAPHY OR BARIUM ENEMA

D King*, H Livett, S Prabhakaran, I Ahmad. *Gastroenterology, Alexandra Hospital, Redditch, Worcestershire, UK*

10.1136/gutjnl-2016-312388.343

**Introduction** Colonoscopy, CT colonography (CTC) and barium enema have been used to detect Colorectal Cancer (CRC). A diagnosis of CRC following a false-negative investigation represents a missed opportunity and may lead to adverse clinical outcomes. The literature describes various rates for missed CRC with some authors suggesting patients be consented for between 2–6%.[1] We present audit data from our NHS Trust looking at the miss rate of CRC following these investigations in both symptomatic and screened patients.

**Methods** We retrospectively audited the computerised (EZNotes) case notes and investigations of patients with a diagnosis of CRC between January-December 2013. Patients were sourced from the Somerset cancer registry and National Bowel Cancer Audit (NBOCA). We recorded whether patients had been investigated with colonoscopy, CTC or barium enema in the preceding 6 to 36 month period, obtaining a rate for false-negative investigations i.e a missed diagnosis of CRC.

**Results** 385 patients had a diagnosis of CRC made within the period. Of 291 colonoscopies performed, 17 missed a diagnosis made in the preceding 6–36 month period equating to a 6% miss rate. The mean time delay between date of colonoscopy in PCCRCs and date of diagnosis was 613 days (range 201–1075). 38% of these missed cancers were in the right colon and 39% were found in the rectum and sigmoid. 62% of patients had concomitant diverticular disease.

Of 32 CTCs undertaken 3 missed a CRC and of 11 barium enemas performed 5 CRCs were missed.

11% of patients presented as emergencies, 14% via bowel cancer screening and the remaining 75% presented with symptoms, from surveillance or with a significant family history.

**Abstract PWE-098 Table 1**

| Investigation | Number of patients | Number of investigations performed | Diagnostic | Missed | % of investigations 'missed' |
|---|---|---|---|---|---|
| Colonoscopy | 243 | 291 | 274 | 17 | 6% |
| CT colonography | 32 | 32 | 29 | 3 | 9% |
| Barium Enema | 11 | 11 | 6 | 5 | 45% |
| **total** | **286** | **334** | **309** | **25** | **8%** |

**Conclusion** Colonoscopy is the best test for detecting CRC but missed cancers still occur. The missed CRC rate found in this audit was comparable to published series. Several factors seem to be associated with false negative investigations; right sided cancers are often cited as more susceptible to misses due to anatomy and technical difficulties. We found that rectal cancers were missed in comparable numbers to right sided cancers, and suggest that particular care is taken when diverticular disease is present. Extra time should be taken in the caecum and hepatic flexure as "review areas" where misses are more likely to occur. Ongoing audit as well as improved endoscopy training and technology will ensure that rates of missed CRC are reduced.

## REFERENCE

1 Bressler B, *et al*. Rates of new or missed colorectal cancers after colonoscopy and their risk factors: a population-based analysis. *Gastroenterology*. 2007 Jan;**132** (1):96–102.

**Disclosure of Interest** None Declared

## PWE-099 DESMOID TUMOURS IN FAMILIAL ADENOMATOUS POLYPOSIS: OUR EXPERIENCE

EG Kane*, S Delamere, E Garforth, R Heath, P Rooney. *Colorectal Surgery, Royal Liverpool University Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.344

**Introduction** Desmoid tumours are rare, benign, non-metastasising fibromatoses that affect 8–23% of patients with FAP. Desmoid disease poses significant morbidity through local compression and obstruction. There is an increased risk in females, pregnancy, those with germline mutation of the APC gene beyond codon 1399 and previous abdominal surgery. Management requires a balance of chemoprophylaxis and careful surgical intervention.

We aimed to evaluate our local investigation and management of patients with FAP and desmoid tumours with respect to published guidance.

**Methods** Patients with FAP who are on the colorectal database who were known to have desmoid disease were identified. Data was collected retrospectively from case notes, ICE and PACS systems. Management of each patient was compared to the St Mark's Polyposis Registry guidance and published literature.

**Results** There are 41 patients with FAP in our colorectal database (25 female, 16 male). Eleven patients from eight families were identified as having desmoid disease (six female, five male). Ten of these had desmoid tumours; one only postoperative desmoplastic reaction. The median age at diagnosis was 33 (range 8–49). Of the 10, all had undergone colectomy (five restorative proctocolectomy, three ileorectal anastomosis, two panproctocolectomy (eight prophylactically, two for malignancy). Three patients have had excision of desmoid tumours; all abdominal wall tumours.

Six patients have been managed conservatively with observation, chemoprophylaxis and ureteric stenting for managing complications of compression. All patients have been kept under surveillance. One patient died following bowel perforation, one following recurrent bowel obstruction with inoperable mesenteric desmoid disease. Genetic testing was performed on the majority but specific mutational analysis was available for only 67% of patients. 6 of 8 of the patients with mutations in the desmoid region have developed desmoid tumours.

**Conclusion** Mortality in our patient group from desmoid disease is higher than that from colorectal cancer and periampullary tumours, in line with national reported data. Prophylactic colectomy has been suggested to increase risk of developing desmoid disease especially with mutations in the desmoid region. Our results show that our patients are being managed appropriately but knowledge of location of germline mutation is strongly advised prior to offering prophylactic colectomy and management of solid desmoid tumours. In those with a higher risk of developing desmoid tumours, there may be an argument to continue endoscopic surveillance for as long as possible.

## REFERENCE

1 Speake, *et al*. Desmoid tumours in patients with familial adenomatous polyposis and desmoid region adenomatous polyposis coli mutations. *Br J Surg* 2006;**93** (Suppl 1):21.

**Disclosure of Interest** None Declared

## PWE-100 MISSED RATES OF COLORECTAL CANCER - DIAGNOSTIC LIMITATIONS

[1]E Clarke*, [1]KL Woolson, [1]M Saunders, [2]J Millington, [2]M Armstrong, [1]M Metzner. *[1]Gastroenterology; [2]Radiology, Derriford Hospital, Plymouth, UK*

10.1136/gutjnl-2016-312388.345

**Introduction** Colorectal cancer is the fourth most common cancer in the UK and the second leading cause of cancer related deaths. Missed colorectal cancer may delay diagnosis and treatment and lead to worse disease outcome. Colonoscopy is considered the gold standard in diagnosis of colorectal cancer but increasing numbers of computed tomography (CT) scans are performed as a less invasive alternative. Other cross-sectional modalities are also used to examine the abdomen.Our aim was to determine the rate of missed colorectal cancers at initial investigation (endoscopy or CT) amongst patients subsequently diagnosed with colorectal cancer in 2014.

**Methods** We identified all colorectal cancer diagnoses made in 2014 by interrogating the histopathology system. Review of the electronic records detected any endoscopic investigations or cross sectional imaging in the 2 years before diagnosis. All

CT imaging within 2 years of diagnosis was reviewed by a consultant gastrointestinal radiologist.

**Results** There were 226 diagnoses of colorectal cancer in 2014. 3 patients had a colonoscopy within 2 years of diagnosis which did not demonstrate the lesion, ie 3 interval cancers. Median delay to diagnosis was 18 months. All 3 were right sided cancers. 11 patients underwent cross-sectional imaging in the 2 years prior to diagnosis which did not reveal the lesion, of whom 8 had multiple scans. Median delay to diagnosis was 9 months.No patients developed an interval cancer following a CTC.

**Conclusion** CT is not a reliable investigation to rule out colonic malignancy and clinicians may be falsely reassured by a negative result. We suggest that all patients in whom Colorectal cancer is suspected should be investigated when appropriate using either endoscopy or CTC, regardless of any other recent imaging.

## REFERENCES


1 Bowel Cancer Key Stats. Cancer Research UK, Nov 2014. www.cruk.org/cancerstats
2 http://nww.irefer.nhs.uk/adult/#Tpc39, accessed 11/**7**/15.
3 Leaper M, *et al*. Reasons for failure to diagnose colorectal carcinoma at colonoscopy. *Endoscopy* 2004;**36**:499–503.
4 Bessler, *et al*. Rates of new or missed colorectal cancers after colonoscopy and their risk factors: a population based analysis. *Gastroenterology* 2007;**132**:96–102.
5 Guidelines for colorectal cancer screening and surveillance in moderate and high risk groups (update from 2002). *Gut* **2010**;59:669–690.
6 Laiyemo AO, *et al*. Liklihood of missed and recurrent adenomas in the proximal versus the distal colon. *Gastrointest Endosc* 2011;**74**:253–261
7 Patai, *et al*. Serrated pathway; alternative route to colorectal cancer. *World Journal of Gastroenteroloy* 2013;**19**(5); 607–615.
8 Brenner, *et al*. Protection from Right- and Left-sided colorectal neoplasms after colonoscopy: Population-based study. *Journal of the National Cancer Institute* 2010;**102**(2):89–95.


**Disclosure of Interest** None Declared

## PWE-101 POST-INVESTIGATION COLORECTAL CANCER RATES AT IMPERIAL COLLEGE HEALTHCARE NHS TRUST LONDON, EXPLORING NEW CALCULATION METHODOLOGY


G Woodfield*, C Carasco, M Foster, G Smith. *Gastroenterology, Charing Cross Hospital, London, UK*



10.1136/gutjnl-2016-312388.346


**Introduction** Post colonoscopy colorectal cancer (PCCRC) rates have been proposed as a key quality indicator of a colonoscopy service. Rates vary according to the calculation methodology used.[1] A recent study used the number of colonoscopies done within 3 years of a colorectal (CR) cancer diagnosis as the denominator for PCCRC calculations, rather than the total number of cancers. This gave higher PCCRCs that previously calculated; 8.6% between 2001–2007 in the English NHS.[1] This study aims to calculate the PCCRC and post- CT virtual colonoscopy CR cancer rate at Imperial College London. This is important in order to assess local practice, but also to explore methodology for calculating PCCRC rates, which is currently not standardised.

**Methods** All patients diagnosed with CR cancer between October 2014–2015 were identified using the Somerset cancer database for Imperial College Trust. All colonoscopy and CT virtual colonoscopy results in the 3 years preceding the diagnostic investigation were reviewed. GPs were contacted, to detect any investigations done outwith Imperial Trust (23 responded). Where patients had multiple surveillance colonoscopies, only the latest could be counted as false negative, as in previous studies.[1]

**Results** 272 patients were initially identified. 99 were excluded due to lack of data, duplications, non-CR cancer diagnoses including anal cancer or tumour recurrences. 173 patients were included for analysis. 103 had been diagnosed by colonoscopy, 70 by CT. In this cohort 115 colonoscopies and 72 CT virtual colonoscopy scans were performed (or CT abdomen if this was the diagnostic test). Of 115 colonoscopies, 28 were done within the Bowel Cancer Screening Programme (BCSP), 75 were done for symptoms, 12 were done for surveillance. There were no false negative colonoscopies in the BCSP group. In the symptomatic group there were 3, and in the surveillance group there were 2 false negative colonoscopies. The overall PCCRC was 4.3%.

Of the 72 CT scans, there were 2 false negative scans, The post CTVC CR cancer rate was 2.8%.

**Conclusion** Our PCCRC rate of 4.3% over one year compared favourably to the estimated National PCCRC rate of 7.3% in 2007 (8.6% between 2001–2007) using the same methodology for calculations.[1]

Imperial NHS Trust is performing in line with predictions of improved colonoscopy pick-up rates over time.[1] This study adds to literature regarding methodology for calculating PCCRC rate, and suggests that it be further refined to provide a clear calculation standard.

## REFERENCE


1 Morris EJA, Rutter MD, Finan PJ, *et al*. Post- colonoscopy colorectal cancer (PCCRC) rates vary considerably depending on the method used to calculate them: a retrospective observational population-based study of PCCRC in the English National Health Service. *Gut* 2015;**64**:1248-1256


**Disclosure of Interest** None Declared

## PWE-102 ELUCIDATING THE ROLE OF NON JEJUNI/COLI-CAMPYLOBACTER IN THE DEVELOPMENT OF COLORECTAL CANCER UTILISING COMPARATIVE GENOMICS TO STUDY THEIR PATHOGENIC POTENTIAL


[1]I Mukhopadhya, [2]T Hsu, [3]H Nielsen, [4]H Nielsen, [1]S Berry, [2]C Huttenhower, [1]GL Hold*. *[1]Gastroenterology, Aberdeen University, Aberdeen, UK; [2]Biostatistics, Harvard T.H. Chan School of Public Health, Boston, United States; [3]Clinical Microbiology; [4]Infectious Diseases, Aalborg University Hospital, Aalborg, Denmark*



10.1136/gutjnl-2016-312388.347


**Introduction** Emerging evidence links the gut microbiota to colonic inflammation and colorectal cancer (CRC). Studies have shown over-representation of oral bacterial species including *Campylobacter* spp. in CRC tissue and also njc-*Campylobacter* are over-represented in IBD wherein normal homeostasis has been lost. Understanding the role of njc-*Campylobacter* as an aetiological agent in CRC and elucidating their pathogenicity characteristics is of immense clinical importance.

**Aim** To perform whole genome sequencing (WGS) of clinically derived njc-*Campylobacter* to compare/identify virulence traits potentially linked to disease presentation.

**Methods** WGS of 21 unique clinically derived *Campylobacter* isolates was performed (7 *Campylobacter showae*, 3 *Campylobacter ureolyticus* and 11 *Campylobacter concisus*) from biopsy/faecal samples of subjects with malignancy, acute

enteritis and IBD. DNA was extracted using the QIAamp DNA Mini Kit. Libraries were prepared using Illumina Nextera XT DNA Library Prep Kit and Nextera XT Index Kit v2, multiplexed, and paired-end sequenced on the Illumina MiSeq. *De novo read* assembly used the A5-miseq pipeline with QUAST. Genome annotation was performed using the rapid prokaryotic genome annotation tool Prokka.

**Results** Genome assembly of *C. showae* strains resulted in 8 to 59 contigs per strain (mean number = 21; average genome size 2,199,446 nucleotides); *C. concisus* isolates had an average contig number of 72 and average genome size of 1,982,586 nucleotides. *C. ureolyticus* strains average contig number was 134 and average genome size of 1,608,008 nucleotides. Through Prokka annotation, the average number of coding sequences was 2215 for *C. showae* isolates (range 2050–2368) with function predicted for ~71.3%. For *C. concisus* the average number of coding sequences was 1985 (range 1833–2087) with function predicted for ~ 71.9%. *C. ureolyticus* had a lower number of coding sequences (average 1613) with function predicted for ~72.6%. We focused on the VirB4/D10 operon homologs, which are components of the Type IV secretion system. Contrary to previously published sequence data from oral strains, the majority of colonic *C. showae* isolated and 2 *C. concisus* strains possessed almost complete T4SS systems and additional virulence traits, including the exotoxin 9 gene.

**Conclusion** The findings clearly demonstrate genetic differences among colonic *Campylobacter* isolates as compared to oral strains and sheds light on the pathogenic potential of these emerging colonic pathogens. The findings also further highlight the need for further sequencing studies to be undertaken.

**Disclosure of Interest** None Declared

## PWE-103 PARTICIPATION, POSITIVITY AND OUTCOMES IN THE NEPALI COMMUNITY INVITED FOR BOWEL CANCER SCREENING – A FEASIBILITY STUDY

[1]HE Seaman*, [1]J Snowball, [1]P Butler, [2]J Underwood, [1]H Bruce. *[1]NHS Bowel Cancer Screening Programme Southern Hub; [2]BCSP Surrey Screening Centre, Guildford, UK*

10.1136/gutjnl-2016-312388.348

**Introduction** The NHS Bowel Cancer Screening Programme (BCSP) offers biennial screening for all adults in England aged 60–74 years using a guaiac-based faecal occult blood test (gFOBt). This feasibility study investigated anecdotal evidence that people who originate from Nepal account for a higher than expected proportion of gFOBt-positive subjects who have a normal outcome at follow-up colonoscopy (false-positive). The BCSP Southern Hub serves several geographical areas with relatively high proportions of Nepali subjects (*e.g.* Aldershot, Reading and Ashford).

**Methods** Data for subjects aged 60–74 invited for screening in the Southern Hub (roll-out to September 2014) were extracted from the BCSP database (BCSS). Because information about subjects' ethnicity is not recorded on BCSS, Nepali subjects were identified using an algorithm that was based on surname and postcode of residence (subject residing in an area where ≥8% of the BCSP-invited population had a Nepali surname). Data on uptake, gFOBt-positivity and false-positivity were compared between Nepali and non-Nepali men and women invited for screening.

**Results** We identified 5,274 Nepali subjects (43.5% women) amongst the 6,218,071 subjects invited for screening during the study period. Compared with the non-Nepali population, uptake of screening was significantly higher amongst Nepalis (61.9% vs. 58.3%; odds ratio [OR] 1.16, 95% Confidence Interval [95%CI] 1.10,1.23), more so amongst Nepali men (OR 1.26, 95%CI 1.17,1.35) than women (OR 1.09, 95%CI 1.00,1.19). Positivity was high in the Nepali population (7.6% vs. 2.0%; OR 4.01, 95%CI 3.53,4.57) and higher for women (OR 5.13, 95%CI 4.22,6.23) than men (OR 3.20, 95%CI 2.69,3.81). False-positivity was markedly higher in the Nepali population (OR 2.37 95%CI 1.77,3.18). More than half of gFOBt-positive Nepali women (50.6%) had a normal outcome at colonoscopy (false-positive), compared with 24.4% in non-Nepali women (OR 3.18 95%CI 2.09,4.84). The proportion of Nepali men with a false-positive outcome was also greater than amongst non-Nepali men (OR 1.75, 95%CI 1.12,2.75).

**Conclusion** Compared with non-Nepali gFOBT-positive subjects, false-positivity was high in the Nepali community living in the south of England. The reasons for high false-positivity, implications for colonoscopy resource and exposure of subjects to unnecessary risk will be addressed in further work. The study area will be extended to include other Nepali communities living in London and a validation exercise will be undertaken to test the algorithm used to identify Nepali subjects.

**Disclosure of Interest** None Declared

## PWE-104 A RANDOMISED DOUBLE-BLIND PLACEBO-CONTROLLED TRIAL OF A MULTI-STRAIN PROBIOTIC IN THE TREATMENT OF CHRONIC SYMPTOMS POST DIVERTICULITIS

[1]C Kvasnovsky, [2]AN Donaldson, [3]R Sherwood, [4]I Bjarnason*, [4]S Papagrigordiasis. *[1]Department of Surgery, University of Maryland Medical Centre, Baltimore; [2]Applied Mathematics and Statistics, State University of New York, Stoney Brook, United States; [3]Clinical Biochemistry; [4]Colorectal Surgery, King's College Hospital, London, UK*

10.1136/gutjnl-2016-312388.349

**Introduction** The emergency treatment for acute diverticulitis is straightforward, but many patients develop post-diverticulitis chronic symptoms which resemble that of Irritable Bowel Syndrome (IBS). We assessed the possible effect of Symprove, a multi strain probiotic, on these symptoms in a randomised double-blind placebo-controlled trial.

**Methods** This was a single-centre, randomised, double-blind, placebo-controlled trial of the efficacy of the probiotic Symprove in adult patients with post-diverticulitis IBS like symptoms. 143 patients were randomly assigned to receive 1 mL/kg/day of the probiotic (N = 72) or placebo (N = 71) for 3 months. The primary endpoint was a change in abdominal pain. Secondary endpoints included nine abdominal symptoms and changes in faecal calprotectin.

**Results** 120 patients completed the trial. Pain score with the probiotic decreased from 9.5±7.7 to 5.9±6.7, which did not differ significantly ($P$ = 0.12) with that of placebo (7.5±7.0 to 6.1±6.4).

The probiotic improved constipation, diarrhoea, mucorrhoea, back pain and vaginal discharge significantly ($p < 0.04$) above that of placebo, but not abdominal pain, PR bleeding, dysuria or bloating. Symprove prevented an increase in intestinal inflammation in male patients ($p$ = 0.05)

**Conclusion** The probiotic Symprove did not improve abdominal pain scores significantly, but significantly improved some

other post-diverticulitis symptoms and prevented an escalation in intestinal inflammatory activity in male patients.

**Disclosure of Interest** C. Kvasnovsky: None Declared, A. Donaldson: None Declared, R. Sherwood: None Declared, I. Bjarnason Grant/research support from: Received financial support for a SpR for a PhD student (Charlotte), S. Papagrigordiasis Grant/research support from: Recipent of a grant from Symprove for a PhD studentship (Charlotte)

## PWE-105 MANAGEMENT OF THE MALIGNANT COLORECTAL POLYP: CHANGES IN PRACTICE AND OUTCOMES IN A TERTIARY REFERRAL CENTRE IN LONDON

[1]I Parisi*, [2]M Mitchison, [2]M Rodriguez-Justo, [1]S McCartney, [1]S Bloom, [1]E Seward, [1]R Vega. [1]*Gastroenterology*; [2]*Histopathology, UCLH, London, UK*

10.1136/gutjnl-2016-312388.350

**Introduction** Screening colonoscopy has resulted in increasing identification rates of colorectal polyps which can be endoscopically removed. Almost 10% will histologically prove to be pT1 cancers. Factors associated with cancer recurrence post polypectomy have been described (ie lymphovascular invasion, poor differentiation, R1 <1 mm resection margins) and completion surgery is advocated for high risk patients. Since current data are not evidence-based and surgery may implicate significant morbidity, it is of utmost importance to clarify the cost-benefit of each therapeutic option.

**Methods** Patients with pT1 cancers that had either endotherapy+surgery or endotherapy alone between 2008–2014 were included in the study (n = 61). Endoscopic, histologic and surgery data, including complication rates from both modalities and overall/ cancer-free survival were recorded. Management was compared between two different periods (2008–11, 2012–14) in order to identify changes in practice.

**Results** 38 (62%) patients were treated with endoscopic resection alone. 23 had a completion surgery, 15 (65%) due to R1 resection. Adenomatous tissue was found in 6 surgical specimens but only one had residual cancer. Major complications occurred in 2 (3%) patients post endoscopy versus 6 (26%) postoperatively (p = 0.044), 2 of whom died. There were no cancer relapses at mean follow up of 41±24 months. 17/31 (55%) patients treated prior to 2012 had surgery compared to 6/30 (20%, p = 0.008) treated in 2012–14. More than one risk factors were apparent in 8 (33%) patients treated with endoscopy only within the last 3 years compared to no one previously (p = 0.017). Out of the overall 38 patients with R1 resection, 14 (74%) had completion surgery between 2008–11 compared to 31% recently treated (p = 0.022).

**Abstract PWE-105 Table 1**

| | Patients endo only 2008–2011 | Patients endo only 2012–2014 | |
|---|---|---|---|
| N | 14 | 24 | **P = 0.008** |
| Size, mm | 24±14 | 17±6 | P = 0.12 |
| R1, N (%) | 5 (35%) | 13 (54%) | P = 1 |
| Poor differentiation, N | 1 | 0 | P = 1 |
| Lymph invasion, N | 1 | 0 | P = 1 |
| Haggitt 4 | 0 | 3 | P = 0.23 |
| Kikouchi sm3, N | 0 | 5 | P = 0.37 |
| ≥1 risk factor, n (%) | 5 (35%) | 14 (58%) | P = 0.31 |
| >1 risk factor, n (%) | 0 (0%) | 8 (33%) | **P = 0.017** |

**Conclusion** Endoscopic resection of polyp cancers is a safe and successful therapy with minor complications and recurrence rates similar to surgery. Changing our practice recently in favour of endotherapy alone did not lead to increasing cancer relapses, suggesting that presence of risk factors should not be an absolute indication for surgery, but instead an individualised decision should be made based on combination of factors.

**Disclosure of Interest** None Declared

## PWE-106 COLORECTAL CANCER: EXPERIENCE OF A DISTRICT GENERAL HOSPITAL IN UK

[1]I Papamargaritis*, [2]P Piskilidis, [3]K Yoong. [1]*Medicine, Aintree Hospital*; [2]*Medicine, Wirral Hospital, Liverpool*; [3]*Medicine, Leighton Hospital, Crewe, UK*

10.1136/gutjnl-2016-312388.351

**Introduction** Colorectal cancer is a significant cause of morbidity and mortality in the UK with 40,000 new cases each year. The purpose of this study is to present the descriptive epidemiology of colorectal cancer in a district general hospital setting (Leighton Hospital – catchment area of 300,000 people).

**Methods** All patients referred to the hospital between 01/01/12-31/12/13 were included.Data were obtained from case notes and computer based data:

- Date of referral
- Route of referral
- Diagnosis
- Treatment and recurrence

Literature search via Medline. Statistical analysis by SPSS statistical package

**Results** Demographics

380 patients (155 female(40.8%) and 225 (59.2%) male).

Anatomical Site 11.3% had cancer in Caecum, 6.3% in Ascending Colon, 2.6% in Hepatic Flexure, 4.8% in Transverse Colon, 1.6% in Splenic Flexure, 4.8% in Descending Colon, 26.8% in Sigmoid, 32.1% in Rectum, 2.6% in Anus and 7.1% in other anatomical sites e.g appendix

Type of Referral 42.3% of patients were referred by GP, 12.3% by physicians, 16.2% by general surgeons, 14.1% by other specialties and 15.3% diagnosed via the Bowel Screening Programme (BSP)

TNM staging 113 patients (29.7%) had TxNxM1 and 267 with TxNxM0. From those with M0, 151 (56.6%) were N0M0 while the rest 43.4% had mets to at least one regional lymph node (N1 or greater)

Surgical treatment 287 patients(75.5%) underwent surgical resection(including removal of liver mets) and 24.5% did not have a surgical procedure

Chemotherapy 164 patients(43.2%) had chemotherapy (adjuvant or palliative), 138 did not require chemo post-operatively and 78 were not suitable for it.

Recurrence From a total of 335 patients (45 patients were treated in different hospitals), 173 of them (51.6%) did not

have any recurrence until June 2015 while the rest 48.4% had recurrence or died from the cancer.

**Conclusion** Compared to the National UK data, this is a representative sample of new bowel cancer diagnosis in terms of demographics and anatomical site (55.7% male, 44.3% female, 95% 50 years old or more). Only exception is the higher number of descending and rectal tumours in Leighton Hospital.

GPs continues to play an important role in diagnosis of bowel cancer but BSP has also improved the rate of diagnosis

Regarding TNM staging, 30% of patients were diagnosed in advanced stage which is higher than the UK(10% diagnosed at stage 4) and creates questions as to how effectively people are referred for specialist review in Leighton Hospital.

Finally, 76.7% of the patients survived one year after their diagnosis (75.7% in the UK) and 75.5% underwent major resection (62% in the UK)

Overall, this study demonstrates that a district general hospital can provide a colorectal service comparative to national standards.

**Disclosure of Interest** None Declared

## PWE-107 SHORT-TERM CLINICAL OUTCOMES OF ENDOSCOPIC RESECTION OF GIANT (>3CMS) COLORECTAL POLYPS: COULD IT BE A SAFE COLON SPARING THERAPEUTIC OPTION?

[1]K Marimuthu*, [1]T Amuthalingam, [2]R Mahmood, [1]P Stonelake, [1]A Kawesha, [2]S Ishaq. [1]*General Surgery*; [2]*Gastroenterology, Russell Hall Hospital, Dudley, Dudley, UK*

10.1136/gutjnl-2016-312388.352

**Introduction** Modern endoscopic practice offers definitive management of colorectal polyps. However the role of this colon sparing minimally invasive modality is not clearly established in technically challenging "giant" polyps. Aim of this study was to evaluate the safety & short-term clinical outcomes of endoscopic resection of large colorectal polyps measuring 3 cm or more.

**Methods** All patients with colorectal polyps measuring ≥3 cm who underwent endoscopic or surgical treatment in our hospital from 2009 to 2016 were included in the study. Patient demographics & clinical data were collected from endoscopic and hospital database.

**Results** Over seven year period, 100 patients (median age: 72 years) were identified but complete data was available for 98 patients (25 right colon & 73 left colon). Median colorectal polyp size was 4.5 cm (range: 3–16 cm, & majority of polyps were in the rectum & sigmoid colon (69/98,69%) & predominantly sessile Paris type 1 s polyps. Four patients (4/98,4.1%) decided not to have treatment. Sixty-eight polyps (68/94,72.3%) were removed by endoscopic mucosal resection (EMR) or piece meal technique, of these fourteen patients (14/68,20.6%) needed more than one EMR session for the complete removal of the polyp. During follow-up, six patients (6/68,8.8%) who underwent previous EMR required additional surgical procedure in order to obtain complete polyp clearance. Following initial endoscopic assessment, surgical resection was deemed appropriate in twenty-six patients (26/94,26.5%) due to difficult location of the polyp & suspected/confirmed malignancy. Majority of the removed polyps were tubulovillous adenoma on histological confirmation. In the endoscopy group, twelve patients in endoscopy group (12/68,17.6%) had high-grade dysplasias (HGD) & four patients had invasive cancers (4/68,5.9%), of which two were considered cured & other two patients underwent further surgery. Among the surgical group seven (7/26,27%) & five (5/26,19%) patients had invasive cancer & HGD respectively. There were twelve procedure-related adverse events (12/68,17.6%) occurred in the endoscopy group, mainly occurred between 2008 & 2013 (eight minor bleeding requiring clips or additional cauterization). We have encountered only four complications between 2014 & 2016 (two minor & one major bleeding & one incidence of hypotension) despite performing more polypectomies. Outcome data for the surgical group was not available at present.

**Conclusion** Colorectal EMR for polyps of ≥3 cm can be performed at experienced endoscopy centres with a low rate of major complications. This modality offers a safe non-surgical option in management of large colorectal lesions especially in the elderly patients.

**Disclosure of Interest** None Declared

## PWE-108 FEASIBILITY, SAFETY AND EFFICACY OF KNIFE ASSISTED RESECTION (KAR) OF RECTAL POLYPS EXTENDING TO THE DENTATE LINE: HOW LOW CAN YOU GO?

K Kandiah*, FJQ Chedgy, S Thayalasekaran, S Subramaniam, R Bhattacharyya, F Thursby-Pelham, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.353

**Introduction** Rectal polyps extending to the dentate line (RPDL) pose a technical challenge to endoscopic resection due to the narrow lumen, rich venous/haemorrhoidal plexus and proximity to the skin. Conventional snare EMR is challenging due to the restrcited space and lack of precision with the snare. This has led to the use of surgical techniques like TEMS and TAR for resection of RPDLs. **K**nife **A**ssisted snare **R**esection (KAR) allows for precise mucosal incision at the dentate line and the dissection of the polyp from the anorectal junction. We aim to assess the feasibility, safety and efficacy of KAR for RPDLs.

**Methods** This is a prospective observational study of patients who underwent KAR with a mean follow up of 32 months (range 1–83 months). All procedures were done on a day case basis and were carried out under sedation by two endoscopists using high definition gastroscopes with a distal transparent cap. The polyp margin on the anal side was injected with lifting solution consisting of gelofusin, indigo carmine, 1% lignocaine and adrenaline. Haemostasis was maintained using a combination of the endoscopic knife and coag-grasper (Olympus Medical). A mucosal incision was extended around the margins of the polyp, followed by submucosal dissection to facilitate snare deployment to achieve complete polyp resection. Post-procedural antibiotics were not routinely given.

**Results** A total of forty patients (20 female, median age 69 years) underwent KAR for RPDLs over the study period. The polyp characteristics and histology are described in Table 1. The curative resection after a single KAR was achieved in 33 (82.5%) patients. 7 of the 40 patients required further KARs, leading to a total curative resection rate to 97%. The risk factors for multiple resections are polyps measuring >60 mm and encompassing >50% of the circumference ($p < 0.01$). Overall, there was one complication where the patient had

delayed bleeding which was managed conservatively. None of the patients experienced perforation, or post-procedural sepsis.

**Abstract PWE-108 Table 1** Lesion characteristics and histology

| Lesion size, median (range), mm | 50 (12–150) |
|---|---|
| **Morphology, n (%)** | 29 (72.5) |
| - LST – G, nodular mixed | 2 (5) |
| - LST – G, homogenous | 2 (5) |
| - LST – NG | 7 (17.5) |
| - Is | |
| **Scarring, n (%)** | 13 (32.5) |
| **Histology, n(%)** | 30 (75) |
| Adenoma with LGD | 6 (15) |
| Adenoma with HGD | 3 (7.5) |
| Cancer | 1 (2.5) |
| Other – Condyloma acuminatum | |

**Conclusion** This is the largest reported series of KAR for RPDLs. Our data demonstrates that for Western endoscopists, KAR is a very safe and effective technique in the treatment of RPDLs. As KAR is a viable alternative to full ESD, TEMS and TAR, it will play an increasingly significant role in the management of RPDLs.

**Disclosure of Interest** None Declared

## PWE-109 CYTOPLASMIC EXPRESSION OF HMGB1 IS ASSOCIATED WITH EARLY COLORECTAL CARCINOGENESIS

A Hay, CA Christopoulou, GI Murray, EM El-Omar, GL Hold, MH McLean*. *School of Medicine, Medical Sciences & Nutrition, University of Aberdeen, Aberdeen, UK*

10.1136/gutjnl-2016-312388.354

**Introduction** High Mobility Group Box-1 (HMGB1) is a ubiquitous nuclear protein that regulates gene expression. When phosphorylated, it translocates to the cytoplasm and extracellular space to stimulate pro-inflammatory responses and influence epithelial cell behaviour. Our aim was to assess expression of HMGB1 in colorectal neoplastic progression.

**Methods** Epithelial nuclear and cytoplasmic subcellular expression of HMGB1 was assessed immunohistochemically in a tissue microarray, representing 650 colorectal cancers and 50 paired normal colorectal mucosa samples, and 25 endoscopically resected paraffin embedded polyp cancer lesions (CaP), sourced from the Grampian Biorepository. Ethical approval was granted by the Grampian biorepository scientific committee. Intensity of HMGB1 expression (none, weak, moderate or strong) in all samples and proportion of positive cells/total CaP compartment (normal, adenoma, carcinoma) were double scored. Relative frequencies of staining across the tumour microarray were calculated and correlated to clinico-pathological data. In CaP, expression analysis used Fisher's exact test of 2X2 contingency tables.

**Results** Increased intensity of nuclear HMGB1 expression was correlated with increasing TNM tumour stage ($p = 0.006$) and Dukes stage ($p = 0.016$). Loss of nuclear HMGB1 intensity was identified at the early cancer stages compared to normal, followed by increased expression as the cancer progressed. No ($p = 0.001$) or low ($p = 0.01$) nuclear staining was associated with defective mismatch repair protein. Across the microarray, expression of cytoplasmic HMGB1 was significantly associated with malignancy ($p < 0.0001$). In CaP, both increased intensity and proportion of cytoplasmic expression was significantly associated with the area of carcinoma compared to adjacent normal ($p < 0.0002$) and adenoma ($p < 0.0002$). There was a significant reduction in proportion of nuclear HMGB1 positive cells in the CaP carcinoma compartment ($p = 0.0001$), due to foci displaying loss of nuclear and emergence of cytoplasmic HMGB1. The leading edge of cancer invasion had strong expression in both nuclear and cytoplasmic compartments (77% of CaP).

**Conclusion** Dynamic subcellular localisation of HMGB1 expression is associated with colorectal neoplastic progression with cytoplasmic HMGB1 a feature of early carcinogenesis. The functional impact of this warrants further investigation and may reveal new insight into the pathogenesis of colorectal cancer.

**Disclosure of Interest** None Declared

## PWE-110 POST ENDOSCOPY MISSED COLORECTAL CANCER AT A LOCAL DGH - IMPLICATION FOR PRACTICE

S Sultan, M Mirzaali*, A El-Sayed, I Jaly, MI Yahya, J Rademaker. *Gastroentorology, Conquest Hospital, East Sussex, UK*

10.1136/gutjnl-2016-312388.355

**Introduction** Colonoscopy is the "gold standard" approach to investigating symptoms in relation to the colon. However, recent literature has shown that colonoscopy as a diagnostic test for colorectal cancer is far from perfect with a cancer missed rate of 8.6% in the UK. We aim to identify the rate of colorectal cancers diagnosed following a negative flexible sigmoidoscopy and/or colonoscopy and to explore contributing factors.

**Methods** This is a retrospective case analysis investigating all patients who received a diagnosis of colorectal cancer over a five-year period (2010–2015). We used our local clinical databases in identifying those patients who had negative flexible sigmoidoscopy and/ or colonoscopies but subsequently received a diagnosis of colorectal cancer.

**Results** 368 (Females 156; males 167; average age 76.71) patients were included in the initial sample. Of those 45 were excluded as an initial endoscope examination was not carried out and the cancers were identified by other means. Of 368 patients who were diagnosed with colorectal cancer, 35 (10.83%) had a previously normal endoscopic examination (19 flexible sigmoidoscopy; 16 colonoscopy)

**Conclusion** This research has shown that despite being the gold standard, colonoscopy as a diagnostic test for colorectal cancer is still far from perfect. In keeping with current research there appears to be a missed rate in detection of colorectal cancers, polyps and adenomas. Factors contributing to missed lesions are thought to be the presence of >2 lesions, lesions present in the left side of the colon, withdrawal time where longer withdrawal time was associated with higher lesion detection rate. Furthermore the smaller the lesion the lower the detection rate on colonoscopy (missed rate: 6% in adenomas >1 cm; 27% in adenomas <5 mm). It is worth bearing in mind that endoscopic procedures are very dependant on operator experience. We recommend longer and more rigorous training in endoscopic procedures and strongly advise following the standardised reporting systems in place.

**REFERENCES**
1 Rex DK, Cutler CS, Lemmel GT, Rahmani EY, Clark DW, Helper DJ, Lehman GA, Mark DG. Colonoscopic miss rates of adenomas determined by back-to-back colonoscopies. *Gastroenterology* 1997;**112**(1):24–8.
2 Barclay RL, Vicari JJ, Doughty AS, Johanson JF, Greenlaw RL. Colonoscopic withdrawal times and adenoma detection during screening colonoscopy. *New England Journal of Medicine* 2006;**355**:2533–2541.

**Disclosure of Interest** None Declared

## PWE-111 COLONIC WALL THICKENING AT COMPUTED TOMOGRAPHY: DOES IT WARRANT AN ENDOSCOPY?

M Kathawala*, SC Cooper. *Department of Gastrointestinal Medicine, University Hospitals Birmingham NHS Trusts, Birmingham, UK*

10.1136/gutjnl-2016-312388.356

**Introduction** Colonic wall thickening is commonly seen on computed tomography (CT).[1,2] The clinical significance is usually unknown and in the absence of guidance, clinicians often face a dilemma to investigate further and send patients to endoscopy. This retrospective study aims to evaluate what proportion of colonic wall thickening at CT correlated to pathology after endoscopic evaluation and to determine if colonic wall thickening at CT always warrants a lower GI endoscopy.
**Methods** A retrospective review of all CT scan reports was performed from 2011 to 2014 at University Hospitals Birmingham NHS Trusts. The database was searched for CT reports which included colonic or bowel wall thickening. Patients with underlying diseases explaining bowel wall thickening were excluded. After selection of relevant cases, anonymised data was collected for gender, age, indication, CT findings and final diagnosis after lower GI endoscopy and biopsy.
**Results** In total, 116 patients with colonic wall thickening reported at CT were found. Chiefly, this was limited to one segment of the colon in 96 patients (82.8%), mostly left sided (59.5%, 69/116). The primary reason for requesting a CT scan was to investigate abdominal pain (48.3%, 56/116). Of the patients with colonic wall thickening at CT, only 51.7% (60/116) proceeded onto lower GI endoscopy with diverticular disease (25%, 15/60) as the main pathology and adenocarcinoma in 9% (5/60). A normal endoscopy was found in 39% (23/60).
**Conclusion** CT scans will often identify colonic wall thickening (2). Subsequent endoscopic examination was performed in just over 50% of patients with a pathological yield of 61.7%. We recommend endoscopic evaluation where colonic wall thickening is demonstrated at CT for patients without existing diagnosis.

**REFERENCES**
1 Macari M, Balthazar EJ. CT of bowel wall thickening: significance and pitfalls of interpretation. Am J Roentgenol 2001;176:**5**:1105–1116.
2 Desai RK, Tagliabue JR, Wegryn SA, Einstein DM. CT evaluation of wall thickening in alimentary tract. *Radiographics*. 1991 Sep;**11**(5):771–83.

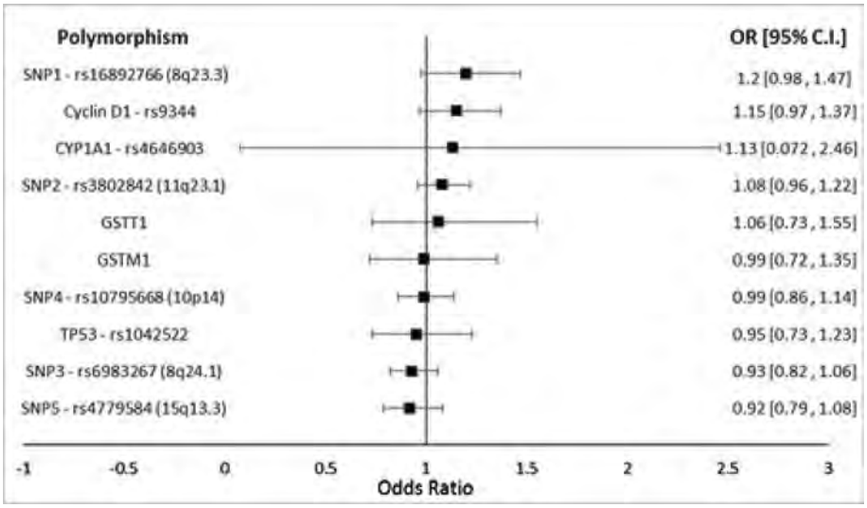
**Disclosure of Interest** None Declared

## PWE-112 THE ASSOCIATION OF LOW PENETRANCE GENETIC RISK MODIFIERS WITH COLORECTAL CANCER IN LYNCH SYNDROME PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

[1,2]N Donald*, [1,2]S Malik, [1,2]J McGuire, [1,2]K Monahan. *[1]Faculty of Medicine, Imperial College London; [2]The Family History of Bowel Cancer Clinic, West Middlesex University Hospital, London, UK*

10.1136/gutjnl-2016-312388.357

**Introduction** Lynch Syndrome (LS) is a highly penetrant inherited cancer predisposition syndrome accounting for approximately 1000 cases of colorectal cancer (CRC) in the UK annually. LS is characterised by autosomal dominant inheritance and germline mutations in DNA mismatch repair genes. The penetrance is highly variable and the reasons for this have not been fully elucidated. This study investigates whether low penetrance genetic risk factors may result in phenotype modification in LS patients.
**Methods** A systematic review was conducted of the PubMed and HuGENet databases. Eligibility of studies was determined by pre-defined criteria. Included studies were analysed via the per-allele model and assessed by pooled odds ratios and establishing 95% confidence intervals. Study heterogeneity was




**Abstract PWE-112 Figure 1**

assessed via Cochrane's Q statistic and $I^2$ values. Publication bias was evaluated with funnel plots. Subgroup analysis was conducted on gender. Statistical software used was the Metafor package for the R programme version 3.1.3.

**Results** Sixty-four polymorphisms were identified and sufficient data was available for analysis of 10 polymorphisms, with between 279 and 1768 CRC cases per polymorphism. None demonstrated association with CRC risk in LS patients. However in sub-group analysis the polymorphism rs16892766 (8q23.3) was significantly associated with CRC risk in males (OR: 1.53, 95% CI: 1.12–2.10).

**Conclusion** The variable phenotype presentation of the disease still remains largely unexplained, and further investigation is warranted. Other factors may also be influencing the high variability of the disease, such as environmental factors, copy number variants and epigenetic alterations. Investigation into these areas is needed as well as larger and more definitive studies of the polymorphisms analysed in this study.

**Disclosure of Interest** None Declared

## PWE-113 ONE YEAR EXPERIENCE OF A NEW CHRONIC RADIATION PROCTOPATHY SPECIALIST SERVICE

N O'shea*, S Thomas-Gibson, A Wilson. *Wolfson Unit, St Mark's Hospital, London, UK*

10.1136/gutjnl-2016-312388.358

**Introduction** Chronic radiation proctopathy (CRP) is a recognised complication of pelvic radiotherapy. Symptoms include diarrhoea, rectal pain, bleeding and tenesmus. In 2014, we set up an enhanced, dedicated, multidisciplinary, specialist service for managing the gastro-intestinal (GI) complications of CRP, based on The Royal Marsden Protocol.[1] Here we review the management of CRP at a tertiary referral centre over one year.

**Methods** Patients with CRP reported at lower GI endoscopy (December 2014–15), were identified by an Endoscopy Database search for 'radiation'. Case notes were reviewed. Indication for procedure, previous cancer and radiotherapy, endoscopy findings, treatment and outcomes were recorded.

**Results** 86 patients had endoscopic evidence of CRP. M:F ratio 8:1. Cancer history: prostate 87% (75), cervical 6% (5), rectal 4% (3), bladder 1% (1), ovarian 1% (1), endometrial 1% (1). Mean time since radiotherapy: 4.5 years (range: 1–13 years). 24% (21) were referred via the 2 WW pathway and 16% (14) by the bowel cancer screening program (BCSP). 23% (20) were identified during surveillance colonoscopies for cancer/ polyps or colitis. 36% (31) were referred from GI clinic. Indications: rectal bleeding 47% (40), change in bowel habit 5% (4), iron deficiency anaemia (IDA) 8% (7) and faecal occult blood 16% (14). 41% (35) were asymptomatic.

27% (23) required intervention for CRP (haemorrhagic angiectasia with rectal bleeding causing anaemia and/or significant impact on quality of life). Sucralfate enemas 2 g bd, ± metronidazole oral 400 mg tds, ± Normacol were prescribed. 65% (15/23) were referred to a Specialist Nurse for follow up, 53% (8/15), of which, responded to medical therapy within 8 weeks. One patient was unable to tolerate sucralfate enemas. 13% (3/23) patients required escalation to rectal formalin instillation. '*Off protocol*', 7% (6) were treated with Argon Plasma Coagulation (APC) as their index therapy. A solitary rectal ulcer was found in 5% (4) of patients, two were a complication of APC. Two patients were referred for hyperbaric oxygen therapy. 62% of patients did not require any therapeutic intervention.

**Conclusion** A significant number of patients with CRP are now referred via 2 WW and BCSP. Full colonoscopic assessment is appropriate to exclude other pathology, however, the majority do not require medical or endoscopic intervention, many are asymptomatic and few have IDA. For patients that require intervention for CRP, a multidisciplinary approach should be employed, medical therapy is effective and well tolerated, endoscopic intervention should be reserved for individuals who fail medical treatment. APC should only be used in carefully selected cases due to risk of ulceration. CRP services should be audited to ensure appropriate management and minimise complications.

### REFERENCE

1 Frontline Gastroenterol (2015) **6** (1): 53–72.

**Disclosure of Interest** None Declared

## PWE-114 GP PARTICIPATION IN INCREASING UPTAKE IN BOWEL CANCER SCREENING: THE PEARL PROJECT

[1]P Butler*, [2]S Duffy, [1]K Reed, [3,4]M Chesters, [3]S Stanley, [3]S Rickard, [3]R Roope, [1]S Benton. *[1]NHS Bowel Cancer Screening Programme Southern Hub, Guildford; [2]Queen Mary University, London; [3]Wessex Strategic Clinical Network, NHS England; [4]Macmillan Cancer Support, Southampton, UK*

10.1136/gutjnl-2016-312388.359

**Introduction** Uptake of bowel cancer screening in England is about 56%. The NHS Bowel Cancer Screening Programme (BCSP) in England is organised centrally, without the direct involvement of general practitioners (GPs). There is evidence to suggest that people are more likely to be screened if they are encouraged to do so by their GP.

The Practice Endorsed Additional Reminder Letter (PEARL) project is a collaboration between the BCSP Southern Hub and a group of Wessex GPs working for Macmillan Cancer Support in partnership with the Wessex Strategic Clinical Network.

**Methods** Wessex practices with BCSP uptake below 55% (prevalent episodes 2008–2013) were invited to participate. Between September 2014 and October 2015 subjects registered with participating practices who had not returned a test kit within 30 days of a standard reminder letter were identified on the BCSP database and their GPs asked to identify those who should *not* be sent a further reminder (end-of-life-care *etc*). The Hub then confirmed that GP-included subjects remained non-respondent and a second reminder letter was sent out with the appropriate GP letterhead and signature.

Uptake was compared between PEARL and non-PEARL practices using logistic regression, adjusted for prior prevalent participation and using conservative variance estimation to take account of correlation of outcomes within practices. To estimate the absolute effect of the intervention, we selected 25 non-PEARL practices matched with PEARL practices for prior prevalent participation and number of invitees.

**Results** The intervention significantly increased the odds of uptake by 12% (OR = 1.12, 95% CI 1.04–1.19, p = 0.001). Restricting analysis to subjects who had not completed a kit by the index date (date PEARL reminder letter was sent, or

would have been sent if in a participating practice), also showed a significant effect of the intervention (2.13 [1.78–2.56]).

**Abstract PWE-114 Table 1**

**Effect of intervention on uptake**

| Population | Study group | No. subjects adequately screened/ invited[1] (%) | OR (95% CI)[2] | p-value |
|---|---|---|---|---|
| All invitees | Comparison practices | 4,822/9,582 (50) | 1.00 | p = 0.001 |
| | PEARL practices | 5,857/10,770 (54) | 1.12 (1.04–1.19) | |
| Invitees not returning kit before index date | Comparison practices | 102/4,259 (2) | 1.00 | p < 0.001 |
| | PEARL practices | 338/4,642 (7) | 2.13 (1.78–2.56) | |

[1] Matched practices comparison; [2] All non-PEARL practices comparison, adjusted for prior prevalent uptake

**Conclusion** The PEARL intervention increased uptake by about 4 percentage points, both as a proportion of all invitees or only those who had not completed a kit by the index date. The extra work PEARL required will be evaluated and recommendations made on the viability of rolling this process out nationally within the BCSP.

**Disclosure of Interest** None Declared

## PWE-115 DETECTION AND CHARACTERISATION OF COLORECTAL POLYPS USING HIGH DEFINITION WHITE LIGHT AND I-SCAN: EVIDENCE AND DELPHI PROCESS-BASED CONSENSUS RECOMMENDATIONS

[1]P Bhandari*, [1]S Thayalasekaran, [2]N Helmut, [3]R Kiesslich, [4]S Sanduleanu. *[1]Endoscopy, Queen Alexandra Hospital, Portsmouth, UK; [2]Endoscopy, Erlangen-Nuremberg, Erlangen; [3]Endoscopy, Klinikum der Landeshauptstadt Wiesbaden und der HELIOS Kliniken Gruppe, Wiesbaden, Germany; [4]Endoscopy, Maastricht University Medical Centre, Maastricht, Netherlands*

10.1136/gutjnl-2016-312388.360

**Introduction** Electronic imaging technologies such as i-Scan, Narrow Band Imaging (NBI) and Fujinon Intelligence Colour Enhancement (FICE) are increasingly used for polyp detection and characterisation, but to date, their use is limited to expert settings. I-scan is a relatively novel technology. Insufficient literature with i-scan and the lack of RCT's hinder its implementation in clinical practice. Our goal was to review the current literature on the clinical utility of i-scan and develop evidence-based practical recommendations.

**Methods** We conducted a systematic review on the role of high definition white-light (HDWL) and i-Scan colonoscopy for polyp detection and characterisation. A series of evidence-based statements were developed and put through anonymous voting along the lines of a modified Delphi process. A one day consensus meeting was held (June 20, 2015, Milan). Each statement was voted until consensus (i.e >80% agreement) was achieved or rejection agreed. GRADE recommendations were assigned to the agreed statements.

**Results** The Consensus Panel consisted of 11 international experts. In total, 11 statements were proposed, of which 9 achieved consensus:

- HDWL is recommended rather than standard definition (SD) for the detection and characterisation of colorectal polyps;
- HDWL + i-Scan improves polyp and adenoma detection rates;
- HDWL + i-Scan are superior to HDWL alone for the optical diagnosis of colorectal polyps;
- HDWL + i-Scan in expert hands meet the ASGE PIVI standards for the optical diagnosis of diminutive polyps;
- HDWL+i-Scan in non-expert hands do not meet the ASGE PIVI standards for the optical diagnosis of diminutive polyps;
- Optical diagnosis of polyps with i-Scan has a learning curve and needs systematic training;
- The performance of i-Scan for real time characterisation of colorectal polyps is similar to NBI & FICE.

Two statements failed to achieve consensus:

- HDWL alone can be effective for the in-vivo characterisation of polyps in expert hands;
- The adenoma detection rate is comparable when using HDWL + i-scan versus chromoendoscopy.

**Conclusion** The Consensus Panel proposes evidence-based recommendations for the detection and characterisation of colorectal polyps using high-definition white light endoscopy and i-scan, to facilitate implementation of this technology in clinical practice. Areas of uncertainty, controversy and future research needs are addressed.

**Disclosure of Interest** None Declared

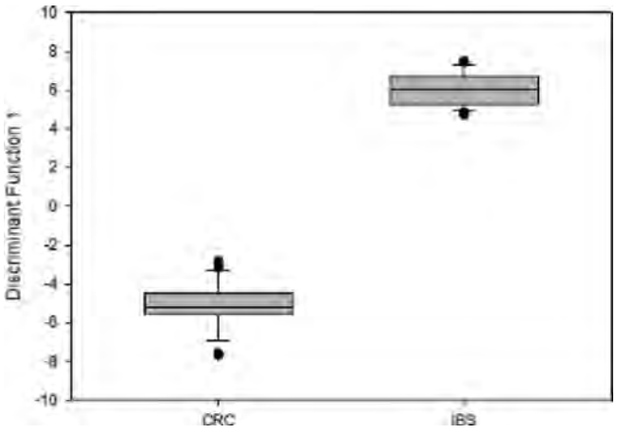
## PWE-116 DETECTION OF COLORECTAL CANCER FROM URINARY VOLATILE ORGANIC COMPOUNDS USING A NEW CHROMATOGRAPH/ELECTRONIC-NOSE INSTRUMENT – WOLF SYSTEM

[1]E Westenbrink, [2]N O'Connell, [2]C Bailey, [2]C Nwokolo, [3]K Bardhan, [4]R Arasaradnam*, [1]J Covington. *[1]School of Engineering, University of Warwick; [2]Department of Gastroenterology, University Hospital Coventry and Warwickshire, Coventry; [3]Rotherham General Hospital, Rotherham; [4]Clinical Sciences Research Institute, University of Warwick, Coventry, UK*

10.1136/gutjnl-2016-312388.361

**Introduction** Colorectal cancer (CRC) remains one of the leading causes of cancer-related death in Europe and the USA. The gold standard diagnostic test of colonoscopy is highly invasive, expensive and has an associated morbidity. The current non-invasive option for CRC screening includes Faecal Immunochemical Testing (FIT) for haemoglobin, which shows a specificity of 87–96%, but has a wide variation in potential sensitivity (66–88%). One non-invasive method that is gaining interest for the diagnosis of a variety of cancers measures the volatiles/gases that emanate from human biological media.

**Methods** Urine samples were collected from 26 CRC and 23 controls (Irritable bowel syndrome patients; IBS) and stored at -80 °C. 5 mL aliquots were heated to 40°C for 5 minutes to develop sufficient headspace. The WOLF 3.1 gas chromatograph/electronic nose instrument, developed at Warwick University, was used to analyse the resultant headspace. The analysis method took a total of 25 minutes for each sample, with an air purge in between to avoid cross-contamination. Statistical evaluation by Linear Discriminant Analysis (LDA) was tested by repeated trials of single unknown sample by re-




**Abstract PWE-116 Figure 1**

introduction and re-classification by a K-Nearest-Neighbour technique.

**Results** Figure 1 below shows the 2 group LDA classification of CRC and IBS samples using response time slices of 100 seconds and extraction of two response features from each. There is distinction between the disease groups, with no overlap seen in any of the samples in this population ($P < 0.0001$). The sensitivity and specificity of distinguishing CRC from IBS controls from KNN re-classification were 92% and 77% respectively.

**Conclusion** This pilot study affirms the utility of a custom made WOLF 3.1 gas chromatograph-electronic nose instrument to detect CRC using urine samples. Further validation in a larger sample set is underway but holds promise for a simple, economical tool in CRC detection.

**Disclosure of Interest** None Declared

## PWE-117 'LIES, DAMNED LIES AND THE CAECAL INTUBATION RATE' A STUDY OF THE INAPPROPRIATE CONVERSION OF INCOMPLETE COLONOSCOPIES TO FLEXIBLE-SIGMOIDOSCOPY

S Beg*, S Sansone, K Ragunath. *Gastroenetrology, Nottingham Digestive Diseases Unit, Nottingham University Hospital, Nottingham, UK*

10.1136/gutjnl-2016-312388.362

**Introduction** A caecal intubation rate of >90% is a well accepted quality indicator of colonoscopy and is consequently monitored within endoscopy units. Endoscopists' desire to meet this target may mean that incomplete colonoscopies are recorded as flexible-sigmoidoscopies. The aim of this study was to examine whether the conversion of requested colonoscopies is a clinically significant phenomenon.

**Methods** A retrospective review of all flexible sigmoidoscopies performed between 1st January 2015 and 31st December 2015 at Nottingham University Hospitals was performed. Where a colonoscopy was requested but a flexible-sigmoidoscopy performed, the patient's records and endoscopy reports were reviewed to determine whether this conversion was decided before the start of the procedure and documented.

**Results** During the 12 month period, 3096 flexible-sigmoidoscopies were performed by 48 endoscopists. 149 requests could not be retrieved and were therefore excluded from this analysis. Of the 2947 sigmoidoscopy requests reviewed, 3.2% (n = 98) procedures were originally requested as a colonoscopy, with 15 converted at the point of vetting. 40 of converted procedures were planned polypectomies or post polypectomy assessments in patients who had previously undergone complete visualisation of the colon, and could therefore be considered appropriate to the intended purpose. 43 conversions occurred in patients who had a valid documented indication for colonoscopy and had undergone full bowel preparation. The most common reasons cited included poor bowel preparation (n = 18), technical failure (n = 12) or clinically inappropriate (n = 8). A clear reason for conversion was not apparent in 5 cases. During the study period 8632 colonoscopies were performed and so conversions represent 0.5% of the total requests. This practice was observed amongst 14 endoscopists, when inappropriate conversions were included in individuals' performance data, 6 endoscopists fell to ≤90% target caecal intubation target.

**Conclusion** A small, but significant number of colonoscopies are converted to flexible sigmoidoscopies at the time of the procedure. This study demonstrates the conversion of colonoscopy to sigmoidoscopy as being a potential limitation of relying on caecal intubation rate alone. Endoscopy units should consider monitoring the rate of inappropriate conversions to ensure quality is maintained.

**Disclosure of Interest** None Declared

## PWE-118 METACHRONOUS CANCERS FOLLOWING SEGMENTAL OR EXTENDED COLECTOMY IN LYNCH SYNDROME: A SYSTEMATIC REVIEW & META-ANALYSIS

[1]SS Malik*, [2]M Lythgoe, [2]KJ Monahan. *[1]Imperial College, London; [2]Family History of Bowel Cancer Clinic, West Middlesex University Hospital, London, UK*

10.1136/gutjnl-2016-312388.363

**Introduction** Around 5% of colorectal cancers are due to mutations within DNA mismatch repair genes, resulting in Lynch Syndrome (LS). These mutations have a high penetrance (85–90%), with early onset of colorectal cancer at an average age of 45 years. The main surgical management options are either a segmental or extensive colectomy. Currently there is no unified agreement as to which management strategy is superior due to the limited conclusive empirical evidence available. A systematic review and meta- analysis to evaluate the risk of metachronous colorectal cancer (MCC) and mortality in LS following segmental and extensive colectomy.

**Methods** A systematic review of the Pubmed database was conducted. Studies were included/ excluded based on a prespecified criteria. In order to assess the risk of MCC and mortality attributed to segmental or extensive colectomies, pooled odds ratios (OR) were calculated and corresponding 95% confidence intervals (CI). Publication bias was investigated using funnel plots. Statistical analysis was conducted using the R program (version 3.2.3).

**Results** The literature search identified eighty-five studies. After further analysis nine studies were eligible for inclusion in this study. Pooled data identified 1429 patients followed up for a mean of 103.1 months with a mean age of onset of 43.3 years of age. 1135 patients underwent segmental colectomies with risk of MCC in this group of 22.0% at the end of follow-up. 294 patients had extensive colectomies with a MCC risk of 4.7% (0% in those with a panproctocolecomy). A segmental colectomy was significantly associated with an

increased risk of MCC (OR = 4.47; 95% CI: 2.68–7.45; Figure 1), but no significant association with mortality was identified (OR = 1.65; 95% CI: 0.71–3.82).

**Conclusion** In LS, segmental colectomy results in a significant increased risk of developing MCC. Despite the choice of segmental or extensive colectomies having no statistically significant impact on mortality, the choice of initial surgical management can impact a patient's requirement for further surgery. An extensive colectomy can result in decreased need for further surgery; reduced hospital stays and reduced costs. The significant difference in the risk of MCC, following segmental or extensive colectomies should be discussed with patients when deciding appropriate management.

**Disclosure of Interest** None Declared

## PWE-119 THE SIGNIFICANCE OF IRON DEFICIENCY IN ANAEMIA IN TWO WEEK REFERRALS FOR COLORECTAL CANCER

S Mashlab*, M D'Auria, P Large, W Laing, D Thurston, S Thompson, O Ng, A Acheson, A Banerjea. *Nottingham University Hospitals, Nottingham, UK*

10.1136/gutjnl-2016-312388.364

**Introduction** Anaemia is common and new NICE guidelines (NG12) for suspected colorectal cancer (CRC) broaden the age and type of anaemia qualifying for urgent two week wait (2 WW) referral. Further, NICE now recommend iron therapy (including intravenous iron) for anaemia prior to surgery. Our study examines how anaemia in 2 WW referrals is related to outcome and the potential for iron therapy as treatment.

**Methods** Retrospective review of 1000 consecutive patients from 01/12/2014 to 13/07/2015 referred for suspected CRC. Anaemia was defined by WHO (<120g/L women, <130 g/L men), Iron deficiency was defined by BSG (<50ug/L in men and women in presence of inflammatory disease). Data on demographics, referral haemoglobin, MCV, ferritin, referral criteria, investigations and outcome were recorded.

**Results** 202/1000 (20.2%) had no haemoglobin at time of referral. 305/798 (38.2%) of patients were anaemic at the time of referral. Only 101/305 (33.1%) had been referred for anaemia and 204/305 (66.8%) for other symptoms. 173/305 (56.7%) had a ferritin recorded. Of 249 anaemic patients who completed investigations 40 (16.1%) had CRC detected. Anaemia was associated with detection of cancer ($p < 0.05$). If anaemic on referral patients were four and a half times more likely to be diagnosed with CRC (OR4.5 95%CI 2.54–8.11 $p =< 0.001$). However, low ferritin was not associated with cancer detection (OR1.17 95%CI 0.61–2.27 $p = 0.636$). 113/305 (37.0%) patients would be suitable for iron therapy and a further 132/305 (43.3%) patients may benefit from assessment of ferritin and subsequent iron therapy if low.

**Conclusion** Anaemia (but not iron deficiency) is associated with CRC detection. About half of patients have no recorded ferritin on referral despite anaemia, but identification of iron deficiency is important as it indicates those patients that would likely benefit from iron therapy in anaemia. Nottingham Colorectal Service historically has not insisted on checking for iron deficiency in our 2 WW referral pathway, these results vindicates this approach and are consistent with new NICE guidance. The introduction of faecal occult blood testing in anaemia as per NICE guidance may help to identify those most likely to benefit from investigations.

**Disclosure of Interest** None Declared

## PWE-120 STRICTER ADHERENCE TO SURVEILLANCE COLONOSCOPY GUIDELINES FOR COLORECTAL ADENOMAS COULD RESULT IN REDUCED BURDEN ON ENDOSCOPY SERVICES

[1]AC Chircop, [1]S Chetcuti Zammit, [1]J Gerada, [2]A Brincat*. [1]*Gastroenterology, Mater Dei Hospital, Msida, Malta*; [2]*Gastroenterology Department, Mater Dei Hospital, Malta*

10.1136/gutjnl-2016-312388.365

**Introduction** International guidelines recommend repeating surveillance colonoscopy in patients with colonic adenomas. We aimed to study local adherence to such guidelines.

**Methods** Patients diagnosed with colonic adenomas between March and August 2008 were enrolled. Surveillance colonoscopy following adenoma removal was audited against the British Society of Gastroenterology guidelines: repeat in 5 years or no follow-up in low risk patients, repeat in 3 years in intermediate risk patients and repeat in 1 year in high risk patients.

**Results** 165 patients (61.8% males; mean age 62.1) were risk stratified as per guidelines. 95 patients (57.6%) were low risk, 61 (37%) intermediate risk, and 9 (5.4%) high risk. In the low risk group, 43 patients (45%) had surveillance either ≥5 years or never and 52 (55%) had a shorter follow up. In the intermediate risk group, 9 (14.8%) patients had surveillance at 3 years, 28 (45.9%) patients before 3 years, 8 (13.1%) patients after 3 years and 16 (26.2%) patients had no follow up colonoscopy. In the high risk group, 5 (55.6%) patients had surveillance at 1 year, 1 (11.1%) patient before 1 year, 2 (22.2%) patients after 1 year and 1 (11.1%) patient had no follow up colonoscopy. 2 patients (1.2%) were diagnosed with interval colon cancer in the same year as the index colonoscopy.

**Conclusion** Guideline non-adherence was noted in 65.5%, mainly due to too aggressive surveillance (49.1% early colonoscopies), increasing burden on endoscopy services. Late colonoscopies (6.1%) or no follow up colonoscopies (10.3%) were not the cause for interval cancers.

**Disclosure of Interest** None Declared

## PWE-121 FAECAL CALPROTECTIN LEVELS OF 50–200: ENDOSCOPIC FINDINGS AND SUBSEQUENT DIAGNOSES

S Sartain*, A Stone. *St Richard's Hospital, Chichester, UK*

10.1136/gutjnl-2016-312388.366

**Introduction** Faecal calprotectin (FC) is a marker of intestinal inflammation, used to investigate gastrointestinal symptoms for inflammatory bowel disease (IBD). The normal range and significance of mild elevations in FC remains under debate. This study aimed to determine endoscopic findings and conditions associated with levels of 50–200.

**Methods** Data was collected retrospectively. Details of patients with FC of 50–200 received by St Richard's Hospital pathology department over an 11 month period were obtained. Results were reviewed with clinical information from clinic letters and investigations that were available 9 months after the FC collection period.

**Results** 189 patients had a FC of 50–200, with 109 having clinical information available. The remaining 80 not seen in secondary care were excluded.

Of the 109 patients included, mean FC was 102.7, 73 were female and mean age 47.3 years. The most prevalent

symptoms were abdominal pain (46.8%) and diarrhoea (64.2%). 82 (75.2%) patients underwent endoscopy, (54 colonoscopies, 32 flexi-sigmoidoscopies), with 10 procedures done before. 47 (57.3%) patients had normal endoscopies, with 34 (63%) colonoscopies being normal. Abnormalities included inflammation, ulcers, diverticulosis and polyps with low grade dysplasia. 51 patients had mucosal biopsies at recent endoscopy, with 12 showing inflammation. From these 12 patients; mean FC was 135.9, though 3 had FC < 100, 4 were diagnosed with IBD (mean FC = 167.5), 2 followed up for possible IBD, 1 had collagenous colitis, 3 had non-specific colitis and 2 had infective colitis. All patients with IBD or possible IBD had FC $\geq$ 100, with mean FC of 158.3. Patients with no inflammation on biopsy had mean FC of 100.3.

Clinic letters showed 37 (33.9%) patients had a diagnosis of irritable bowel syndrome (IBS), with mean FC of 97. 21 (19.3%) patients with normal investigations lacked a formal diagnosis, being mostly discharged or not followed up. Many patients avoided endoscopy as alternative diagnoses were made. Other diagnoses included chronic pancreatitis (5.5%), gastroenteritis (5.5%), coeliac disease (2.8%), diverticulosis (5.5%) or symptoms improved (3.7%).

**Conclusion** FC levels of 50–200 have a low association with subsequent diagnosis of IBD (3.6%). Many patients were diagnosed with IBS or had normal investigations indicating a functional condition. In this range of FC, patients with inflammation on biopsy had a higher FC than those with negative biopsies ($p < 0.05$). Inflammation caused by IBD had a higher FC than other causes of inflammation. Negative predictive values of FC 50–99 were higher than FC 100–200 with regards to excluding IBD (100% v 91.8%) and mucosal inflammation if undergoing endoscopy (95% v 81.6%). Many patients with FC 50–200 were not referred to secondary care. This study suggests a low rate of missed IBD is likely as a result.

**Disclosure of Interest** None Declared

## PWE-122 NON-BOWEL CANCER SCREENING COLONOSCOPY HAS INFERIOR RATES OF POLYP RETRIEVAL AND ADENOMA DETECTION THAN BOWEL CANCER SCREENING

[1]V Sehgal*, [1]TN Jones, [1]LLY Ping, [1]A Robbins, [1]A Edwards-Bailey, [1]LA Belón, [2]M Rodriguez-Justo, [1]K Besherdas. *[1]Gastroenterology; [2]Histopathology, University College London Hospital, London, UK*

10.1136/gutjnl-2016-312388.367

**Introduction** Colonoscopy within the Bowel Cancer Screening Programme (BCSP) is scrutiny to high national standards and enhanced quality assurance. These include accredited colonoscopists who are required to have passed a summative assessment and perform more than 150 BCSP colonoscopies annually. Additionally, extended time allocation to allow for longer withdrawal times, are thought to further improve quality. In contrast, patients attending for non-BCSP (NBCSP) may have their colonoscopy performed by any endoscopist with less time allocation.

Adenoma detection rate (ADR) a key quality indicator of colonoscopy with the strongest association to post-colonoscopy colorectal cancer. We hypothesised that patients within the BCSP had a superior ADR to NBCSP patients and consequently, a higher quality colonoscopy.

**Methods** Patients attending for BCSP and NBCSP colonoscopy over a 2 year period (August 2013–July 2015) at University College London Hospital were identified. NBCSP patients aged 60–74 years were only included in our analyses.

BCSP colonoscopy was performed by one of 6 BCSP accredited colonoscopists. NBCSP colonoscopy was performed either by a nurse endoscopist, registrar (including those in training) or a consultant.

An in-house endoscopy and BCSP database were used to record polyp detection (PDR), polyp retrieval (PRR), adenoma to polyp detection rate (APDR) and adenoma detection rates (ADR) in both groups. The Student's t-test was used and $p < 0.05$ was statistically significant.

**Results** A total of 1,547 and 5,898 patients attended for BCSP and NBCSP colonoscopy. In the NBCSP group, 1,692 (29%) were aged 60–74 years and were only included in our analyses.

The polyp detection rate (PDR) in the BCSP group was significantly higher (931/1547, 60%) than in the NBCSP group (465/1692, 27%), $p < 0.05$. In the BCSP group, a total of 2,094 polyps were removed. In the NBCSP group, 1,048 polyps were removed. The PRR was significantly higher in the BCSP patients (2086/2094, 99%) compared to NBCSP patients (764/1048, 76%), $p < 0.001$.

The APDR was similar between both groups - BCSP 1,542/2,086 (74%), NBCSP 572/764 (75%). In contrast, the ADR was significantly higher in the BCSP cohort (735/1547 patients had >=1 adenoma, 48%) compared to the NBCSP group (337/1692 patients had >=1 adenoma, 20%), $p < 0.05$.

**Conclusion** To our knowledge, this is one of the largest multi-operator studies comparing quality indicators in BCSP and NBCSP patients. Our study has demonstrated that NBCSP patients are more likely to have a significantly lower PRR and ADR than their BCSP counterparts. Further efforts should be made to address this disparity to help drive equality between these two services.

**Disclosure of Interest** None Declared

## PWE-123 TECHNICAL FACTORS PREDICT DELAYED BLEEDING AFTER ENDOSCOPIC MUCOSAL RESECTION FOR COMPLEX NON-PEDUNCULATED COLORECTAL POLYPS

[1]ZPP Tsiamoulos*, [1]T Elliott, [1]S Thomas-Gibson, [1]N Suzuki, [1]A Hart, [2]P Bassett, [1]BP Saunders. *[1]Wolfson Unit for Endoscopy; [2]Wolfson Unit for Endsscopy, St Mark's Hospital, London, UK*

10.1136/gutjnl-2016-312388.368

**Introduction** Delayed bleeding is the most common severe adverse event after p-Endoscopic Mucosal Resection (p-EMR) but factors that may predict delayed bleeding are not well-defined.

**Methods** Data were analysed from a prospective single centre observational cohort study of patients with complex NPCPs $\geq$20 mm who underwent p-EMR between January 2010 and August 2012. Patient, polyp, and procedure-related data were collected. Four post p-EMR resection defect factors were evaluated for interobserver agreement and included in risk analysis. A telephone interview was conducted with patients 14 days post p-EMR. Delayed bleeding severity was reported in accordance with guidelines. Predictors of bleeding were identified by univariable and multivariable analyses.

**Results** Delayed bleeding requiring hospitalisation occurred in 22 of 330 (6.7%) patients. Eleven patients required blood transfusion; of these 4 underwent urgent colonoscopy, 1 underwent radiological embolisation and 1 required surgery to

| Factors | Category | All polyps | ≥2 -<4cm polyps | ≥4cm polyps | P-value |
|---|---|---|---|---|---|
| Polyp lift | Full | 162 (48%) | 117 (54%) | 45 (37%) | **0.002** |
| | Incomplete | 179 (52%) | 101 (46%) | 78 (63%) | |
| Difficult polyp position | No | 167 (49%) | 121 (55%) | 46 (37%) | **0.001** |
| | Yes | 174 (51%) | 97 (45%) | 77 (63%) | |
| Techniques used | pEMR | 230 (67%) | 173 (79%) | 57 (46%) | **<0.001** |
| | Hybrid pEMR | 63 (19%) | 31 (14%) | 24 (20%) | |
| | Spiral pEMR | 48 (14%) | 14 (6%) | 34 (28%) | |
| Procedural bleeding | No | 306 (91%) | 205 (95%) | 101 (83%) | **<0.001** |
| | Yes | 32 (9%) | 11 (5%) | 21 (17%) | |
| Delayed bleeding | No | 258 (78%) | 181 (85%) | 77 (66%) | **<0.001** |
| | Yes | 72 (22%) | 32 (15%) | 40 (34%) | |

**Abstract PWE-124 Figure 1**

achieve haemostasis. Interobserver agreement for identification of the 4 post p-EMR resection defect factors was moderate (kappa >0.5 for each). Predictors of delayed bleeding on multivariable analysis were a previous EMR attempt (odds ratio = 3.13, $P = 0.05$) and visible muscle fibres in the post p-EMR resection defect (OR 3.64, $P = 0.03$). Factors not predictive on multivariable analysis included patient age, ASA class, aspirin use, polyp site, polyp size or APC use.

**Conclusion** Visible muscle fibres in the p-EMR resection defect and a previous failed p-EMR attempt are predictors of delayed bleeding after p-EMR. These findings emphasise the importance of technical factors in ensuring good outcomes after p-EMR for complex NPCPs.

**Disclosure of Interest** None Declared

## PWE-124 COMPLEX COLORECTAL POLYPS: A TERTIARY CENTRE EXPERIENCE; TAILORING THE EMR TECHNIQUE TO THE POLYP

ZPP Tsiamoulos*, T Elliott, N Suzuki, P Bassett, BP Saunders. *Wolfson Unit for Endoscopy, St Mark's Hospital, London, UK*

10.1136/gutjnl-2016-312388.369

**Introduction** Features that characterise polyp complexity should be clearly defined and recognised to avert suboptimal piecemeal endoscopic mucosal resection (p-EMR) strategies and need for salvage surgery.

**Methods** A prospective database of all colorectal polyps excised at our tertiary referral centre between Jan 2010 and August 2012 was collected. Standard p-EMR, p-EMR using a 20 mm spiral snare (sp-EMR), and hybrid p-EMR (hp-EMR; p-EMR plus endoscopic mucosal ablation or endoscopic submucosal dissection) were performed. Multinomial regression analysis was utilised to define characteristic features of complex polyps and factors associated with the chosen resection technique.

**Results** Of 330 patients with 341 polyps (mean size 3.7 cm), 81% (261/323, $p < 0.001$) were tertiary and 19% were local referrals. 94/261 (36%, $p < 0.001$) tertiary referrals mentioned one or more previous endoscopic resection attempts. Endoscopic polyp access was described as difficult in 174/341 (51%, $p = 0.001$), incomplete polyp lift in 179/341 (52%, $p = 0.002$) cases and polyp size $\geq$ 4 cm (median size 5 cm) in 123/341 (36%, $p < 0.001$) cases. Polyps $\geq$4 cm were more frequently in a difficult position ($\geq$4 cm; 63% vs <4 cm; 37%, $p < 0.001$). Polyps <4 cm were more likely to be in the caecum or ascending colon (<4cm; 35% vs $\geq$4 cm; 16%, $p < 0.001$).Endoscopically complete polypectomy was achieved in one session in 336/341 (98%, $p < 0.001$) polyps. Procedural and delayed bleeding were significantly higher in the $\geq$ 4 cm group where 2 of the 3 micro-perforations also occurred (3/341, 0.9%, $p < 0.001$) that were all treated successfully with endoscopic clipping. The overall long-term recurrence at 24 months was 17% (28% for $\geq$4 cm/$p = 0.02$). Only eleven patients (4 benign recurrence/7 cancer at histology, 3%) in this cohort underwent surgery. Using multivariable analysis, factors associated with need for sp-EMR or hp-EMR were; **i) tertiary referrals** (sp-EMR, OR 3.41, $p < 0.001$), **ii) incomplete polyp lift** (hp-EMR, OR 8.3 > sp-EMR, OR 1.19 $p < 0.001$), **iii) previous polypectomy attempt** (hp-EMR, OR 2.77, $p = 0.02$), **iv) larger polyp size** (for an increase of 1 cm – hp-EMR (OR 1.37)/sp-EMR (OR 1.66,) $p < 0.001$, **v) polyps in the rectosigmoid location** (sp-EMR and hp-EMR, $p < 0.001$) and **vi) Paris IIa+IIb polyps** (sp-EMR, OR 5.01 and hp-EMR, OR 2.9, p –0.007).

**Conclusion** Complex colorectal polyps referred to this tertiary centre were characterised by polyp size $\geq$ 4 cm, caecal location, previous unsuccessful polypectomy, difficult endoscopic access, or incomplete polyp lift. Advanced techniques such as hybrid-pEMR and spiral p-EMR were required in 33% of tertiary referrals.

**Disclosure of Interest** None Declared

## PWE-125 MANAGING THE MALIGNANT POLYP: SURVEILLANCE OR SURGERY?

Z Cargill*, A Masding, R Raju, S Mann. *Department of Gastroenterology, Royal Free NHS Trust, Barnet Hospital, Barnet, UK*

10.1136/gutjnl-2016-312388.370

**Introduction** A 'malignant polyp' contains cancer cells that have breached the mucosa. Usually this refers to a polyp that

is resected endoscopically and appears benign, but contains carcinoma on histological analysis. A reported 0.75–5.6% of polyps removed at colonoscopy are malignant.[1] However practice is varied regarding subsequent management. Options include colonoscopic surveillance or surgery, utilising criteria to estimate the risk of cancer spread following polypectomy versus the risk of surgery.

**Methods** Patients were identified from the colorectal cancer multidisciplinary team (MDT) database. Endoscopy, histology and clinic letters were reviewed from the Electronic Patient Record. Information collected included patient demographics, polyp histology, the degree of cancer differentiation and invasion, whether surveillance or surgery was utilised, the rate of residual malignancy identified within surgical specimens and 1 year mortality.The aim was to determine the management and outcome of patients with malignant polyps in our institution over a 3 year period (2010–13).

**Results** Our institution is in a district hospital which serves a population of 500,000 in North London. Twenty patients were identified (M = 12; mean age 60 yrs; range 53–80 yrs). Estimated polyp size ranged from 3 mm to 20 mm [pedunculated = 9 (45%); sessile = 11 (65%)]. All polyps were adenocarcinomas [well differentiated = 1 (5%); moderately differentiated = 15 (75%); poorly differentiated = 1 (5%); highly suspicious of malignancy, but managed as malignant polyps = 3 (15%)]. Lymphovascular invasion was present in only 1 case (5%). Resection margins were clear in 9 patients (45%), positive in 4 (20%) and indeterminate in 7 (35%). Ten patients (50%) underwent surgery: 5 (50%) had a laparoscopic anterior resection, 3 (30%) had a laparoscopic hemicolectomy and 2 (20%) had Transanal Endoscopic MicroSurgery (TEMS). The surgical resection specimens failed to identify any residual malignancy on histology in 7 cases (70%). Two patients (10%) died of unrelated causes over a 12 month follow-up (surgical management = 1, endoscopic management = 1).

**Conclusion** In our unit, half of all patients with a malignant polyp had subsequent surgery with its associated risks. However 70% of those patients had no residual microscopic malignancy in the resected specimen. We feel that these patients would be best served in a dedicated 'Polyp MDT' where the colonoscopist contributes to the discussion. Experienced endoscopists can be confident about the completeness of resection even in the presence of histological uncertainty, thereby avoiding unnecessary surgery. All patients in the colonoscopy surveillance pathway have been free of cancer recurrence during the period of follow-up.

**REFERENCE**

1 Williams JG, et al. Management of the malignant colorectal polyp: ACPGBI position statement. *Colorectal Disease* 15.s2 (2013): 1–38.

**Disclosure of Interest** None Declared

## PWE-126 THE 'VIRTUAL CLINIC' EXPERIENCE OF A REGIONAL LIVER UNIT

A Mcneice*, I Cadden, J Cash, N McDougall, RB McCorry. *Hepatology, Belfast Health and Social Care Trust, Belfast, UK*

10.1136/gutjnl-2016-312388.371

**Introduction** 'Virtual clinics' are a relatively recent concept that can be used to assess, and deliver advice about, specific patients without the requirement to review them face-to-face in an outpatient clinic. The consultant running the clinic reviews the referral, blood results and imaging to make an assessment before corresponding with the referrer. This audit was completed to assess the impact of the introduction of a regional hepatology virtual clinic.

**Methods** All referrals to hepatology outpatients between 1 Dec 2014 and 30 Nov 2015 were triaged by 4 consultants and those that were deemed suitable for virtual clinic assessment were passed on to a single consultant. All referrals dealt with by the virtual clinic were analysed retrospectively. Virtual clinic letters stored on an online system were used to collect data on the source of and reason for referral, the diagnosis and any advice given.

**Results** 148 referrals were dealt with by the virtual clinic out of a total of 1420 referrals to the hepatology service. Of those, 87% were sent by General Practitioners (GPs), with the remainder being referred from various hospital specialities. The most common indications for virtual clinic management included misinterpretation of iron profile/HFE genotyping results (28%), Gilbert's Syndrome (14%), isolated GGT elevation (10%), benign liver lesions on imaging (10%), non-alcoholic fatty liver disease (NAFLD) (8%), misinterpretation of Hepatitis B/C serology (6%) and transient elevations in LFTs associated with acute illness (4%). Only 4 (3%) referrals dealt with by the virtual clinic ultimately required formal review in a hepatology clinic and these were due to deteriorating LFTs post-referral.

**Conclusion** A virtual hepatology clinic can safely deal with 10% of referrals and reduce the number of face to face clinic appointments required. This will in turn reduce clinic waiting lists, to the benefit of those patients in need of a clinic appointment. Lastly this audit identifies topics that could be incorporated into education sessions for GPs to help modify referral practise.

**Disclosure of Interest** None Declared

## PWE-127 THE EXTENDED EFFECT OF AN ALCOHOL LIAISON NURSE SERVICE ON ATTENDANCE AT A COUNTY'S EMERGENCY DEPARTMENTS: A 3 YEAR RETROSPECTIVE COHORT STUDY

[1]E Davies, [2]M Vardy, [1]B Deans*, [2]J France, [1,1]D Aldulaimi. *[1]Worcestershire Acute Hospitals NHS Trust, Redditch; [2]Worcestershire Acute Hospitals NHS Trust, Worcester, UK*

10.1136/gutjnl-2016-312388.372

**Introduction** Worcestershire Acute Hospitals NHS Trust has an Alcohol Liaison Nurse Service (ALNS) across two hospital sites, with two full-time ALNs providing screening, case management support, brief interventions (BI) and referrals into community treatment services. We performed a retrospective cohort study to assess the impact of the ALNS on emergency departement (ED) re-attendance over a 3 year period and estimated the cost saving using the 2012/3 reference costs.

**Methods** All patients who had attended the ED, surgical or medical assessment units and received a BI delivered by the ALNS over a 3 month period, between January to March 2012, was identified via hospital records (Patient First ED computer system and OASIS). Patient attendances to ED for the preceding 12 month period were compared with the 12 month periods after the BI over the following 3 years. Patients were excluded if they lived outside the trust

catchment area or were imprisoned or died during the study period. Costs of attendances to ED over the period were estimated as £114 per visit. Statistical analysis was by paired t-test.

**Results** 192 patients (123 males & 69 females) identified as having a BI were included in the cohort. 36 were excluded due to death within the study period and 4 due to incarceration. The median age of the cohort was 44 years (range 17–87 years). The most common reason for presentation related to mental health issues including deliberate self harm and overdose. During the 12 month period before ALNS intervention there were 464 qualifying ED attendances with an average of 2.42 attendances per patient. In the first 12 months following BI, the ED attendance rate fell to 327 (1.7 attendances/patient), and then to 255 in the second 12 months (1.33 attendances/patient), and finally 225 in the third 12 months following BI (1.17 attendances/patient).

The reduction in attendance was statistically significant 12 months after intervention compared with the preceding year ($p < 0.005$) and was sustained at 36 months post intervention ($p < 0.005$). Attendance for the third 12 month period post-intervention was statistically significantly lower compared with the first ($p = 0.0181$).

For this 3 month cohort of 192 patients, the cost of ED attendance in the year before BI was estimated at £52, 896. By the end of the study period this had been reduced by 51.5% (twelve monthly cost estimates £37,278, £29,070 and £25,650).

**Conclusion** This pragmatic study suggests that an ALNS may have a sustained effect upon the number and cost of ED attendances.

## REFERENCE

1 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/261154/nhs_reference_costs_2012-13_acc.pdf

**Disclosure of Interest** None Declared

## PWE-128 THE OUT-OF-HOURS GASTROINTESTINAL BLEED SERVICE IN SOUTH-WEST LONDON: A MODEL FOR REGIONAL EMERGENCY ENDOSCOPY COVER

[1]C Alexakis*, [2]V Chhaya, [2]I Sutherland, [2]R Lalani, [3]O Tavabie, [1]R Hewett, [1]D Chan, [1]G Amarasinghe, [1]J Ryan, [1]S Uppal, [1]N Inayet, [1]C Woodhouse, [1]B Kok, [1]G Chakrabarty, [2]S Moodie, [2]P Patel, [2,4]S Zar, [2]A Mahmood, [1]G Sadler, [1]C Groves, [3]S Gupta, [1]S Clark. *[1]Gastroenterology, St George's NHS Trust, London; [2]Gastroenterology, Epsom and St Helier's NHS Trust, Surrey; [3]Gastroenterology, Croydon University Hospital NHS Trust, London; [4]Gastroenterology, Royal Marsden Hospital, Sutton, UK*

10.1136/gutjnl-2016-312388.373

**Introduction** Gastrointestinal (GI) bleeding is associated with a mortality of 10–30%. An NCEPOD report recently recommended that management of GI bleeds should be directed by a named GI bleed clinician, although wasn't implicit that procedures be performed by a consultant.[1] In SW London, 5 hospitals developed a network service to cover out-of-hours emergency endoscopy requirements for the region. It is a registrar-delivered, consultant-supported service. We present the key service outputs over a 10 month period in 2015.

**Methods** OGDs were performed by registrars accredited with appropriate skills in upper endoscopy. Endoscopists prospectively collected data on all out-of-hours OGDs performed including age and sex of patient, Rockall score, time to OGD, primary endoscopic findings and therapeutic intervention. Data on mortality and re-bleed rates were retrospectively collected for the last 2 months of the study.

**Results** 172 out-of-hours OGDs were performed between March and December 2015. 57% occured during the weekend, giving rise to a procedure rate of 1.12 OGD/weekend day and 0.33 OGD/week day. Mean age of patient was 59.5 years (range 16–94). 64% were male. Median Rockall score was 4. Mean time to OGD was 4hrs 15 mins (range 1 hr-16hrs). Table 1 shows the primary pathologies at OGD. Therapeutic intervention was needed in 52% of cases. Failure to achieve haemostasis endoscopically occured in 1.7%. Consultant assistance was required in 3 cases. Data from Nov to Dec 2015, which included 40 OGDs (mean age 59 years, 63% males, intervention rate 53%) indicated an inpatient re-bleed rate of 10% (NCEPOD audit rate 23%), an interventional radiology requirement in 6% (NCEPOD 8%) and a surgical intervention rate of 2.5% (NCEPOD 6%). All-cause 30 day mortality rate was 15%, although only one patient (2.5%) died as a direct result of uncontrolled bleeding.

**Conclusion** The results indicate that an effective and safe regional out-of-hours emergency GI bleed service can be provided via a registrar-delivered, consultant-supported model. This has important implications when considering the development of consultant on-call rosters, and maximising training opportunities for registrars.

## REFERENCE

1 NCEPOD 'Time to get control' – a review of the care received by patients who had a severe gastrointestinal haemorrhage 2015.

**Disclosure of Interest** None Declared

## PWE-129 SURVEY OF POTENTIAL BLOOD DONORS WITH STABLE HAEMOCHROMATOSIS

C Wong, M Camarata*, J Stenner. *Gastroenterology Department, East Surrey Hospital, Redhill, UK*

10.1136/gutjnl-2016-312388.374

**Introduction** Hereditary haemochromatosis (HH) is a genetic disease characterised by excessive intestinal absorption of dietary iron, with a prevalence in the UK of 1 in 200. This results in a pathological accumulation of iron in organs such as the liver. Lifelong regular venesection remains the mainstay of treatment to achieve ferritin levels of <50µg/L. European Association for the Study of the Liver (EASL) guidelines state that blood from stable, uncomplicated HH patients who fulfil blood donor selection criteria should be made available to

**Abstract PWE-128 Table 1**

| Primary diagnosis | Duodenal ulcer | Gastric ulcer | Variceal | Non-variceal oesophageal pathology | Foreign body | Gastritis/ duodenitis | Cancer | Other | Normal |
|---|---|---|---|---|---|---|---|---|---|
| % | 23 | 18 | 17 | 10 | 3 | 5 | 2 | 11 | 11 |

blood transfusion services. Statistics from the NHS blood and transplant service (NHSBT) show a 40% drop in new blood donors this decade. Given the increasing donor shortage, utilising otherwise discarded blood from eligible HH patients would aid in easing the national crisis. This survey aims to understand the barriers to eligible HH patients becoming blood donors.

**Methods** We identified all HH patients receiving regular venesections between May 2014-May 2015, at the nurse-led unit within Surrey and Sussex Healthcare NHS Trust. A random sample of patients potentially suitable for referral to NHSBT based on age (17–65 years) and stable ferritin (<200μg/L for 6 months) were interviewed by telephone.

**Results** 112 HH patients were venesected regularly (>2 occasions) over this period. 40% (45/112) had ferritin levels consistently <200μg/L. Of these stable patients, 75% (34/45) were identified as potential blood donors based on age criteria. 16 out of 34 (47%) patients were interviewed. There were no blood donors within the sampled cohort. Only 50% (8/16) were aware they could potentially make regular blood donations (subject to donor selection criteria) as part of their venesection programme. Within this group, a specialist was responsible for informing the patient in only 62.5% (5/8) of cases. Of note, 37.5% (6/16) of patients interviewed had less than yearly specialist clinic follow up. Encouragingly, 81% (13/16) of patients were interested in becoming blood donors.

**Conclusion** This survey identified a substantial proportion (30% = 34/112) of HH patients within our cohort who are missed potential blood donors. This is due to a lack of patient education and awareness of referral procedures on the part of the medical team. The specialist team should facilitate blood donations by referring eligible patients to the NHSBT, providing a clear venesection plan and monitoring schedule. Regular specialist follow up is key to ensuring compliance with treatment and achieving therapeutic targets. We have introduced local protocols for HH patients and increased educational resources for both patients and clinicians. Such measures applied nationally will optimise HH management and increase the utilisation of an otherwise wasted resource.

**Disclosure of Interest** None Declared

## PWE-130 GLASGOW BLATCHFORD SCORE (GBS) IDENTIFIES THE LIKELIHOOD OF ENDOSCOPIC INTERVENTION REQUIRED – A RETROSPECTIVE STUDY IN A DISTRICT HOSPITAL

C Kong*, S Murphy, M Moran, W Jafar. *Gastroenterology, Stockport NHS Foundation Trust, Stockport, UK*

10.1136/gutjnl-2016-312388.375

**Introduction** Upper GI bleeding (UGIB) is a common presentation to the emergency department.[1] Studies assessing the effectiveness of the Glasgow Blatchford Score (GBS) as a risk stratification tool are well documented in the literature. National Institute of Clinical Excellence (NICE) recommends that all patients admitted with suspected UGIB require a GBS score. This study evaluated the effectiveness of the GBS in predicting the need for endoscopic therapy. It also evaluated whether there was any correlation between the GBS with re-bleeding rates and 30 day mortality.

**Methods** Electronic UGIB requests between January to July 2015 were evaluated retrospectively. Patients who were deemed medically fit for the procedure and underwent a gastroscopy as an in-patient were included in this study. Patients deemed medically unfit for a gastroscopy or were discharged prior to in-patient gastroscopy being performed were excluded from the study. The OGD reports were subsequently retrieved from electronic endoscopy reporting system "Unisoft" and the GBS was retrieved from the electronic request system. The re-bleeding rate and 30 day mortality were evaluated from the review of the electronic patient records. The data collected was entered onto Microsoft Excel 2010 spreadsheet and a chi-square test was applied.

**Results** There were a total of 182 requests for urgent in-patient gastroscopy. 25 patients were excluded from the study - 3 were medically unfit for OGD on arrival, 3 unable to intubate, 1 request was later deemed not required, 1 was changed to outpatients and 17 no OGD reports could be retrieved from Unisoft. The remaining 157 underwent urgent in-patient gastroscopy. Age distribution ranged from 22 to 103 with mean age of 63. 90 patients were male (57%) and 67 were female (43%). Of the 157 patients, 48 (31%) required endoscopic intervention compared to 109 (69%) who did not. Of the 48 patients that required endoscopic intervention, 8 scored GBS $< 6$ and 40 had GBS $\geq 6$. The correlation between GBS and the need for endoscopic intervention was found to be statistically significant ($p < 0.001$). Of the 157 patients, the re-bleeding rate was 1.8% ($n = 3$) during the same hospital admission and the 30 day mortality rate of 5.7% ($n = 9$). From the re-bleeding group, the mortality rate was 33% ($n = 1$). No statistical significance between GBS with re-bleeding rates ($p = 0.17$) and mortality ($p = 0.33$) was found.

**Conclusion** This study identified that a GBS $\geq 6$ significantly correlates with the likelihood of requiring endoscopic intervention as compared to a GBS $< 6$. However, the GBS did not correlate with in-patient re-bleeding rate and 30 day mortality rate.

### REFERENCE

1 Longstreth GF. Epidemiology of hospitalisation for acute upper GI haemorrhage: a population-based study. *Am J Gastroenterol* 1995;**90**:206.

**Disclosure of Interest** None Declared

## PWE-131 THE FIRST UK MULTIDISCIPLINARY DIAGNOSTIC CENTRE: A NOVEL CANCER DIAGNOSTIC SERVICE

[1]D Chung*, [2]K Matoo, [2]E Seward, [2]R Haidry, [2]M Chapman, [2]S McCartney, [2]S Shaw, [2]N MacLean, [1,2]K Pritchard-Jones, [1,3]A Millar. *[1]London Cancer, UCLPartners; [2]University College London Hospitals NHS Foundation Trust; [3]North Middlesex University Hospital NHS Trust, London, UK*

10.1136/gutjnl-2016-312388.376

**Introduction** Late diagnosis is thought to be a significant cause of the observed lower cancer survival in UK compared to equivalent countries worldwide. A significant proportion of patients with intra-abdominal cancer are often diagnosed after attending Emergency Departments with late stage disease, highlighting the fact that often symptoms of early upper gastrointestinal (UGI) cancer are nebulous and ill-defined.

**Methods** A pilot Multidisciplinary Diagnostic Centre (MDC) at UCLH was established in June 2015. The MDC is for: (a) patients with severe but non-specific worrying symptoms, warranting rapid diagnosis but not qualifying for a '2 Week Wait'

referral; (b) patients with severe symptoms for whom admission to hospital currently offers the only clinically appropriate route to timely care. The Centre aims to provide rapid access to specialist assessment and appropriate diagnostic tests, leading to a defined management plan within 28 days of referral, aligning to the Independent Cancer Taskforce recommendations. Initial assessment is by a clinical nurse specialist (CNS) with consultant support. Once the diagnostic tests are performed, follow up is by face to face consultant assessment. Feedback to the service was elicited by a series of phone calls to a proportion of referring doctors.

**Results** Of the initial 91 patients, the majority of patients (47%, 43) presented with vague abdominal symptoms alone. A further 24% (22) of patients had unexplained weight loss. 93% of patients were offered an initial appointment to MDC within 5 working days. Relevant eventual clinical diagnoses were cancer of unknown primary (1), pancreatic cancer (1), adrenal adenoma (1) and intraductal papillary mucinous neoplasm of pancreas (1). Other non-cancer diagnosis include hiatus hernia (10%), irritable bowel syndrome (8%), and colonic/rectal polyp (5%). The majority of patients underwent CT scanning (54%) and UGI endoscopy (39%). Primary care feedback (n = 6) highlighted the importance even of non-cancer diagnoses.

**Conclusion** The ability to provide a rapid access diagnostic clinic is feasible and will enable the NHS to achieve the Independent Cancer Taskforce recommendation on providing a definitive cancer diagnosis, or cancer excluded within 28 days. Cancer rates are in keeping with other cancer pathways. Input from CNS and efficient administration support are essential in ensuring the diagnostic journey is centred around the patients. We need to understand more about patient experience in this novel pathway, in particular whether rapid access to diagnostic tests and specialist opinion is being perceived as an excellent service.

**Disclosure of Interest** None Declared

## PWE-132 IS THE NHS READY FOR VIDEO-CONFERENCE CONSULTATIONS IN OUTPATIENT CLINICS?

[1]E Antoni*, [2]MF Jaboli, [2]M Samarasinghe, [1]A Mohamed, [2]O Epstein. [1]*University College London*; [2]*Royal Free Hospital, London UK*

10.1136/gutjnl-2016-312388.377

**Introduction** Past literature has explored qualitative differences between teleconsultation and conventional face-to-face consultation in the context of diabetes care. However, designing the algorithm of such innovative consultations necessitates inclusion of patients' ideas and concerns so as to optimise their practicality and be adequately tailored to patients' needs. Hence, the Centre of Gastroenterology at the Royal Free Hospital in London decided to involve patients through a questionnaire focusing on the design of synchronous teleconsultation through video-conferencing.

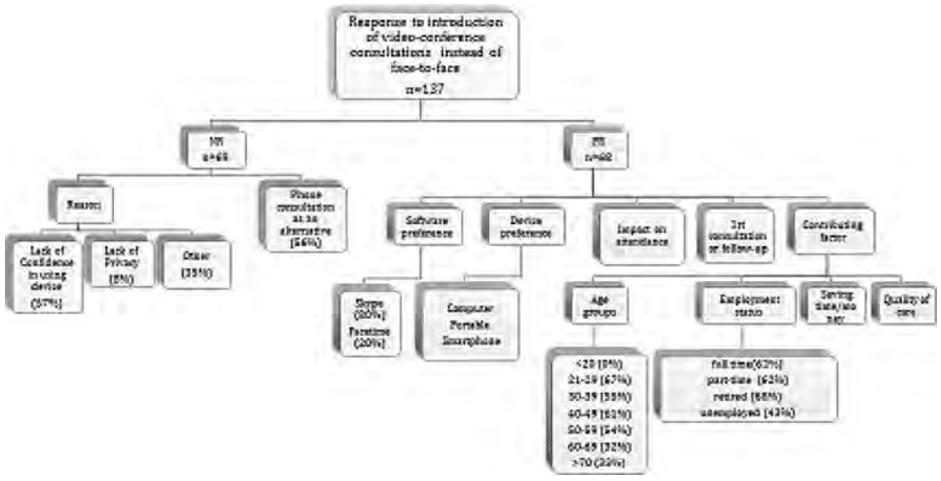
**Methods** We aimed to identify: 1)Patients' responses to introducing video-conferencing and explore factors contributing to their decision and 2)Patient groups in which video-conferencing would be more applicable. We analysed responses of 137 patients attending the gastroenterology outpatient clinic between April-August 2015. 'Positive response' (PR) was defined as patients who would consider a video-conference consultation compared to a conventional face-to-face method/'negative response' (NR). Further analysis identified potential factors contributing to a PR such as age and employment status as well as device, software and consultation type preferences. We were also interested as to whether video-conferencing would improve patient attendance.

**Results: PRs (n = 68): Also refer to figure 1.**

- >50% were <60 years old compared to only 30% aged ≥60 years.
- The majority had current/previous work experience (full-time 62%,part-time 62% and retired 68%).
- Patients indicated preference towards bigger screens:computer (56%), portable device(47%) and smartphone(36%).
- 70% preferred Skype and 30% facetime while 1/3 preferred having a video-conference as their 1st appointment and 2/3 as their follow-up.
- 41% indicated they would be more likely to attend a video-conference compared to 59% who indicated their attendance would either decrease or remain unaffected.

**Reasons for NRs (n = 69)** Lack of confidence with device (57%), Lack of privacy at home/work(12%) and Other reasons (38%).

**Conclusion** Results suggested that a traditional face-to-face interaction is more suitable for a first consultation, however video-conferencing could be a beneficial alternative for follow-up.Video-conferencing would be more applicable to patients aged <60, with work experience and potentially greater




**Abstract PWE-132 Figure 1** Core themes explored in patient questionnaire

exposure to technology. Preference for a bigger screen may indicate a need for a more realistic and personal interaction with the doctor, while widespread accessibility of Skype provides the most convenient option. We feel that acquisition of more experience in utilising technology in the near future can increase the acceptability of video-conferencing with similar quality of care to conventional methods of consultation.

**Disclosure of Interest** None Declared

## PWE-133 FEMALE REPRESENTATION IN LEADERSHIP ROLES: RESULTS FROM THE SUPPORTING WOMEN IN GASTROENTEROLOGY (SWIG) SURVEY

[1]E Arthurs*, [2]A Brooks, [3]E Taylor, [4]J Solomon, [5]P Neild, [6]S Thomas-Gibson, [7]M Lockett, [8]C Edwards, [9]J Eaden. [1]*Gastroenterology, Bristol Royal Infirmary, Bristol*; [2]*Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield*; [3]*St James University Hospital, Leeds*; [4]*British Society of Gastroenterology*; [5]*St. George's University Hospitals NHS Foundation Trust*; [6]*St. Mark's Hospital, Harrow, UK and Imperial College London, London*; [7]*North Bristol NHS Trust, Bristol, UK*; [8]*University of Cape Town, Cape Town, South Africa*; [9]*University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.378

**Introduction** Whilst numbers are increasing, women remain under-represented at both trainee and consultant grade in gastroenterology compared with other medical specialties, 52% and 34% respectively.[1] There is little available data on female representation in leadership roles in gastroenterology in the UK. The aim of this survey was to identify the key issues around female representation in positions of leadership.

**Methods** A comprehensive survey was designed and circulated to consultants and trainees in gastroenterology; all were members of the BSG. Data regarding demographics, professional experiences and opinions was collected and analysed.

**Results** The survey was sent to 1900 people, 600 people opened the email and 186 responded, a response rate of 9.79%. 107 of respondents were female (62.9%), 16 respondents did not declare gender. Data was available for 183 responses.

Of 188 responses, 119 (63.3%) of respondents had a leadership role; 66 were female (55.5%) and 52 (43.7%) were male. 48 (40.3%) had a local role within the medical school, LETB or NHS trust (29 (60.4%) female versus 18 (37.5%) male); 40 (33.6%) had one or more regional roles (23 (57.5%) female versus 17 (42.5%) male) and 31 (26.1%) had one or more national roles (14 (45.2%) female versus 17 (54.8%) male).

Important reasons for not having a leadership role were time constraints due to workload at work (22.4% of responses, n = 32, 75% female versus 21.9% male (gender not declared 1)), time constraints due to home commitments (18.2% of responses, n = 26, 80.8% female versus 19.2% male) and lack of confidence (14.7% of responses, n = 21, 80.9% female versus 19.0% male).

Iimportant factors to encourage people to take on a leadership role included time and flexibility at work (30.4% of responses; n = 49, 77.6% female versus 22.4% male), personal invitation (24.2%; n = 39, 82.1% female versus 17.9% male) and more opportunity (11.9%; n = 18, 77.8% female versus 22.2% male).

**Conclusion** Whilst women hold local and regional leadership roles, they remain under-represented at nationally. Strong influencing factors that have emerged are busy work and home commitments and lack of confidence. Introducing more time and flexibility into job roles, personally inviting potential female candidates and creating more opportunities may encourage more women in the speciality to undertake leadership roles.

### REFERENCE

1 Census of consultant physicians and higher speciality trainees in the UK, 2014–2015. Royal College of Physicians, 2016.

**Disclosure of Interest** None Declared

## PWE-134 THE EFFECTIVENESS AND PATIENT SATISFACTION OF SPECIALIST SCREENING PRACTITIONER (SSP) PRE-CONTACT TELEPHONE CLINIC IN BOWEL SCOPE SCREENING

[1]G Fitzgerald*, [1]M Mbuyongha, [1,2]S Sarkar, [1,2]A Gaglia, [1]S Mumtaz-Wong. [1]*Bowel cancer screening*; [2]*Endoscopy Unit, Royal Liverpool Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.379

**Introduction** Bowel Scope is preventive intervention for colorectal cancer with a one off flexible sigmoidoscopy in the population at age 55 years. However, the invasive 'intrusive & unpleasant' nature, the requirement of patients to self-administer their enema and that only written information is supplied as standard prior to the procedure are all likely to impact on population uptake.

**Aims** On setting up Bowelscope at the Liverpool and Wirral Bowel Screening Centre, we trailed and then adopted a Pre-Contact SSP Telephone Clinic (PCTC) prior to Bowel scope with the aim to reassure and verbally inform patients and offer an opportunity for any questions and answers. This study was to evaluate the effectiveness of the Pre-Contact Clinic by reviewing the positive and negative impact of the clinic by reviewing the effect on patient satisfaction.

**Methods** This study was performed from 4/15 to 12/15 at the Liverpool & Wirral Bowel Screening Service and included 692 patients. **Trail Phase**: During the initial 4 month phase of roll out 1 Bowel scope list per week was performed. We trialled the PCTC by targeting alternate lists during this phase. **Adopted Phase:** following initial analysis, for the next phase-all confirmed patients were booked into a PCTC. Patient Satisfaction was measured in all patients and DNA rates monitored.

**Results Trial Phase**: In the trial phase 45.7% patient were booked into PCTC with 87.9% successfully contacted. In the standard listed patients the DNA rate was 7.2%. This compared to just 3.9% in the PCTC lists. Additionally, the patient satisfaction scores for these lists were extremely high compared to the standard lists.

**Adopted Phase:** 77% capture of patients for PCTC. The DNA rate in those contacted was just 1.1% compared to 6.4% in those where pre-contact was NOT possible. In terms of patient satisfaction 98.8% of patients found PCTC useful. When rating the usefulness, the median score was 9 and mode score was 10 (scale where 1 was not at all useful & 10 was extremely useful). The themed items cited were reassurance (55%), opportunity to get advice and ask questions (34%) and others (17%). An additional advantage was that although 22 patients had already chosen to not proceed but had not informed the centre or hub, due to being contacted we have had the opportunity to utilise the slots instead of them being lost to DNA.

**Conclusion** SSP Pre-contact Telephone Clinic (PCTC) has made a significant impact on our Bowelscope service for us and particularly for the patients. As a consequence our DNA is very low and almost exclusively in the non-contacted patients. Patients are extremely satisfied with this model and it has had an impact on the uptake of Bowel scope in our centre.

**Disclosure of Interest** None Declared

## PWE-135 PUSHING PROPOFOL-ASSISTED DOUBLE BALLOON ENTEROSCOPY OUT OF THEATRE AND INTO THE ENDOSCOPY SUITE: DOES THE POUND HAVE ENOUGH PULL?

[1]H-L Ching*, [2]F Branchi, [1]DS Sanders, [3]D Turnbull, [1]R Sidhu. *[1]Gastroenterology, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK; [2]Department of Pathophysiology and Transplantation, Università degli Studi di Milano, Milan, Italy; [3]Anaesthetics, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.380

**Introduction** Double balloon enteroscopy (DBE) has poorer tolerability compared to other forms of endoscopy due to procedure duration. Anaesthetic led propofol sedation in theatre is increasingly used for complex endoscopy however has cost implications. We studied the feasibility and cost effectiveness of providing an anaesthetic led propofol-based DBE service outside theatre.

**Methods** All patients undergoing DBE with propofol between March 2013 and December 2015 were prospectively recruited. The propofol lists were carried out in an endoscopy room with anaesthetists and fully equipped with anaesthetic equipment. Patient data including hospital anxiety and depression scores (HADS) were performed prior to DBE. Pain, discomfort and distress scores were measured post-DBE (range 0–10 for each category). Costs including consumables, staffing, ward and theatre expenses were compared.

**Results** A total of 82 patients (44% male, 79% oral DBE) were included (mean age 54±13 years). Indications for DBE included iron deficiency anaemia (37%), overt gastrointestinal bleeding (8.5%), Peutz-Jeghers syndrome (18%), abnormal radiology (2.4%), suspected Crohn's disease (22%), suspected coeliac complications (4.8%) and small bowel tumours/masses (6.1%). The mean dose of propofol was 1089 mg±422.9 and the mean procedural time 77 mins±25. The diagnostic yield was 63%. The findings included polyps/tumours (18%), angioectasias (22%), ulcers (12%), strictures (7%), and abnormal mucosa (6%). DBE was normal in 36.5%. DBE was well tolerated with median scores for pain, discomfort and distress all being 0.2. There were no correlations between pre-DBE HADS and post-DBE pain, discomfort or distress scores ($p > 0.05$ for all categories). Therapeutic intervention was performed in 40% which included argon plasma coagulation for angioectasias (13.4%), polypectomy (22%) and dilation of strictures (3.7%). One patient experienced transient bradycardia and required glycopyrrolate while another patient became wheezy and required nebuliser therapy post-procedure. Neither cases necessitated abandonment of DBE and were deemed non-serious adverse events. The cost of running a single DBE list with propofol is £2391 at our unit compared to a national range of £3174 - £4730 if run in theatre. Extrapolating this information would imply cost-savings of between £40,700 - £110,000 per year.

**Conclusion** We have demonstrated that propofol-assisted DBE in an endoscopy suite is safe and feasible. It provides excellent tolerability, irrespective of pre-DBE HADS and is cost effective for the department. This allows better utilisation of theatre resources and should be encouraged nationally for other forms of complex endoscopy.

**Disclosure of Interest** None Declared

## PWE-136 BOWEL CANCER SCREENING NON RESPONDERS: WHAT CAN BE DONE TO INCREASE UPTAKE IN MEN FROM LOWER SOCIOECONOMIC GROUPS?

[1]J Scott*, [2]P Elton, [3]G Lipscomb, [4]S Paynter, [5]J Scott, [6]N Hill. *[1]Pennine Acute NHS Trust, Manchester; [2]Strategic Clinical Networks for Greater Manchester; [3]Royal Bolton Hospital, Greater Manchester; [4]Public health England, immunisation and Screening; [5]Tonge Fold Health Centre; [6]North West Bowel Cancer Screening Programme, Manchester, UK*

10.1136/gutjnl-2016-312388.381

**Introduction** In the 2006 UK Bowel Cancer Screening Pilot, uptake levels were around 60%.[1] As of 2014, in Bolton, the uptake rate amongst men in the lowest deprivation quintiles was less than 50%.[2] This study aims to aims to discover the factors that influence Bowel Cancer Screening Non-Responders to not complete their kit; and to explore interventions to increase uptake in this population.

**Methods** Between Sept 2012 and Sept 2013, 131 male BCS non-responders were exposed to incremental GP endorsement interventions of increasing intensity (letter, telephone call and the offer of a face to face interview). 10 non-responders were resistant to both letters and telephone calls, but consented to an interview. The interviews were semi-structured, and explored BCS attitudinal barriers and "Cues to Action" found in a review of the current literature. Analysis was performed using an inductive, grounded theory approach.[3]

**Results** Interview analysis yielded 32 attitudinal and interventional themes. Common attitudinal themes included "the Poo Taboo", "Masculinity" and "the NHS Disconnect". Most participants felt embarrassed to talk about or handle their faeces (the Poo Taboo). Some felt that screening tests, particularly invasive tests, weren't "manly" (Masculinity). A few declined the test, because they distrusted the local hospital or the NHS in general (the NHS Disconnect). Health literacy was low in this group, the majority knew very little about Bowel Cancer and Bowel Cancer Screening. Improving knowledge and health education were thought to be important interventional "Cues to Action".

**Conclusion** Bowel Cancer Screening Non-Respondence is a complex and multifactorial problem with no "silver bullet" solution. The subject of Bowels and Bowel Cancer Screening requires further normalisation. Strategies such as endorsement from Friends and Family; and GP group educational events were thought to be important tools for improving BCS perceptions, behaviour and ultimately response.

### REFERENCES

1 Bowel Cancer Screening Pilot. http://www.cancerscreening.nhs.uk/bowel/pilot-2nd-round-evaluation.pdf
2 Bolton Health Matters. http://www.boltonshealthmatters.org/sites/default/files/PHIT-Report-10-Bowel-Cancer-Screening-in-Bolton.pdf
3 Crabtree B, Miller W, eds. *Doing qualitative research*. 2nd ed. Newbury Park, Calif: Sage; 1999.

**Disclosure of Interest** None Declared

## PWE-137 INPATIENT COLONOSCOPY: IS URGENCY A SUBSTITUTE FOR QUALITY?

J Schembri*, N Muhammad, P Orchard, R Dennes, M Thoufeeq. *Department of Gastroenterology, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.382

**Introduction** Whereas colonoscopy is usually regarded as an outpatient procedure the practice of inpatient colonoscopy has nowadays become routine.[1] Apart from the classical indication of acute lower gastrointestinal bleeding, inpatient colonoscopy has some other clear advantages including expedited assessment and relieving waiting list pressures.

**Methods** We conducted a retrospective cohort study looking at inpatient adult colonoscopies performed at Sheffield Teaching Hospitals over a 1 year period (Oct 2014 and Sep 2015). Inpatient colonoscopies were split as either emergency (EMI) or elective procedures (ELI), the latter usually required for anticoagulation bridging or for inpatient bowel prep. The ELI group served as a control for EMI procedures.

**Results** 316 inpatient colonoscopies were performed over this time period (43.7% EMI,56.3% ELI). Table 1 compares patient characteristics and endoscopy outcomes between EMI and ELI procedures. Compliance to bowel prep and prep adequacy was suboptimal in both, but particularly poor in the EMI group. This is also reflected by the fact that more EMI patients went on to have an alternative investigation. Caecal intubation was also lower in the EMI group and well below accepted national standards. Polyp detection was similar in both groups.

Overall 34.8% of EMI procedures were deemed diagnostic. Referral indications in order of yield were rectal bleeding (52%), abnormal radiology (44%) and change in bowel habit (38%) with abdominal pain (30%) and anaemia (15%) being the least helpful indications. The commonest pathologies identified during EMI colonoscopy were colitis (15.2%), malignancy (4.3%), vascular lesions (4.3%) and large polyps (3.6%).

Length of stay from time of procedure varied widely within the EMI group with a mean of 19 days and 11.7% of patients had passed away at 3 months post procedure, none of these being procedure related deaths.

**Abstract PWE-137 Table 1**

| | Emergency (EMI) | Elective (ELI) | Significance (*p*) |
|---|---|---|---|
| Age (years) | 63.8 | 59.1 | 0.03 |
| Inadequate Bowel Prep (%) | 38.8 | 21.6 | 0.00 |
| Caecal Intubation (%) | 83.3 | 90.4 | 0.04 |
| Polyp Detection (%) | 24.6 | 21.9 | 0.96 |
| Further investigations (%) | 29.7 | 10.7 | 0.00 |

**Conclusion** Emergency inpatient colonoscopy is clearly a useful tool with a relatively high diagnostic yield. A significant proportion of procedures are however being deemed inadequate and therefore submitting frail inpatients to unnecessary stress. The relative lengthy hospital stays and mortality rates indicate that some of these procedures might be futile and not always beneficial. We believe that apart from more consideration being given to the patients' general wellbeing and medical state, this service should be limited to a few strict indications like rectal bleeding and suspected IBD.

### REFERENCE

1. Enns R, Krygier D. The inpatient colonoscopy: A difficult endeavourendeavor. *Canadian Journal of Gastroenterology* 2008;**22**(11):900–902

**Disclosure of Interest** None Declared

## PWE-138 THE VALUE OF THE STRAIGHT TO TEST (STT) SPECIALIST NURSE IN EXPEDITING PATIENTS REFERRED ON A ROUTINE PATHWAY WITH RED FLAG, LOWER GASTROINTESTINAL (LGI) SYMPTOMS TO A DIAGNOSTIC ENDOSCOPY PROCEDURE

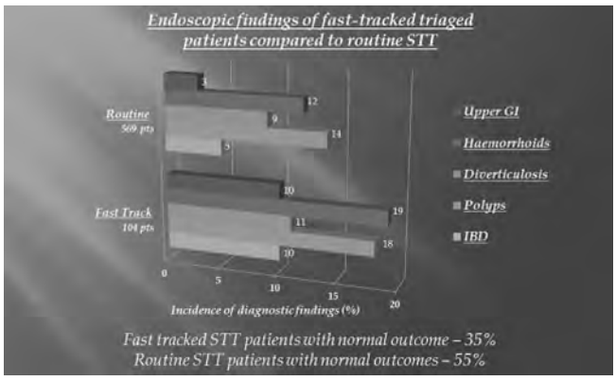
[1]L Steward, [1]P Andrews*, [2]E Seward, [3]M Machesney, [1]A Wong. *[1]Endoscopy Unit, Whipps Cross University Hospital, Barts Health; [2]Endoscopy Unit, UCLH; [3]Surgery, Whipps Cross University Hospital, Barts Health, London, UK*

10.1136/gutjnl-2016-312388.383

**Introduction** Our Trust has a well-established STT service to reduce the wait until a definitive diagnostic test in patients with LGI symptoms. STT receives routine18 Week Wait (18 WW) referrals through Choose and Book with a patient- controlled 3 week window. GPs, therefore, currently refer non-target patients to the service. Patients referred on the pathway wait an average of 31 days for procedure (range 13–44). However, it was found from triage assessment that some patients needed to be fast-tracked and investigated within 2 weeks due to the onset and severity of their symptoms, particularly patients with symptoms suggestive of inflammatory bowel disease (IBD).

**Methods** Routine referrals are vetted and prioritised by specialist colorectal nurses using information from the GP referral letter and patient-reported history during telephone assessment. Triage is based on a structured algorithm following 2 Week Wait (2 WW) and National Institute of Clinical Evidence (NICE) guidelines and a symptom questionnaire is completed. A prospective database captures patients' symptoms, outcomes of triage, procedures and demographic details. Patients with red flag symptoms referred on a routine pathway were expedited and their outcomes documented. Chi Square statistics were applied to test for significance of findings.

**Results** 569 patients have been triaged since we began formally fast-tracking (August 2014) .Of those patients, 104 (18%) have been expedited following telephone assessment. 57% of those fast-tracked were female and the mean age was 58 years (range 18–88 yrs). 79% underwent colonoscopy, 3% had a flexible sigmoidoscopy, 1% were referred for an ultrasound scan and 17% were directed for an initial clinic review. The mean number of days from triage to test was 5, which is a 96.5% time-saving on the 18 WW pathway. Of all the patients fast-tracked, 65% had pathology, of which 14% had IBD (age range 18–57 yrs with mean of 39 yrs), compared to 45% pathology findings in routine referrals *(p-value <0.01)*, of which 5% had IBD. The chart below shows the findings at endoscopy:




**Abstract PWE138 Figure 1**

**Conclusion** These data suggest that there is a benefit to having a comprehensive history taken by a colorectal specialist nurse in determining the patient pathway in a timely way for diagnosis and start of treatment. With 14% of patients expedited found to have new-onset IBD, the result was prompt treatment of symptoms, and potential avoidance of a hospital admission.

**Disclosure of Interest** None Declared

## PWE-139 AUDIT AND ANALYSIS OF TURNAROUND TIMES IN THE ENDOSCOPY SUITE

[1]MJ Edmondson*, [1]J Thompson, [2]J Morris, [3]A Scarborough, [2]J Hoare. *[1]Gastroenterology, St. Mary's Hospital; [2]Gastroenterology, St.Mary's Hospital; [3]Gastoenterology, St. Mary's, London, UK*

10.1136/gutjnl-2016-312388.384

**Introduction** Endoscopic procedures can be subject to large variability due to patient factors. The turnaround time (TAT) between patients offers a more predictable sequence of events, amenable to a sustainable reduction in time through implemented changes.

Our primary aim was to reduce TAT at St.Mary's Hospital (SM). Our secondary aim was to identify and compare factors leading to TAT delay at SMH and Charing Cross Hospital (CC), both tertiary centres based in London.

**Methods** Clinical observers were used to record TAT and reasons for delay during endoscopy lists at both sites. A TAT was defined as from the point of scope removal from the previous patient to insertion of scope for the next.

**Results** 28 TAT were measured at SM during June 2014, with an average TAT of 25 minutes 14 seconds. Nurse-led cannulation was identified as a factor to reduce TAT and partially implemented at SM and CC. From March to May 2015, 44 TAT were recorded at SM (average 20 minutes 49 seconds) and 43 at CC (average 20 minutes 8 seconds), demonstrating a reduction in TAT at SM. Analysis demonstrated significantly more nurse led cannulations in the fastest 20 TAT compared to the slowest 20 TAT ($p = 0.01$). Endoscopist interruption from non-procedural staff during the TAT also occurred in 25% of TAT across both sites.

**Conclusion** Changes in TAT procedure offer sustainable ways to reduce endoscopy list length. Sources of delay are multifactorial, however nurse-led cannulation has been shown to contribute to faster TAT.

**Disclosure of Interest** None Declared

## PWE-140 RELATIONSHIP BETWEEN SOCIAL DEPRIVATION AND THE CARE PATHWAY OF OSOEPHAGO-GASTRIC (OG) CANCER PATIENTS

M Varagunam*, D Cromwell, on behalf of NOGCA audit team. *Clinical Effectiveness Unit, Royal College of Surgeons, London, UK*

10.1136/gutjnl-2016-312388.385

**Introduction** Incidence and mortality of all cancers combined in England are higher in individuals living within the most deprived areas compared to those from the least deprived. The government recognises that overall performance can be improved for people living in deprived areas. We analysed the effect of deprivation on the care pathway of patients with OG cancer.

**Methods** This study used data collected by the National Oesophago-Gastric Cancer audit (NOGCA) between April 2012 and March 2014 to evaluate the effect of social deprivation on the route of referral into secondary care and treatment options. Social deprivation was measured using the English Index of Multiple Deprivation, with patients allocated to quintiles based on the deprivation score for their area of residence. Quintile 1 represents the least deprived group and quintile 5 the most deprived. Analysis was performed using multivariable logistic regression.

**Results** 16,635 patients were included in the study with a mean age of 70.4 years and 69.2% males. The proportion of patients who were diagnosed after an emergency admission was 11.4% in the least deprived group and 16.4% in the most deprived group. An increase in a quintile of deprivation was associated with an 18% increase in risk of an emergency admission after adjusting for risk factors (age at diagnosis, sex, pre-treatment TNM stage, co-morbidities, site of tumour, and performance status), odds ratio (CI) 1.18 (1.1,13) $p = 0.001$. With every increase in the quintile of deprivation, there was a 8% decrease in likelihood of having curative surgery, odds ratio (CI) 0.92 (0.90,0.96) $p < 0.001$ after adjusting for route of referral and risk factors .

**Conclusion** The treatment pathway of patients with OG cancer differs among patients living in different areas of social deprivation, with most deprived patients being more likely to be diagnosed after an emergency admission and less likely to have curative surgery. The reasons for the variation needs to be investigated to improve overall outcomes.

**Disclosure of Interest** None Declared

## PWE-141 IMPACT OF THE 'BE CLEAR ON CANCER' NATIONAL OESOPHAGO-GASTRIC CANCER AWARENESS CAMPAIGN ON ENDOSCOPY SERVICES AND CANCER DIAGNOSIS RATES AND OUTCOMES

[1]M Kabir*, [2]D Khoo. *[1]Department of Gastroenterology; [2]Department of Upper Gastrointestinal Surgery, Barking, Havering and Redbridge Hospitals NHS Trust, Greater London, UK*

10.1136/gutjnl-2016-312388.386

**Introduction** Previous regional pilot studies have suggested that media campaigns for upper gastrointestinal (UGI) cancers successfully increase public awareness of symptoms, increase two-week wait pathway (2 WW) general practitioner (GP) referrals and increase the numbers of cancers diagnosed.[1] This prompted the roll-out of a nationwide televised media campaign, which promoted dyspepsia as a sign of cancer, from 26

th January to 22 nd February 2015. This study aimed to evaluate its impact, which is not well known to date, on the numbers of GP referrals made to a high volume endoscopy unit in London and the numbers and prognosis of the cancers diagnosed.

**Methods** This was a retrospective observational study, analysing departmental and patient records at the Barking, Havering and Redbridge Hospitals NHS Trust. Total numbers of GP 'urgent' priority and 'two-week wait' (2 WW) cancer pathway referrals for UGI endoscopies were collected from a six month period before the onset of the campaign and compared with a six month period after the campaign onset. The total numbers, demographics and outcomes of the oesophago-gastric cancers referred and diagnosed in the pre- and post-campaign period were recorded. Student paired t tests and $\chi 2$ tests were used to assess for statistical significance.

**Results** There were 1143 urgent/2 WW UGI endoscopy referrals made by GP's in the pre-campaign period and 1448 referrals in the post-campaign period. There was a statistically significant rise of mean monthly 2 WW referrals in the post-campaign period by 36.5% ($p = 0.001$). The extra demand was most noticeable in the 2 month post-campaign period with a mean weekly referral rate increase of 46.5% ($p = 0.001$), equating to 20 extra UGI endoscopies requested per week. However, there was no statistically significant change in the overall rates of oesophago-gastric cancers detected in any age group (47 cancers pre-campaign vs. 38 post-campaign), in their staging or the proportion that could be treated with curative intent. Most of the cancers diagnosed in both groups actually presented as dysphagia (35–37%) and/or weight loss (22–27%) rather than dyspepsia (10–11%).

**Conclusion** The national oesophago-gastric cancer awareness campaign significantly increased the demand placed on endoscopy services but did not meet its aim of detecting more cancers at an earlier curative stage. Most diagnosed were still in advanced stages 3 and 4. Perhaps future campaigns should place more emphasis on promoting awareness of dysphagia, which was more strongly associated with cancer detection, in addition to dyspepsia, in order to increase cancer detection rates.

## REFERENCE

1 Cancer Research UK literature: http://naedi.org/beclearoncancer/oesophago-gastric

**Disclosure of Interest** None Declared

## PWE-142 STATE OF THE ENDOSCOPY SERVICES IN BANGLADESH- FIRST NATIONWIDE SURVEY

[1]MM Rahman, M. M. Rahman[2,*], [2]UR Dave, [1]MJ Hossain, [1]MG Kibria, [1]M Nuruzzaman, [1]F Ahmed, [3]A Rowshon, [4]M Hasan, on behalf of ABM University Health Board, British Society of Gastroenterology international Office (Grant) and Bangladesh Gastroenterology Society working together made this project study successful. *[1]Gastroenterology, Dhaka Medical College Hospital, Dhaka, Bangladesh; [2]Gastroenterology, ABM University Health Board, Swansea, UK; [3]Gastroenterology, Shaheed Suhrawardy Medical College Hospital; [4]Bangladesh Medical Research Council, Bangladesh Medical Research Council, Dhaka, Bangladesh*

10.1136/gutjnl-2016-312388.387

**Introduction** We conducted survey on endoscopy centres in Bangladesh with the aim to assess the current status and to identify areas to improve standards in services.

**Methods** All endoscopy centres in the country were identified from endoscope vendors, Bangladesh Gastroenterology society (BGS) member list and personal communication. A Structured questionnaire containing mainly structural, process and outcome measures along with a letter from BGS were sent to a senior endoscopist of every centre who completed the questionnaire. Data was analysed anonymously.

**Results** Questionnaire sent to all 197 endoscopy centres and 195 centres responded (response rate 99%). Of those 12% were public and 88% were privately run endoscopy centres. More than half (52%) were diagnostic centres (39%) or clinics (13%) and rest were in hospital setting (48%). Gastroscopy, colonoscopy, flexible sigmoidoscopy, ERCP and EUS were done at 100%, 65%, 37%, 13% and 2% centres. Total 356251 gastroscopy, 51252 colonoscopy, 10824 flexible sigmoidoscopy, 4123 ERCP and 291 EUS were done in the year (October 2014 to September 2015) with a rate of 227, 33, 6.9, 2.63 and 0.19 per 100,000 people respectively. Majority performed only diagnostic gastroscopy (53%) in a single room unit (76%) with no dedicated recovery areas and majority never used sedation (59%). Paediatric Gastroenterologists available in 2% of 61% centres performing endoscopy on children. Computerised reports with photo provided by 97% centres and majority kept records (92%). 38% of centres were run by a single endoscopist while 9% had five or more endoscopists. Only 5% of centres had trainee endoscopists. Majority did not have registered endoscopy nurse (59%) or clerical staff (52%). Most centres had single scope (Gastroscope 76%, colonoscope 78%). Automated sterilisation system available in 3 centres and 31% reported sterilisation before procedures. Centres using sedation (41%) only 43% of them kept antidotes for sedative agents. Information leaflet for gastroscopy and colonoscopy provided by 34% and 65% and signed consent form by 35% and 80% centres respectively. Few kept records of procedure related complications (26%) and only 18% carried out regular audit.

**Conclusion** This first ever nationwide survey on endoscopy centres provided baseline data. The study is exploring the current status and standards in endoscopy in Bangladesh which will help to identify the limitations and scope for improvements and act as a first building block.

**Disclosure of Interest** None Declared

## PWE-143 DEVELOPMENT OF INFORMATICS TOOLS FOR THE UK IBD REGISTRY USING ROUTINE DATA: PROFILING OF NATIONAL-LEVEL HOSPITAL ACTIVITY FOR IBD PATIENTS IN ENGLAND

[1]M Shawihdi[*], [2]A Osborne, [2]E Devonport, [3]R Driscoll, [4]F Cummings, [5]S Bloom, [6]P Williamson, [6]M Pearson, [6]K Bodger. *[1]Gastroenterology, University of Liverpool; [2]Aintree Health Outcomes Partnership, University Hospital Aintree, Liverpool; [3]UK IBD Registry, British Society of Gastroenterology, London; [4]Gastroenterology, Univ. Hospital Southampton, Southampton; [5]Gastroenterology, University College London Hospital, London; [6]Department of Biostatistics, Institute of Translational Medicine, University of Liverpool, Liverpool, UK*

10.1136/gutjnl-2016-312388.388

**Introduction** We report a project to generate profiles of NHS activity for IBD patients receiving care in English hospitals, with national and local level activity reports (Trust and Primary Care Organisation) as the basis for clinically validated metrics to support services.

**Methods** COHORT: 352,614 patients with a specific IBD diagnosis between 2003/4 and 2013/14. DATASETS: All-cause

events for the cohort for each year from HES datasets: Admitted Patient Care (**APC**, daycase and inpatient care), Outpatient (**OP**) and Accident & Emergency (**A&E**). Source: Health & Social Care Information Centre. ANALYSIS: In IBM-SPSS, Excel and SAS. Clinical review of ICD-10 (diagnosis) and OPCS-4 (procedure) codes for all APC events, categorising all-cause activity into logical baskets of IBD-related primary diagnoses (e.g. perianal abscess) or procedures (e.g. colonoscopies). **APC** categorised as **elective daycases (El-D)**, **admissions (El-Ad)** or **emergencies (Em-Ad)**. The OP dataset lacks diagnosis, so categorised by GI-relevant specialities. A&E contacts were all-cause (non-admitted). Data reported are 2013/14.

**Results APC:** 149,115 IBD patients (42% of cohort) had hospital admission in 13/14 (389,574 admissions; **El-D**, 246,064; **El-Ad**, 26,911; **Em-Ad**, 105,482; **Other**, 11,117). Of **Em-Ad**, the primary diagnosis code was *IBD-specific* in 17,274 (CD: 10,077; UC: 7,197), *non-specific IBD* in 455, *IBD-related conditions* in 9,709, relevant *GI symptoms* in 6,934, *benign anorectal conditions* in 2,445, *anaemias* in 1,158, *enteric infections* in 1,148, *colonic or small bowel cancers* in 472. Categorising **Em-Ad** by procedures identified 5,515 with *GI surgery* (Perianal: 1,233; Colonic or SB resection: 1,547). Of **El-Ad**, 7,030 included *GI surgery*. **El-D** included 70,354 *lower endoscopies* and 73,968 *infusions/injections*. **Outpatient Activity**: 244,248 IBD patients (69% of cohort) attended clinic (1,351,807 all-cause visits), of which 387,503 were *gastroenterology* or *general surgery*. **A&E Activity:** 98,838 all-cause attendances for 53,083 IBD patients (non-admitted). At organisation level (PCT), mean emergency bed days (primary IBD diagnosis) was 247 per 100,000.

**Conclusion** Analysis of IBD-related hospital activity in routine data is possible but requires complex algorithms. Our candidate metrics at Trust and Primary Care Organisation level will be shared with front line teams, including links between A&E, OPD and APC events and refined iteratively. Linkage to IBD Registry dataset has been tested and will allow future enhancements.

**Disclosure of Interest** M. Shawihdi Grant/research support from: Crohn's & Coliitis UK, A. Osborne: None Declared, E. Devonport: None Declared, R. Driscoll Consultant for: AbbVie, F. Cummings: None Declared, S. Bloom: None Declared, P. Williamson: None Declared, M. Pearson: None Declared, K. Bodger Grant/research support from: Crohn's & Colitis UK, Speaker bureau with: AbbVie

## PWE-144 PREDICTING TREATMENT FAILURE IN C.DIFFICILE INFECTION: A PROSPECTIVE OBSERVATIONAL COHORT STUDY

NM Joshi*, J Goodhand, W Alazawi, S Das, M Wilks, D Rampton. *Centre for Immunobiology, Blizard Instuite, Barts and The London School of Medicine and Dentistry, London, UK*

10.1136/gutjnl-2016-312388.389

**Introduction** C.difficile-induced diarrhoea is often refractory to treatment and can be life-threatening. As yet, there is no prospectively derived tool with which to predict treatment failure (TF) in C.difficile infection (CDI). We performed a fully powered, pragmatic, prospective observational study to create such a tool.

**Methods** Patients with confirmed CDI were consented to enter the study within 24 hours of testing positive. Demographic data (including age, antibiotic and PPI use, smoking, ward type), clinical variables (pulse, PB, temperature) and blood test results (FBC, urea, creatinine, CRP, albumin) and faecal calprotectin on the day of diagnosis were collected. TF was defined as occurrence of any of: death while admitted, colectomy, ongoing diarrhoea at day 7, recurrent diarrhoea at <30 days after initial CDI diagnosis. Case level re-structuring was used to account for missing data and forward stepwise binary regression to derive a predictive model. The model was internally validated by bootstrapping and assessed by Receiver Operated Characteristic (ROC) analysis.

**Results** 122 patients were recruited and primarily treated by their routine clinical team with metronidazole (n = 89) or vancomycin (n = 29). 63 patients (52%) failed treatment: 28 died during their admission, 43 had continuing diarrhoea at day 7, 16 had recurrent diarrhoea within 30 days and 1 had a colectomy (some patients had TF on >1 criteria). TF rate was the same whether metronidazole or vancomycin was primary therapy. Of the variables measured, only age and serum albumin predicted TF (age, $p = 0.029$; albumin, $p = 0.0001$). An equation with which to predict individual patients' risk of TF was then derived: for ease of clinical application, a simple read off table was derived allowing prediction of outcome using the patient's age and serum albumin. The model correctly predicted TF in 79% of cases. By ROC analysis, the model initially had an Area Under the Curve (AUC) of 0.76; in the internal validation assessment the AUC was 0.75.

**Conclusion** A prospectively and internally validated tool with which to predict treatment failure in CDI has been derived. The tool consists of 2 variables (age and serum albumin) on the day of diagnosis of CDI. The predictive tool could be used to highlight those who might benefit from more intensive treatment, for example using fidaxomicin or faecal microbial transplant as primary CDI therapy.

**Disclosure of Interest** None Declared

## PWE-145 INCORPORATING SCREENING FOR POOR PROGNOSIS INTO INPATIENT MANAGEMENT OF DECOMPENSATED CIRRHOSIS

R Goddard*, A Gopfert, G Connolly, B Hudson. *Hepatology, University Hospitals Bristol NHS Foundation Trust, Bristol, UK*

10.1136/gutjnl-2016-312388.390

**Introduction** The Lancet standing commission on liver disease recently highlighted the importance of palliative care in advanced liver disease. The end of life care strategy (DoH, 2008) noted many patients do not die in a place of their choosing, and that difficulties exist amongst physicians in identifying the dying process. Optimal provision and co-ordination of palliative care relies on timely recognition of poor prognosis. 90% of patients who die from liver disease are admitted to hospital at least once in the previous year. Hospital admission presents an important opportunity to assess prognosis and explore patients' understanding of their risk of dying and preferences for care. This quality improvement project aimed to create a clinical framework through which screening for poor prognosis could be integrated into the

routine inpatient management of patients with decompensated cirrhosis.

**Methods** An inpatient Poor Prognosis Screening Tool (PPST - incorporating assessment of disease severity, WHO performance status, frequency of admission, and suitability for transplantation) was developed at University Hospitals Bristol in 2013. Based on retrospective data, a positive PPST screen predicted death at 1 year with a sensitivity of 81%. Initial audit identified infrequent use of the existing PPST (18.1%). A series of 5 quality improvement cycles (plan-do-study-act) were completed with input from consultants, junior medical and nursing staff at each stage. Ease of use and incorporation into routine practice were used as primary objectives.

**Results** The weekly ward MDT was identified as a point where the PPST could be routinely incorporated. Following feedback from junior staff the PPST was simplified and embedded into a weekly written MDT proforma. Guidance for completion were streamlined and made accessible by printing on the reverse of the proforma. Following feedback from nursing staff the proforma sheet was coloured, allowing key discussions and decisions to be easily identified on subsequent admissions. Consultants chairing the MDT incorporated the PPST into the standard weekly discussion of each patient. Repeat audits demonstrated that PPST use had become routine with completion rates of 66–94% for patients with decompensated cirrhosis.

**Conclusion** Assuming MDT agreement, a positive PPST screen triggers a consultant led poor prognosis discussion with the patient, a poor prognosis letter to the GP, and involvement of the palliative medicine team to assist with symptom control and advance care planning. Through incorporation of the PPST into the routine care of patients with decompensation, identification of patients with end-stage disease has improved. Better access to appropriate services and support, and improved co-ordination of community care can be subsequently afforded to appropriate patients.

**Disclosure of Interest** None Declared

## PWE-146 IS A NURSE-LED COMPUTERISED HCC SURVEILLANCE SYSTEM EFFECTIVE?

S Priestley, S Testrow*, K Ashton, J Jones, M Fox. *St Helens & Knowsley Teaching Hospitals NHS Trust, Merseyside, UK*

10.1136/gutjnl-2016-312388.391

**Introduction** Hepatocellular carcinoma (HCC) accounts for 90% of liver cancers and has a growing incidence of HCC worldwide. In 2013, liver cancer accounted for 2% of all cancers with an incidence of 5,413 new cases. 90–95% of cases of HCC arise in cirrhosis and non-cirrhotic chronic Hepatitis B.[1] Outcomes are poor with a median survival of 11 months and a 3 year survival rate of 19%.[2] Factors influencing outcome are multifactorial but evidence supports improved results through screening high risk groups.

The British Society of Gastroenterology (BSG) guidelines on the surveillance of HCC in high risk groups recommend 6 monthly liver ultrasound (USS) and serum alpha fetoprotein (AFP).

The ad hoc nature of our HCC surveillance contributed to the expansion of our liver service, including 2 liver specialist nurses and an electronic HCC surveillance database, all designed to provide a more robust system. The database includes appropriate patients and automatically flags up when surveillance is due. Has this service development had an impact of on patient care?

**Methods** A retrospective audit compares surveillance over 2 time periods: before and after the introduction of the database in January 2015. Data was obtained from the database and patient records. Deceased patients or those removed from the programme on clinical grounds were excluded from the cohorts. The following data was collected: gender, age, aetiology, CPS, date of diagnosis and the time interval between serum AFP measurements and liver imaging.

**Results** There is no significant difference in demographics between the 2 cohorts. The table below illustrates the percentages of patients undergoing surveillance within the guidelines. HCC was diagnosed in 5 patients (2 pre/3 post group) with a mean AFP of 13 mcg/l at diagnosis.

**Abstract PWE-146 Table 1**

| | *Pre-database (n = 111)* | *Post-database (n = 219)* |
|---|---|---|
| **Serum AFP** | 53 (47.7%) | 180 (82.2%) |
| *Mean Interval (m)* | *5.9* | *8.4* |
| **USS** | 34 (30.6%) | 189 (86.3%) |
| *Mean Interval (m)* | *4.4* | *5.2* |

**Conclusion** Establishment of the database and the specialist nurse service has improved data collection reflected in the increased numbers undergoing surveillance. There is improved compliance, with detection & treatment of early HCC. Any delays were often due to patient cancellation, occasionally repeatedly, without a subsequent appointment being immediately arranged. So how could we improve further still? Recommendations may include; a cancellation failsafe mechanism, increased patient education with comprehensive information leaflet and more intelligent software that automatically sends an electronic reminder, as currently the database still relies on manual monitoring.

### REFERENCES

1 Forner A, *et al*. Hepatocellular carcinoma. *Lancet* 2012 March;**379**(9822):1245–55.
2 Greten TF, *et al*. Survival rate in patients with hepatocellular carcinoma: a retrospective analysis of 389 patients. *Br J Cancer* 2005 May;**92**(10):1862–1868.

**Disclosure of Interest** None Declared

## PWE-147 THE USE OF ANGIOGRAPHY WITH A VIEW TO EMBOLISATION IN NON VARICEAL GASTROINTESTINAL HAEMORRHAGE UNCONTROLLED WITH ENDOSCOPIC THERAPY, A 10 YEAR EXPERIENCE AT A TEACHING HOSPITAL

[1]S Esmaily*, [1]S Paremal, [2]J Dean, [1]J Greenaway, [1]B Disney. *[1]Department of Gastroenterology; [2]Department of Radiology, James Cook University Hospitals, Middlesbrough, UK*

10.1136/gutjnl-2016-312388.392

**Introduction** Gastrointestinal (GI) bleeding is a common medical emergency. The incidence is 1.33/1000 population, approximately 85,000 cases/year. The NCEPOD review of GI

haemorrhage emphasised the role of embolisation in patients with GI bleeding who have failed endoscopic therapy.

Transcatheter arterial embolisation (TAE) has been shown to be as effective as emergency surgery in the treatment of refractory acute non variceal upper GI bleeding (ANVGIB) with reduced 30 day mortality rates.

The study aim was to review the utilisation and outcomes of patients undergoing emergency angiography (EA) with a view to embolisation in ANVGIB not amendable to, or controlled by, endoscopic therapy.

**Methods** A retrospective analysis of patients undergoing EA for ANVGIB between January 2005 and February 2016 was performed. Patients were identified from endoscopy and radiology databases. Endoscopy reports and discharge letters were reviewed electronically. Successful embolisation was deemed when extravasation had stopped and/or no bleeding post embolisation.

**Results** Over the study period, 22412 patients were diagnosed with GI bleeding. 57.9% (12967/22412) had an endoscopy.

EA was performed in 107/12967 (0.83%) of patients undergoing endoscopy due to uncontrolled GI bleeding.

Mean age was 69 years for males and 74 years for females (range 30–98); 74/107 were male.

EA and embolization was performed in hours in 71% of cases and out of hours in 29%.

Pre-angiography endoscopy report was available in 86/107 patients. The commonest endoscopic diagnosis was duodenal ulcer which was present in 25.6% (22/86) of the cases. A normal upper GI endoscopy was noted in 20.9% (18/86) of patients. Lower GI bleeding was the cause in 17.4% (15/86) of patients. Other causes included; unidentified bleeding point, dieulafoy lesion, gastric ulcer.

Of those patients undergoing angiography 54/106 (50.9%) had TAE. TAE was deemed successful in 90.7% (49/54) of cases. Surgical intervention was necessary in 2/5 of the unsuccessful cases.

The 30 day mortality for the patients undergoing angiography with or without intervention was 18/107 (16.8%). 57% (61/107) were alive at 1 year.

**Conclusion** The results demonstrate that angiography and embolisation is a valuable tool in the management of GI bleeding not controlled by endoscopic therapy with a high success rate avoiding the need for surgery in the majority of cases. Our figures are comparable to published studies.

The results support the need for 24/7 access to interventional radiology which is part of the recommendations from the NCEPOD review of the care received by patients who had a severe gastrointestinal haemorrhage.

**Disclosure of Interest** None Declared

## PWE-148 TACKLING THE 2WW SERVICE- A HARD NUT CRACKED

S Vinnamala*, A Gibson, L Osborne, J Akhtar, A Malik, SMT Nasser, J Mannath, J Eaden. *Gastroenterology, University Hospitals Coventry and Warwickshire NHS trust, Coventry, UK*

10.1136/gutjnl-2016-312388.393

**Introduction** A service review of the upper GI 2 WW referrals locally showed a 20% annual increase in the UGI referrals from 2013 to 2015. The cancer pick up rates were static at 4.5% with the vast majority of patients discharged back to their GP after a normal gastroscopy.[1] The review also showed a 43% re-referral rate back to gastroenterology after a normal gastroscopy leading to an increase in the outpatient volumes and hence a delay in the delivery of care to those patients.

**Methods** We piloted a dedicated consultant taking a lead to vet all UGI referrals and to channel them in to a simple (straight to gastroscopy) or complex (clinic first) pathway. All complex pathway patients were reviewed in clinic and investigated appropriately if required.

**Results** Of the 619 UGI 2 WW referrals received over a 3 month period between August to October 2015, 153 (25%) patients were reviewed in dedicated complex pathway clinics (2 clinics/week). The cancer pick up rate increased to 8% (12) with 60% (7) being UGI (oesophagus (6) and stomach (1)) and 40% Non-GI cancers (ovarian, lung and endometrial cancers). 15% of these patients had a diagnosis requiring ongoing secondary care follow up (more than one follow up appointment) for conditions such as strictures, coeliac disease and eosinophilic oesophagitis etc. 42% (65) had a clinically significant diagnosis that required advice and guidance to GP for community follow up. 82% were discharged back to primary care after one follow up appointment.

**Conclusion** There was an 80% increase in the cancer pick up rate as compared to our previous direct to test pathway. We believe daily clinician vetting of referrals and upgrading to a clinic first pathway contributed to a higher rate of cancer detection. There were non GI cancers detected which would have been missed with a gastroscopy only service. The prompt clinic follow up in secondary care for patients with significant yet benign diagnoses together with advice and reassurance prior to discharge for others should eventually lead to a reduction in the re-referral rate whilst maintaining the high quality delivery of care.

### REFERENCE

1 Kapoor N, Bassi A, Sturgess R, *et al*. Predictive value of alarm features in a rapid access upper gastrointestinal cancer service. *Gut* 2005;**54**:40–5.

**Disclosure of Interest** None Declared

## PWE-149 5 YEARS OF A DGH DELIVERED REGIONAL DOUBLE BALLOON ENTEROSCOPY (DBE) SERVICE

[1]S Batchelor*, [1]D Mansour, [2]S Deshpande, [3]D Nylander, [1]S Panter. *[1]Gastroenterology; [2]Anaesthetics, South Tyneside District Hospital, South Shields; [3]Gastroenterology, Royal Victoria Infirmary, Newcastle upon Tyne, UK*

10.1136/gutjnl-2016-312388.394

**Introduction** Double Balloon Enteroscopy (DBE) allows visualisation and interventional therapy throughout the small bowel. It was commenced in South Tyneside District Hospital (STDH) in January 2010 to complement the existing capsule endoscopy service.

**Methods** Records were examined retrospectively for all DBEs at STDH between 1/1/2010 & 31/12/2015 to determine the indication, route & depth of insertion, findings & therapies performed & the complications.

**Results** 92 procedures were performed from 172 referrals: (47%) via oral route, (52%) via anal route and (1%) via ileostomy. Procedures were done under conscious sedation or propofol, with GA for planned therapeutic cases. The average depth of insertion for the oral route was 174 cm & 96 cm for the anal route. The overall average insertion time was 71 minutes. (61%) had tattoo applied.

The indications were to evaluate suspected or confirmed Crohn's disease (38%), obscure mid gastrointestinal (GI) bleeding (28%), suspected malignancy or abnormal imaging (20%), detect polyps in suspected or confirmed polyposis syndrome (7%) and refractory coeliac (1%). 25% of patients had more than one indication for DBE.

DBE findings: 50% had normal examinations, 11% Crohn's disease, 16% non-specific inflammation, 10% polyps, 4% tumours and 1% coeliac disease. Other diagnoses included small bowel angioectasia and radiation enteritis. The overall diagnostic yield was 50%. The diagnostic yield for suspected Crohn's disease was 29%, evaluation of obscure mid GI bleeding was 31%, suspected polyps was 40%, refractory Coeliac was 100% and the evaluation of malignancy and abnormal imaging was 11%. 95% of patients who had a normal DBE had prior abnormalities in their imaging.

Limitations: 10 procedures were incomplete due to equipment failure (5), persistent looping (4) & inability to pass strictures (1). 1 was abandoned due to poor bowel preparation.

Therapy was performed in 13 (14%) procedures: 3 dilatation of strictures, 5 had Argon Plasma Coagulation, 4 polypectomies and 1 had a bleeding ulcer clipped. No complications were recorded at DBE for any patients

**Conclusion** Our DBE service is safe and complements other imaging modality. Our overall diagnostic yield is 50%. Our main indication for DBE is to evaluate suspected Crohn's (38%) rather than for obscure GI bleeding as in the literature.[1] Even with stringent case selection the diagnostic yield for DBE was lower than the preceding VCE.

**REFERENCE**

1 Seong Ran, *et al*. Changes over time in indications, diagnostic yield, and clinical effects of double-balloon enteroscopy. *Clin Gastroenterol Hepatol* 2012;**10** (10):1152–1156.

**Disclosure of Interest** None Declared

## PWE-150 ANAESTHETIC SUPPORT AND THEATRE ACCESS FOR EMERGENCY ENDOSCOPY IN MAJOR UPPER GASTROINTESTINAL BLEEDING (UGIB); WHERE CAN WE IMPROVE?

[1]TM Monaghan*, [2]D Evans, [3]P Sugathan, [3]T Archer, [3]MW James. *[1]NIHR Biomedical Research Unit in Gastrointestinal and Liver Diseases, University of Nottingham; [2]Anaesthetics; [3]Gastrointestinal and Liver Services, Nottingham University Hospitals NHS Trust, Nottingham, UK*

10.1136/gutjnl-2016-312388.395

**Introduction** The 2015 NCEPOD "Time to get control" report recommends that hospitals admitting patients with severe UGIB have access to critical care and anaesthetic support for urgent endoscopy. We examined our emergency pathway including theatre urgency codes, time to therapy and clinical outcomes.

**Methods** We analysed all patients who had emergency endoscopy in theatre for suspected severe UGIB at Queen's Medical Centre, Nottingham, UK, between 1st March 2014 and 28th February 2015. We examined patient demographics, ASA and UGIB risk scores, shock index (SI; heart rate/systolic BP), referral times to endoscopy and breach rates, anaesthetic and operator details, endoscopic findings and therapy (blood product use, interventional radiology and surgery), procedural documentation, re-bleed plans, discharge location, complications and inpatient mortality.

**Results** 95 patients (60 male mean [±SD] age 59.2 [±19.1]; 35 female, 55.2 [±28.4]) with suspected severe UGIB were treated in emergency theatres over the 12 month period. 93/95 (98%) had significant UGIB; 82% ASA grade ≥3 and Glasgow Blatchford Scores (GBS) were recorded in 18% of cases; median (range) score 12 (1–19). 64% were classified as theatre urgency 1 (U1; within 60 mins) and 25% U3 (within 180 mins). 64% of those in U1 had a high shock index (SI > 0.9). However, median time from referral to endoscopy was 215 (range 37–1370) minutes. 47% breached the theatre urgency code times; including 59% of those assigned to U1. A consultant gastroenterologist was present in theatre in 86/95 (91%) of cases and 96% of patients received a general anaesthetic with rapid-sequence induction. The UGIB was non-variceal in 55/95 (58%; endoscopic intervention in 63%), variceal in 32/95 (34%), no cause found 8/95 (8%). 70% received a blood transfusion within 24 hrs of admission, mean 2.7(±2.5) units packed cells. 9/95 (10%) had CT angiography and 6/95 (6%) underwent coil embolization. No patients underwent surgery. An endoscopy report was generated for all cases, but re-bleed plans were only documented in 51%. Following endoscopy, 63/95 (67%) required a high-dependency bed and inpatient mortality was 21%.

**Conclusion** Patients undergoing emergency endoscopy in theatre for acute UGIB had high risk scores and inpatient mortality, but 47% breached theatre urgency timings. These delays may impact on patient outcomes and are likely multifactorial. Potential reasons include time for resuscitation, transfer from admitting areas and co-ordination of emergency endoscopy teams and equipment. These logistics need to be understood more and improved to achieve improvements in patient care.

**Disclosure of Interest** None Declared

## PWE-151 ALCOHOL-RELATED ADMISSIONS TO A CENTRAL LONDON HOSPITAL: TOO LITTLE CODING; TOO MUCH RESOURCE

[1]W Blad*, [2]J Lovendoski, [2]P Morris, [2]J Varley, [1]M Foxton. *[1]Gastroenterology; [2]Chelsea and Westminster Hospital Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.396

**Introduction** Alcohol-related harm costs the NHS £3.6 billion per year, of which 78% is costs to the hospital.[1] Alcohol is traditionally poorly coded in UK hospitals and so estimating alcohol-related admissions and the resources they consume can be challenging. Underestimation may adversely influence service requirements and underestimate the impact of cost reduction measures.

**Methods** Hospital admissions to a Central London Hospital for a 101 day period were identified from four sources:

- A search of 25 alcohol-related ICD-10 discharge diagnosis codes;
- Patients reviewed by the alcohol liaison nurse;
- All CT Head scans completed were analysed for evidence of alcohol misuse;
- Patients attending The Accident and Emergency Department (A&E) with alcohol misuse.

**Results** Over this 101 day period, 537 admissions in 349 individual patients with harmful/hazardous alcohol use were identified with a total of 2,855 inpatient bed days and 104 day case procedures. 237 (44%) of these admissions did not have an alcohol-related discharge code. The mean admission length

was 5.3 days. Fifty-eight percent of these patients had presented to the hospital at least once in the previous year with a total of 914 attendances, resulting in 518 admissions. This estimates 1,941 admissions per year in patients who drink to excess and a total of 10,318 inpatient bed days, equating to 28 inpatients per day. Eighty percent of these were emergencies accounting for 9.5% of all emergency admissions to the hospital.

The table lists the resources used by this cohort both during the index admission and over the past 12 months:

**Abstract PWE-151 Table 1**

| Investigations/Procedures | Index admission | Last 12 months |
|---|---|---|
| CT Head | 123 | 87 |
| Ultrasound Abdomen/Liver | 37 | 66 |
| Endoscopy | 40 | 67 |
| Operation | 99 | 36 |
| MRI | 23 | 24 |
| Other CT | 67 | 81 |
| Other Ultrasound (including ECHO) | 72 | 92 |
| Other Procedures | 86 | 99 |
| ITU/HDU Admission | 14 | 8 |

Over the same period, A&E ordered 464 CT Head scans, of which 112 (24%) were due to alcohol with head injuries being the commonest indication (34.4% alcohol-related). Alcohol was involved in 133 (22.2%) scans done within 24 hours of admission, estimating almost 500 scans per year.

**Conclusion** Our data demonstrates that alcohol admissions are poorly coded and therefore the extent of alcohol-related resource use is likely to be an underestimation. We expect there to be further admissions not picked up using the above methods. Alcohol-related admissions account for high resource use and the costs, in bed days alone, exceed £3,500,000 per year in a single hospital. Accurately coding admissions is crucial to ensure that this group of patients, with high resource use, can be identified so that measures can be taken to treat their alcohol misuse and reduce the burden on healthcare.

## REFERENCE

1 Statistics on Alcohol: England, 2013. Health and Social Care Information Centre. 2013.

**Disclosure of Interest** None Declared

## PWE-152 FAECAL ELASTASE: IMPACT OF AGE, SEX, ETHNICITY, PRE-EXISTING PANCREATIC ENDOCRINE DYSFUNCTION AND INDICATION FOR TESTING ON FAECAL ELASTASE RESULTS

YK Kim, A Soubieres*, A Buckingham, C Woodhouse, I Khan, DC Gaze, F Boa, A Poullis. *St George's Hospital, London, UK*

10.1136/gutjnl-2016-312388.397

**Introduction** Pancreatic Exocrine Insufficiency (PEI) is underdiagnosed and faecal elastase (FE) testing underutilised. The impact of age, sex, ethnicity, pre-existing pancreatic endocrine dysfunction and indication for testing on faecal elastase results are poorly studied. Previous small studies have suggested an age related decline in FE levels. Our Institution serves an ethnically mixed population in South London and we have described previously un-know ethnicity differences in colonic polyp prevalence,[1] intestinal metaplasia in Barrett's oesophagus[2] and vitamin D deficiency in inflammatory bowel disease.[3]

**Methods** A retrospective study on 530 patients who underwent FE testing from September 2011 to September 2015 was carried out. Patient demographics were retrieved from hospital records. Ethnicity was categorised as 'Indian-subcontinent' and "Non-Indian-subcontinent' as previously described (1). Paediatric cases (age less than 1) and adults with incomplete data were excluded from analyses. These were performed using Analyse-it Version 2.30 for Microsoft Excel. 494 cases were analysed.

**Results** Mean age of study participants was 50.7 (sd 22.7), there were 251 females and 243 males. The mean FE in our population was 381μg/g (sd 166). 89/494 were diagnosed with PEI. There was no significant difference in FE result when analysed for age, sex, ethnicity and history of weight loss. No age related differences were found when analysed for mean age in those with normal v abnormal FE results (20.2 v 52.9, p = n.s.), age v FE level or age v FE level in those with PEI. Patients with pre-existing diabetes mellitus were significantly more likely to have PEI (DM v no DM: FE low in 28 v 16%, p = 0.03). Patients presenting with unexplained diarrhoea were significantly more likely to have PEI (diarrhoea v no diarrhoea: FE low in 20.5 v 10.6, p = 0.009).

**Conclusion** This is the first study investigating the effects ethnicity and indication for testing on FE result and the largest study looking at the effect of age. Contrary to earlier smaller studies we found no relationship to age. We identified that patients with diarrhoea rather than isolated weight loss have a higher detection rate for PEI. We confirmed previous observations that patients with diabetes have a higher rate of PEI. FE testing should routinely be carried out in patients with unexplained diarrhoea.

## REFERENCES

1 West NJ, Poullis A. *Indian J Gastroenterol* 2007.
2 Hewett R, Poullis A. *Indian J Gastroenterol* 2015.
3 Chatu S, Poullis A. *Frontline Gastroenterol* 2013.

**Disclosure of Interest** None Declared

## PWE-154 ENDOSCOPIC ULTRASOUND (EUS) IS SUPERIOR TO CT/MRI IN THE DETECTION OF PANCREATIC NEUROENDOCRINE TUMOURS (PNETS) AS A BASELINE ASSESSMENT OF PATIENTS WITH MULTIPLE ENDOCRINE NEOPLASIA TYPE I (MEN1)

I Koumoutsos*, C Chia, I Nasr, S DeMartino, J Meenan. *Gastroenterology, Guys & St Thomas Hospital, London, UK*

10.1136/gutjnl-2016-312388.398

**Introduction** Early identification of pNETs is a key element to reducing morbidity and mortality in MEN1 patients. Prognosis is associated with tumour size and many pNETs are small subcentimetre lesions and only become symptomatic when the tumour is large. Conventional radiology is suboptimal in detecting such lesions, thus missing the window to remove them at an earlier stage. We compared: (a) linearEUS detection of pNETs in patients with confirmed MEN1 vs triple-phase contrast-enhanced CT/MRI pancreas and (b) incremental

benefit of EUS to cross-sectional imaging for detection of small pNETs and quantity of pNETs in this cohort

**Methods** Between Jan 2008- Oct 2015, a total of 20 patients with clinically confirmed MEN1 underwent baseline assessment with EUS, CT/MRI and biochemical screening. Data were retrospectively retrieved from the hospital electronic records database. Statistical analysis was performed using SPSS v20 on the size and number of pNET detection by EUS and CT/MRI using the Wilcoxon Signed Rank Test and McNemar Chi-square

**Results** A total of 28 EUS procedures and an equal number of cross sectional imaging (CT/MRI) were performed. pNETs were identified in 95% of all 20 MEN1 cases. Overall median pNET size was 7.1 mm on EUS and 14.5 mm on CT/MRI ($p = 0.007$). Median value for smallest pNETs detected by EUS was 4.6 mm and 12.7 mm on CT/MRI ($p = 0.001$). EUS detected more pancreatic lesions/pNETs compared to CT/MRI ($p < 0.001$) in 25 of the 28 procedures (89.3% more). The remaining 3 procedures showed equal numbers of pNETs detection by both modalities. The interquartile range (IQR) for smallest pNET detected by EUS was 3.0–5.0 mm while IQR for CT/MRI lies between 8.3 mm-14.8mm. EUS detected all 100% cases of pNETs in our series of MEN1 compared to CT/MRI imaging alone which detected 57.9% cases ($p = 0.008$). 14 of 20 patients had FNA performed with a positive yield of 85.7%. In 50% of patients, pNET measured ≤10 mm. Conclusions In MEN1 patients, CT/MRI underestimated the presence of pNETs in approximately half of all cases compared to EUS and was not able to identify small pNETs (< 8 mm) in all but one case.

**Conclusion** EUS offers higher sensitivity than cross sectional imaging (CT/MRI) in terms of detecting the number of positive pNET cases as well as a greater number of pancreatic lesions especially subcentimetre ones. EUS should be considered a standard tool in the algorithm for MEN1 workup, instead of an adjunct reserved for diagnostic dilemmas

**Disclosure of Interest** None Declared

## PWE-155 SHOULD PATIENTS WITH HUMAN IMMUNODEFICIENCY VIRUS AND GASTROINTESTINAL SYMPTOMS BE ROUTINELY TESTED FOR PANCREATIC EXOCRINE INSUFFICIENCY?

JA Campbell*, DS Sanders, AD Hopper. *Academic Dept of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.399

**Introduction** Diarrhoea and gastrointestinal (GI) symptoms are common symptom in patients with human immunodeficiency virus (HIV). Malabsorption secondary to pancreatic exocrine insufficiency (PEI) has been reported in patients with HIV. Treatment with pancreatic enzyme replacement therapy (PERT) improves symptoms and reduces complications of PEI (malnutrition and osteoporosis). We aimed to calculate the prevalence of PEI in patients with HIV referred to gastroenterology secondary care clinics for persistent GI symptoms.

**Methods** All patients tested for PEI between 2010 and 2014 were identified. Presenting symptoms and presence of HIV were noted. Faecal elastase (FEL-1) was used to assess pancreatic function with FEL-1 <200μg/g defined as abnormal. Comorbidities, response to PERT and abdominal imaging results were noted. Prevalence of PEI was compared in patients with and without HIV. Patients treated with PERT were identified on follow up and a positive symptom response noted.

**Results** 84 patents were identified during the period. 21 were identified with HIV (mean age 47.5, SD 9.8, 85.7% male). 12/21 (57.1%) HIV patients with GI symptoms had low FEL-1 compared to 8/63 (12.7%) patients with GI symptoms without HIV ($p =< 0.0001$). The most common presenting GI symptom in patients tested for FEL-1 was diarrhoea, (85.7% in both groups) other symptoms included abdominal pain (HIV 9.5%, non HIV 19.0%), weight loss (HIV 0%, control 9.5%) and bloating (HIV 4.8%, control 6.3%).

10/12 (83.3%) HIV patients with low FEL-1 had abdominal imaging. Pancreatic abnormalities were detected in 2/10 cases (20%). 7/8 (87.5%) controls with low FEL-1 had imaging, 3/7 (42.9%) had pancreatic abnormalities. In both groups pancreatic calcification and atrophy were detected. No malignancy was identified.

9/12 (72.5%) HIV patients and 5/8 (62.5%) controls were treated with PERT. 9/9 (100%) HIV patients reported symptomatic improvement; 4/5 (80%) controls derived benefit. Doses prescribed varied from 60,000–140,000 units/day across both groups.

**Conclusion** Given its significantly high yield and response to treatment FEL-1 should be performed to check for PEI in patients with HIV presenting with gastrointestinal symptoms or weight loss.

**Disclosure of Interest** None Declared

## PWE-156 WHAT IS THE PREVALENCE OF CHRONIC PANCREATITIS AT POST MORTEM? A NOVEL APPROACH USING "DIGITAL AUTOPSY"

[1]JA Campbell*, [1]DS Sanders, [2]C Howard, [2]J Hampton, [1]AD Hopper. *[1]Academic Dept of Gastroenterology, Royal Hallamshire Hospital; [2]Digital Autopsy, iGene Global, Sheffield, UK*

10.1136/gutjnl-2016-312388.400

**Introduction** The prevalence of exocrine insufficiency in patients with IBS type symptoms does not correlate with post mortem prevalence of chronic pancreatitis (CP) suggesting a failure of early diagnosis. Historical dissection post mortem studies estimate the incidence of chronic pancreatitis to be around 6–12%. "Digital autopsy" computerised tomography (CT) is a non-invasive alternative to conventional post mortem examination. We aimed to evaluate the prevalence of radiological changes of CP with this technique.

**Methods** Consecutive non-contrast post mortem CT scans were reviewed. Simple demographic information was collected (sex, age at death) as well as interval between death and scan. The presence of pancreatic calcification and/or atrophy was noted as radiological indicators of chronic pancreatitis. Main pancreatic duct anatomy was reviewed but smaller ductal changes were not assessed due to lack of intravenous contrast.

**Results** 124 scans were included for assessment (mean age 67.6 years, SD 18.6, 63.8% male). 9 scans were excluded due to inadequate pancreatic views (6 due to decomposition, 3 due to intra-abdominal fluid, lymphadenopathy or artefact). Scans were performed 0–14 days post mortem (median 2 days). 36/115 (32.1%) of those scanned had features of chronic pancreatitis. 20/115 (17.9%) had calcification, 26 (23.2%) had atrophy and 2 (1.8%) main pancreatic duct

dilatation. There is a significant difference between average ages of those with (78 years) and without (62 years) radiological evidence of chronic pancreatitis ($p < 0.0001$)
**Conclusion** This is the first study to report the prevalence of chronic pancreatitis using post mortem CT. The prevalence seems to be higher when compared to conventional autopsy reporting. This could suggest an under diagnosis of early CP in clinical practice.
**Disclosure of Interest** None Declared

## PWE-157 EUS GUIDED TRANS-GASTRIC PANCREATIC PSEUDOCYST DRAINAGE- DOES STANDARD USE OF FLUOROSCOPY JUST COMPLICATE THINGS?

JA Campbell*, AD Hopper. *Academic Dept of Gastroenterology, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.401

**Introduction** Endoscopic pancreatic pseudocyst drainage is effective and associated with lower morbidity and mortality compared to surgical or percutaneous methods. EUS guidance is now the gold standard intervention due to a higher success rate and lower complication rate compared to blind puncture with fluoroscopic assistance. Many centres still use fluoroscopic guidance with EUS for all cyst-gastroscopy procedures. We present single centre experience of EUS guided pseudocyst drainage and complication rates comparing complication rates with and without fluoroscopic assistance.
**Methods** All EUS guided trans-gastric and trans-duodenal pseudocyst and acute pancreatic fluid collections drainage procedures from 2010 to January 2016 were included. Demographics, use of fluoroscopy and initial success of drainage with stent placement were recorded. All procedures were performed with midazolam and fentanyl sedation without endotracheal tube insertion. Standard trans-gastric drainage was attempted if there was good luminal/gastric wall apposition (cyst distance <10 mm) with no interposing vessels. Drainage was performed with 19 g needle puncture with fluid aspiration, 0.035 inch guide wire insertion, followed by 10 French cystotome puncture with 'endocut' effect 3 diathermy. A second wire was placed down the cystotome and subsequently, two 4cm 7 French double pigtail stents were placed over each wire. Balloon dilatation to 10 mm of the tract prior to stent placement was performed if the aspirated fluid was purulent or infection suspected. Success of drainage and immediate and delayed complications were identified from patient records. Complication rates were calculated separately for procedures performed with fluoroscopy and those without. The two groups were then compared (Fishers test).
**Results** 71 procedures were performed in 68 patients (mean age 50.8, SD 16.1). Immediate drainage was achieved in 69/71 (97.1%) of cases (2 procedures were abandoned due to bleeding). 2 procedures used fully covered metal stents, the remainder used two plastic stents. 2 procedures were performed via the duodenum due to cyst position. 9 patients experienced complications. Although the complications in the fluoroscopy group were more frequent there was no significant statistical difference in complication rates on comparing the two groups ($p = 0.25$).

**Abstract PWE-157 Table 1**

| | |
|---|---|
| **Total procedures** | **71** |
| **Patients with complications** | **9 (12.6%)** |
| Fluoroscopy procedures | 20 (28.1%) |
| Patients with complications | 4 (20.0%) |
| No fluoroscopy | 51 (71.9%) |
| Patients with complications | 5 (12.6%) |
| Pneumoperitoneum | 5 total |
| | 2 surgical washout |
| | 3 conservative management with antibiotics |
| Bleeding | 3 total |
| | 1 treated surgically |
| | 2 settled conservatively |
| Stent migration | 2 total |
| | 1 metal stent, endoscopic retrieval day 7 |
| | 1 plastic stent, immediately removed |
| Readmission- abdominal pain | 1 no complication on cross sectional imaging, treated with analgesia |

**Conclusion** Although fluoroscopy could be helpful in certain circumstances, the routine additional use of fluoroscopy does not reduce complications for EUS guided trans-gastric drainage of pancreatic pseudocysts.
**Disclosure of Interest** None Declared

## PWE-158 IS MANOMETRY FIT FOR PURPOSE IN PREDICTING RESPONSE TO SPHINCTEROTOMY IN TYPE 2 AND 3 SPHINCTER OF ODDI DYSFUNCTION - A TERTIARY CENTRES EXPERIENCE INCLUDING A NOVEL USE OF BOTULINUM TOXIN

J Geraghty, R Cox, T Begum, A Makin*. *Gastroenterology, Central Manchester University Hospitals, Manchester, UK*

10.1136/gutjnl-2016-312388.402

**Introduction** The latest Rome III revision of the Milwaukee classification describes 3 types of Sphincter of Oddi dysfunction (SOD). Type 1 is biliary-type pain, abnormal LFTs (>2 times upper limit of normal on ≥2 occasions) and a dilated bile duct (>8 mm). Type 2 is pain and either laboratory or imaging abnormalities and type 3 is pain alone. Type 1 is usually successfully treated with endoscopic sphincterotomy (ES), while Types 2 and 3 respond less consistently and Sphincter of Oddi manometry (SOM) is used to preselect those likely to benefit. There are however concerns with SOM. It is difficult to interpret, time consuming, expensive and associated with a high risk of pancreatitis - this applies to both the solid state and water perfused system, which we used. From 2007 to 2013, our unit performed SOM on type 2 and 3 patients. In 2014, our practice changed to quadrantic ampullary injections of botulinum toxin (100 U) to paralyse the SOD and allow assessment of the response. If clinical improvement persisted to 3 months, a further injection was given. Following two successful responses, ES was performed. Our aim was to assess the safety and efficacy of the two approaches.
**Methods** 50 patients were studied retrospectively - 34 were evaluated with SOM and 16 with botulinum.

**Results** 94.2% of patients were female and 76.9% had a prior cholecystectomy. 25 patients were Type 2 and 27 Type 3. In the SOM group (n = 34), 20 patients had high baseline or high frequency contractions and underwent ES. In this group 40% (n = 8) developed pancreatitis post procedure. In 5 patients SOM was normal and no ES was performed, with the pancreatitis rate being 40% (n = 2). In 9 patients technical problems prevented SOM being performed. Instead, these patients had ES, with the pancreatitis rate being 22.2%. Overall the intention to treat pancreatitis rate for SOM was 35.3%. Overall, this group required 149 bed days, with a median stay of 1 day (range 0–20). Three months following SOM; 77.3% had an improvement in symptoms compared to 45.5% at 12 months.

In the botulinum group (n = 16), there were 25 injections and no cases of pancreatitis were reported, a significantly lower rate than SOM (p = 0.005). One patient developed abdominal pain requiring a four day admission. Four patients had no response and had medical manangement instigated for functional disease. The remaining patients are proceding through the management algorithm.

**Conclusion** SOM, has a high risk of pancreatitis and following ES a modest response rate. The risks and cost do not support this strategy and so new management algorithms are required. Our pilot data suggests twice repeated botulinum injection is a safe investigative procedure and worthy of examination in larger trials.

**Disclosure of Interest** None Declared

## PWE-159 DIABETES AND PANCREATIC CANCER – CAUSE OR ASSOCIATION?

L Chen*, M Kumar. *Maidstone and Tunbridge Wells NHS Trust, Maidstone, UK*

10.1136/gutjnl-2016-312388.403

**Introduction** Diabetes is an established risk factor for pancreatic cancer.[1] However, there is still limited evidence around predictors of pancreatic cancer diagnosis and severity in patients with pre-existing diabetes. In this retrospective observational study, we assess the relationship between pre-existing diabetes and pancreatic cancer in a UK patient cohort. In particular, we investigate the association of pre-diagnosis blood glucose levels with onset and severity of pancreatic cancer to determine whether there is a role for screening in diabetic patients.

**Methods** Between 2012 and 2014, a total of 188 patients were diagnosed with pancreatic cancer at our regional oncology centre. Data was available for 116 of these patients. Detailed information on pre-diagnosis diabetic status, plasma glucose levels and cancer severity were retrieved systematically from their clinical notes and cancer services database, using standardised forms and procedures. Multivariate logistic regression analysis was used to investigate the association of blood glucose levels 5 years pre-diagnosis with age of cancer diagnosis and TNM staging of the cancer.

**Results** Overall, the mean age of diagnosis was 70.8 years and 30% of these patients had pre-existing diabetes, compared to the UK national prevalence of 16.3% (men) and 9.4% (women) for a similar age range (65–74 years).[2] Among those who had died by the time of analysis (n = 37), the age at diagnosis of cancer was 2.4 years younger in patients with pre-existing diabetes than those without. Mean highest blood glucose level 5 years before diagnosis (n = 93) was 7.17 mmol/l in non-diabetics and 15.14 mmol/l in patients with diabetes. Each 1 unit increase of log-transformed blood glucose, regardless of diabetes status, was associated with a 2 year earlier age of diagnosis (p = 0.32) and 4 fold increase of having TNM stage T4/N1/M1 or greater (p = 0.22).

**Conclusion** Our study suggests that pancreatic cancer patients had a much higher prevalence of pre-existing diabetes compared with the general population. Raised blood glucose levels appeared to be associated with earlier age of onset, worse staging and prognosis of pancreatic cancer. This study highlights the need for further UK studies to investigate the relationship between high pre-diagnosis blood glucose levels and pancreatic cancer in order to further examine the role of screening in diabetic patients.

### REFERENCES

1 Muniraj T, Chari ST. Diabetes and pancreatic cancer. *Minerva Gastroenterol Dietol*. 2012 December;**58**(4):331–345.
2 Health Survey for England 2011. HSE 2011: Vol 1, Chapter 4: Diabetes and Hyperglycaemia.

**Disclosure of Interest** None Declared

## PWE-160 EXPLORING GASTROINTESTINAL SYMPTOMS AND THEIR IMPACT ON QUALITY OF LIFE IN PATIENTS WITH NEUROENDOCRINE TUMOURS

[1]M Williams, [1]K Reid, [2]J Lewis, [3]A Christian, [1]L Sunderraj, [4]H Williams, [2]A Rees, [1]MS Khan*. *[1]Department of Gastroenterology; [2]Department of Endocrinology; [3]Department of Pathology, Cardiff and Vale University Health Board; [4]GI Oncology, Velindre Cancer Centre, Cardiff, UK*

10.1136/gutjnl-2016-312388.404

**Introduction** Treatments available to patients with neuroendocrine tumours(NETs) have been studied for their effect on tumour progression and carcinoid syndrome. However, there is minimal evidence on gastrointestinal (GI) symptom burden and its impact on quality of life (QoL). We aimed to determine whether patients with NETs receiving treatment experience GI symptoms, and to explore the impact that these symptoms have on QoL.

**Methods** A prospective cohort of 46 patients with histologically confirmed NET visiting endocrine and oncology clinics completed GSRS (gastrointestinal symptom rating scale) and EORTC QLQ-GINET21 QoL questionnaires prior to establishment of a gastroenterology NET service.

**Results** The majority of patients had a midgut(70%) or pancreatic(15%) primary with 96% having metastatic disease. Duration of diagnosis was 42 months (range 2–249), 91% having stable disease. The majority of patients reported GI symptoms including: abdominal cramps(80%), bloating(74%), excessive passing of wind(87%) and faecal urgency(87%). 50% had a stool frequency of more than 5 times a day and 71% of patients scored type 5 or higher on the Bristol Stool Chart. 54% of patients reported greasy/oily stool. 60% scored their QoL to be less than 7 out of 10. When asked how much bowel symptoms were affecting quality of life, 58% of patients scored more than 5 out of 10. 97% reported their illness to be distressing for those close to them.

**Conclusion** This study represents the first systematic analysis of specifically defined GI symptoms experienced by NET patients. Despite having stable disease, many patients frequently experience GI symptoms which have a negative impact on QoL.

**Disclosure of Interest** None Declared

## PWE-161 PREVENTING POST-ERCP PANCREATITIS (PEP): THE ROLE OF PROPHYLACTIC PANCREATIC DUCT STENTING IN THE RECTAL NSAID ERA

[1]N Bekkali, [2]T Thomas*, [1]S Murray, [1]D Joshi, [1]G Johnson, [1]M Chapman, [1]S Pereira, [1]G Webster. [1]*Pancreatobiliary Unit, University College London Hospital, London*; [2]*Norwich Medical School, University of East Anglia, Norwich, UK*

10.1136/gutjnl-2016-312388.405

**Introduction** Post ERCP pancreatitis (PEP) is an important complication. Rectal NSAIDs at ERCP is the standard of care to reduce the risk. Pancreatic duct (PD) stenting also reduces the risk of PEP in high risk patients, but placement can be technically challenging. Failed PD stenting carries reported PEP rates of at least 35%. We aimed to assess whether prophylactic pancreatic stenting is still justified in the current rectal NSAID era.

**Methods** Between January 2013 and June 2015, we retrospectively evaluated the use of PD stents in a UK tertiary referral centre. Rectal NSAIDs were used universally for all cases post-ERCP, except in those contraindicated to NSAIDs. Prophylactic PD stenting (unflanged 5Fr 5–7 cm single pigtail stents, Cook Medical) was attempted in predicted high risk PEP cases. Indications for therapeutic PD stents included patients with chronic pancreatitis. Data was collected from our prospective database, completed following each ERCP. Follow-up information was reviewed through electronic records and telephone enquiry.

**Results** 1633 ERCPs were performed during the study period. Pancreatic stenting was attempted in 324 cases (20%); successful placement was achieved in 307 cases (95%). Prophylactic PD stenting failed in 12 cases, one case developed PEP (1/12 = 8%). This patient had sphincter of Oddi dysfunction (SOD) and a contraindication to NSAIDs. 65% (201/307), of successfully placed pancreatic stents were inserted prophylactically, in whom 9% (18/201) developed PEP. PEP occurred in 1.4% (18/1309) of cases who did not undergo attempted PD stenting. The relative risk of PEP was 8.4 (p = 0.04) in the stented group.

**Conclusion** PEP rates in failed PD stenting were low (8%) compared to past studies, and comparable to PEP rates in successful prophylactic PD stenting. This suggests a protective role of rectal NSAIDs, as previously shown by Choksi et al.[1] The higher rate of PEP in the PD stenting/attempted stenting group, compared to the unstented group, likely reflects the higher perceived risk of PEP in the PD stenting group. The low rate of recorded PEP in the unstented group may, in part, be due to under-reporting. Our data suggests that increased rates of PEP continue to be seen in perceived high risk cases, even in a universal NSAID use setting. The overall risk appears lower than in the pre-NSAID era, and in our series a lack of difference in the PEP rate between successful and failed PD stenting suggests there is less need for prophylactic PD stenting in the NSAID era.

### REFERENCE

1 Choksi, *et al*. The risk of post-ERCP pancreatitis and the protective effect of rectal indomethacin in cases of attempted but unsuccessful prophylactic pancreatic stent placement *Gastrointest Endosc* 2015;**81**(1):150–155.

**Disclosure of Interest** None Declared

## PTH-001 UNDERWATER ENDOSCOPIC MUCOSAL RESECTION: THE EXPERIENCE OF TWO UK CENTRES

[1]A Yusuf*, [1]N Suzuki, [2]H Htet, [2]N Gautam, [1]S Thomas-Gibson, [2,3]S Ishaq. [1]*Wolfson Unit for Endoscopy, St Mark's Hospital, London*; [2]*Department of Gastroenterology, Russells Hall Hospital, Dudley*; [3]*Birmingham City University, Birmingham, UK*

10.1136/gutjnl-2016-312388.406

**Introduction** Underwater Endoscopic Mucosal Resection (UEMR) is a relatively new technique, which has been developed for endoscopic resection of colonic lesions. In this technique submucosal injection is not required for many of the lesions. We present here the experience of two UK centres.

**Methods** All of the UEMR procedures were performed by two experienced interventional endoscopists: NS performed 16 cases at St Mark's hospital in London, and SI performed 18 cases at Russells Hall Hospital in Dudley. Patient data was collected prospectively. A Hybrid technique, i.e. injection of lifting solution or use of Argon Plasma Coagulation (APC) together with UEMR, was employed if the lesion was traversing a fold/removed in retroflexed position or if there was remnant tissue post resection, respectively.

**Results** From May 2015 to February 2016, a total of 34 patients (mean age 64 years, range 35–85, males n = 21) have had UEMR of 35 lesions performed by the two operators. The lesions (mean size 33 mm, range 7–160 mm) were located in right colon (n = 5), transverse colon (n = 2), left colon (n = 9), and rectum (n = 19). Seven of the lesions (20%) were recurrence post previous traditional EMR. The morphology of the lesions were either flat (n = 21) or sessile (n = 14). Hybrid technique was employed as follows: Lifting (n = 14), APC (n = 4), and a combination of lifting and APC (n = 2). Histopathology of the lesions demonstrated low grade dysplasia (n = 29), high grade dysplasia (n = 4), and other (n = 2; One hyperplastic polyp, and one sessile serrated lesion). Complete endoscopic resection (at index procedure) was achieved in 34 out of the 35 lesions (97.1%); a large lesion (160 mm in size), which was crossing over two folds, was resected at two planned sessions. There was no immediate bleeding or perforation, but there was one case of delayed bleeding (2.8%). The procedures, which were performed either with no sedation or analgesia (n = 9), with light sedation and analgesia (n = 18), or with Entonox inhalation as required (n = 7), were well-tolerated with a pain score of zero or one (zero = no pain; one = minimal pain).

**Conclusion** In our experience, underwater endoscopic mucosal resection seems to be a safe and a well-tolerated procedure. It can be an alternative to the traditional EMR, which requires either air or $CO_2$ insufflation, and submucosal injection in all lesions. However, the air or $CO_2$ insufflation significantly thins the bowel wall during the EMR, and submucosal injection does not only create a potential risk of seeding neoplastic cells into deeper wall layers,[1] but it also prolongs the procedure time. Follow-up data is required to assess the short- and long-term recurrence rate associated with UEMR.

### REFERENCE

1 Binmoeller, KF. *J Interv Gastroenterol* **4**:**4**:113–116.

**Disclosure of Interest** None Declared

## PTH-002 GASTROINTESTINAL BLEEDING IN DIALYSIS PATIENTS: IDENTIFYING INCIDENCE, RISK FACTORS AND ENDOSCOPY FINDINGS

[1]A Kumar, [2]B Bachi*, [2]H Razaq*, [3]ED Justice, [4]A Yew, [5]K Shivakumar. *[1]Cardiology, New Cross Hospital, Wolverhampton; [2]Vascular Surgery, Russells Hall Hospital; [3]High Dependence Unit, New Cross Hospital, Dudley, Birmingham; [4]Geriatrics, New Cross Hospital, Wolverhampton; [5]Nephrology, Russells Hall Hospital, Dudley, Birmingham, UK*

10.1136/gutjnl-2016-312388.407

**Introduction** Due to the growing incidence of diabetes mellitus and advancing age of patients, there has been a rapid increase in the number of patients on dialysis. These patients are at higher risk of thrombotic complications requiring long term antiplatelet and anticoagulant medications, increasing their risk for bleeding. The most serious source of bleeding is gastrointestinal (GI) bleeding, which accounts for 2.5% of dialysis patients per year. This study was undertaken to determine the incidence and risk factors of GI bleeding in dialysis patients.

**Methods** A retrospective study was carried out in a UK district general hospital. Data was collected on all patients that were on haemodialysis and peritoneal dialysis until August 2015. Co-morbidities, medication lists, blood results and endoscopy findings were collated and analysed.

**Results** A total of 239 patients were identified to be on dialysis. The incidence of GI bleeds in dialysis patients was 7.9%. The average time from the start of dialysis to the time of bleed was 3 years. The average Hb, platelet count and INR was 68 g/L, 260, and 2.7 respectively. The most common findings on endoscopy included peptic ulcer disease (15.8%), haemorrhoids (15.8%), diverticular disease (15.8%), polyps (10.5%) and normal findings (10.5%). Patients with two or more co-morbidities had a 68% risk of bleeding compared to 54% who had one co-morbidity. Patients on two or more offending medication had a 15.8% risk of bleeding compared to 26.8% who were on single medication therapy. 42% of patients who had a GI bleed required a blood transfusion and 21% needed intervention during endoscopy. See table 1 for full details on risk factors associated with GI bleeding.

**Conclusion** There was a higher incidence of GI bleeding in our study as compared with the literature. We identified risk factors as being on anticoagulation, older age, male and having multiple co-morbidities. Being on more than one offending medication or on gastroprotective agents did not suggest higher risk of bleeding.

**Abstract PTH-002 Table 1** Factors associated with gastrointestinal bleeding in dialysis patients

| | Non-bleeders (n = 220) | Bleeders (n = 19) |
|---|---|---|
| Average age (range) | 63.5 (23–92) | 70 (32–89) |
| Male (Female) | 62.7% (37.3%) | 68.4% (31.6%) |
| Haemodialysis (bled on haemodialysis) | 72.7% | 94.7% (11.25%) |
| Peritoneal Dialysis (bled on peritoneal dialysis) | 26.4% | 5.3% (1.7%) |
| **Medication** | | |
| Aspirin | 52.3% | 36.8% |
| Clopidogrel | 15.9% | 10.5% |
| Warfarin | 11.4% | 31.6% |
| Gastroprotective agents | 125 (56.8%) | 10 (52.6%) |

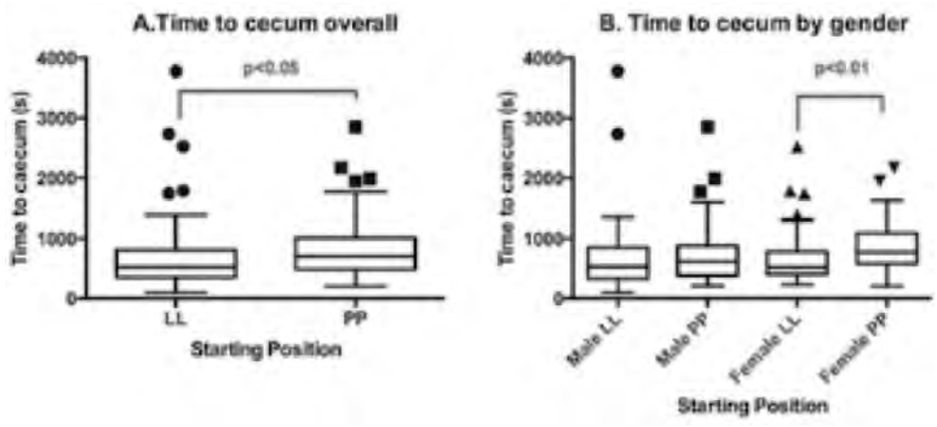
**Disclosure of Interest** None Declared

## PTH-003 PRONE OR LEFT STARTING POSITION FOR COLONOSCOPY? A RANDOMISED CONTROLLED TRIAL

[1]AJ Scarborough, [1]JA Morris, [2]N Vergis*, [2]J Hoare. *[1]Department of Surgery and Cancer, St Marys Hospital, Imperial College London; [2]Department of Surgery and Cancer, St Mary's Hospital, Imperial College London, London, UK*

10.1136/gutjnl-2016-312388.408

**Introduction** Colonoscopy is an essential modality in gastroenterology but can be technically challenging and cause patient discomfort. By convention, the procedure is started with patients in the left lateral position. The recent ROLCOL study has shown that right lateral starting position may be preferable to left lateral starting position. However, a prone starting position for colonoscopy has not been tested with the same rigour. One study found that obese patients undergo quicker procedures when colonoscopy is started with the patient in the prone position. We sought to test the benefits of prone positioning over conventional left lateral positioning in unselected patients.




**Abstract PTH-003 Figure 1**

**Methods** 181 consecutive patients undergoing scheduled colonoscopy were stratified according to age, gender, BMI and experience of the endoscopist. Patients were then randomised to begin colonoscopy in either the prone (PP) or left lateral (LP) position. The primary outcome measure was time to reach cecum. Secondary outcome measures included: *i)* time to reach transverse colon; *ii)* patient comfort and *iii)* endoscopist's perception of procedure difficulty, both assessed by visual analogue scale (VAS).

**Results** Time to reach cecum was longer for patients randomised to start colonoscopy in the PP compared to the LP (700 s vs. 525 s; $p < 0.05$). This was in line with a longer time to reach the transverse colon in the PP group (329 s vs. 257 seconds; $p < 0.05$) as well as an increase in the difficulty perceived by the endoscopist for procedures in which the patient was positioned prone (5 vs. 4 VAS; $p < 0.01$). The doses of intravenous sedation used (midazolam 2 vs 2 mg; $p = 0.27$ and fentanyl 50 vs 50 mcg; $p = 0.68$) and patient comfort scores (3.5 vs. 4 VAS, $p = 0.43$) were similar between the two groups. In subgroup analysis, a statistically significant increase in time to cecum was shown in particular for female patients positioned prone at the start of colonoscopy (771.5 s vs. 522.5 s, $p < 0.01$).

**Conclusion** Starting patients in the prone position led to an increased cecal intubation time and was more technically challenging for the endoscopist. Our results do not, therefore, support the prone position as the optimal starting position for colonoscopy in unselected patients. Future research should focus on elucidating the situations in which position change to prone during colonoscopy is helpful.

**Disclosure of Interest** None Declared

## PTH-004 VIDEO CAPSULE COLONOSCOPY IN ROUTINE CLINICAL PRACTICE

[1,2]E Toth, [1,2]A Nemeth, [1]G Wurm Johansson, [2,3]A Koulaouzidis*, [2,4]H Thorlacius. *[1]Endoscopy Unit, Skåne University Hospital, Malmö; [2]Lund University, Lund, Sweden; [3]Endoscopy Unit, The Royal Infirmary of Edinburgh, Edinburgh, UK; [4]Department of Surgery, Skåne University Hospital, Malmö, Sweden*

10.1136/gutjnl-2016-312388.409

**Introduction** Colonoscopy is the gold standard in the work-up of patients(pts) with suspected colon pathology. However, conventional colonoscopy is an invasive procedure, associated with certain risks/adverse events and/or occasionally contraindicated. We report routine clinical experience with videocapsule colonoscopy(VCC), in pts with suspected colon pathology, from a tertiary referral centre in Sweden.

**Methods** 77(20 M/57 F) consecutive pts (median age 56;range 15–89 yrs) with suspected colon pathology were included. PillCam®COLON 1/2 VCC(Given®Imaging Ltd) was used. Bowel preparation advised was 1 day of clear liquid diet, followed by a split-dose administration of polyethylene glycol (3+1 L); in order to enhance gastric & small-bowel transit(SBT) and maximise mucosal visualisation, domperidone(40 mg) and/or on-demand sodium phosphate(30+15 ml) and bisacodyl(10 mg) suppository were administered.

**Results** Reasons for VCC were previously incomplete and/or declined colonoscopy in 39 & 26 pts, respectively; clinical indications were GI bleeding:28 (36%); suspected inflammatory bowel disease(IBD) or followup in patients with known IBD:23 (30%); and other (colorectal cancer screening, follow up of abnormal radiology & diverticulitis):26 (34%) pts. 58/77 pts (75%) underwent a complete examination of the colon (median colon transit time was 257; range 3–895 min). In 3 cases the capsule did not reach the colon due to stomach retention, small-bowel (stricture) retention & slow SBT. In the remaining 16 incomplete cases the capsule reached the rectum (n = 4), sigmoid (n = 6), descending (n = 5) and transverse colon (n = 1). Good or excellent bowel preparation was achieved in 58 (75%) pts. The most frequent findings were diverticulosis (29 pts, 38%); polyps (17 pts, 22%; size 3–20 mm); active IBD (12 pts, 16%); haemorrhoids (8 pts, 10%); angioectasia (4 pts, 5%) & advance cancer (1 pt, 1%). 15 (19%) pts had no observable colon pathology. Pathological changes in the small-bowel were detected in 8 (10%) pts, including stricture, angioectasia, tumour & Crohn's lesions. All patients tolerated the bowel preparation and the VCC well. Two patients with significant pathology (ulcerated small-bowel stricture and colonic cancer) experienced a temporary capsule retention with spontaneous resolution.

**Conclusion** VCC is an effective and well-tolerated method to examine the colon. Although further technical development may be needed to examine the whole colon in large numbers of patients, VCC may complement or even replace conventional colonoscopy for certain clinical indications.

### REFERENCES

1 Spada C, *et al*. Second-generation PillCam® Colon Capsule Compared with Colonoscopy. *GIE*. 2011;**74**:581–9
2 Spada C, *et al*. Colon capsule endoscopy: ESGE Guideline. *Endoscopy*. 2012;**44**:527–36

**Disclosure of Interest** None Declared

## PTH-005 MACROSCOPIC COLONOSCOPY FINDINGS OF COLLAGENOUS COLITIS; A THREE-CENTRE EXPERIENCE

[1]A Koulaouzidis*, [2]K Sjöberg, [1]L Bartzis, [3]M MacNeill, [2]A Nemeth, [1]DE Yung, [2]GW Johansson, [3]P Fineron, [4]AJ Lucendo, [2]E Toth. *[1]Centre of Liver & Digestive Disorders, Royal Infirmary of Edinburgh, Edinburgh, UK; [2]Department of Gastroenterology, Skåne University Hospital, Malmo, Sweden; [3]Department of Pathology, Western General Hospital, Edinburgh, UK; [4]Endoscopy Unit, Hospital General de Tomelloso, Tomelloso, Spain*

10.1136/gutjnl-2016-312388.410

**Introduction** Microscopic colitis (MC) encompasses 2 entities, collagenous colitis (CC) and lymphocytic colitis (LC).[1] Although (by definition) a histopathological diagnosis, there are occasions when colonoscopy reveals findings such as alteration of the vascular mucosal pattern/innominate grooves, mucosal nodularity and a sequence of mucosal changes from defects/lacerations to cicatricial lesions that are thought to be characteristic of MC, and especially CC.[1,2] The aim of this study was to evaluate the frequency and type of endoscopic findings in patients diagnosed with CC in two University Hospitals.

**Methods** Retrospective study. The databases of the Pathology Department of 2 university hospitals in Edinburgh (Scotland) and Malmo (Sweden), and a district general hospital in Spain (Hospital General de Tomelloso) were searched for patients who had been diagnosed with CC between May 2008 and August 2013. Endoscopy reports and endoscopic images were retrieved and reviewed; data on lesions, sedation, bowel preparation (type and effect) and endoscopists' experience were extracted. Categorical data are reported as mean±SD. The Fischer's exact, *chi-square* and unpaired *t* tests were used to

compare datasets. A two-tailed P value of <0.05 was considered statistically significant.

**Results** The case notes of 416 patients (96 M/320 F; mean age: 67.1±12.1 years), who had been diagnosed with CC, were collected and reviewed. The colonoscopies had been carried out by senior medical/surgical staff (consultants or associate specialists) in 331 (79.6%). A total of 81 (19.5%) patients had a mix of findings previously described as being suggestive of CC in endoscopy, such as mucosal erythema/oedema (mosaic pattern) (n = 65), colonic mucosa linear defects (lacerations, tears, ulcers/fractures, mucosal furrows) (n = 10), cat-scratch mucosa (n = 4), and cicatricial lesions (n = 3). Although the use of polyethylene glycol (PEG) offers superior quality of bowel preparation effect (as compared to other pre-colonoscopy preparations; P < 0.0001), this was not associated with higher detection rate of all types of macroscopic findings and/or colonic mucosal defects in specific (P = 1.0). Furthermore, mucosal colonic defects had no association with either the experience of the colonoscopist (P = 0.812), or the use of general anaesthesia/propofol (P = 0.53), and/or the use of spasmolytic (hyoscine butylbromide/glucagon) (P = 0.568).

**Conclusion** A substantial minority of patients with CC (19.5%) had endoscopic findings indicative of CC. The presence of these findings is not associated with procedural factors such as endoscopist's experience, quality of bowel preparation, and/or use of spasmolytic during colonoscopy.

## REFERENCES


1 Koulaouzidis A and Saeed AA. Distinct colonoscopy findings of microscopic colitis: not so microscopic after all? *World J Gastroenterol.* 2011;**17**:4157–4165

2 Suzuki, *et al*. Usefulness of colonoscopic examination with indigo carmine in diagnosing microscopic colitis. *Endoscopy.* 2011;**43**:1100–1104


**Disclosure of Interest** A. Koulaouzidis Grant/research support from: Given Imaging ESGE research grant 2011, Conflict with: Lecture fee(s) from: Dr FalkPharmaUK, Other: Travel support: Dr FalkPharma, Abbott, MSD, K. Sjöberg: None Declared, L. Bartzis Grant/research support from: Hellenic Society of Gastroenterology, M. MacNeill: None Declared, A. Nemeth: None Declared, D. Yung: None Declared, G. Johansson: None Declared, P. Fineron: None Declared, A. Lucendo: None Declared, E. Toth: None Declared

## PTH-006 COMPUTER-AIDED LESION MEASUREMENT IN CAPSULE ENDOSCOPY IMAGES


[1]A Koulaouzidis*, [2]D Chatzis, [2]P Chrysanthopoulos, [2]DK Iakovidis. *[1]Endoscopy Unit, The Royal Infirmary of Edinburgh, Edinburgh, UK; [2]Department of Computer Science & Biomedical Informatics, University of Thessaly, Lamia, Greece*


10.1136/gutjnl-2016-312388.411

**Introduction** A novel image segmentation algorithm is applied & assessed for lesion size measurements in capsule endoscopy (CE). It is based solely on colour features of CE lesions.

**Methods** The lesion images are available online from **KID** database (Dataset 1).[1] Size reference standards were made by manual annotation. The proposed algorithm uses the CIE-Lab colour representation instead of the standard RGB used in CE.[1] The components of this space represent lightness (L), the quantity of red (a > 0) or the quantity of green (-a >0), the quantity of yellow (b > 0) or the quantity of blue (-b >0) of a pixel. Initially, the user specifies a point on the lesion of interest (with a single click). Simple Linear Iterative Clustering (SLIC) is applied to group the pixels of similar colour into contiguous regions, called superpixels.[2] Subsequently the superpixels are clustered using the k-means approach into three clusters using information from component a. Thereafter, each superpixel neighbouring to the superpixel that contains the user-specified point is represented by a colour vector (a, b). The proposed algorithm estimates a) its Euclidean distance d1 from the respective vector of the selected superpixel, b) its Euclidean distance d2 from the mean of the respective vectors obtained from all superpixels that do not belong to the cluster of the selected superpixel. Then, the neigerpixel is considered to belong to the abnormal region of interest if d1

**Results** Seven types of GI lesions were used for evaluation. The measurement accuracy was assessed by comparing the area of the lesion (as identified by the method) with the reference standard area of each lesion. Average accuracies obtained for the measurement of angioectasias, aphthae, chylous cysts, lymphangiectasias, polypoid lesions, stenoses, and ulcers are 98.6%, 92.8%, 94.3%, 99.1%, 80.0%, 82.9%, and 94.8%, respectively. Comparatively, using the well-known colour space proposed by Ohta (I1I2I3) for image segmentation instead of CIE-Lab[2] the results are lower; 97.1%, 92.1%, 92.6%, 97.8%, 75.2%, 78.8%, and 91%, respectively.

**Conclusion** A novel algorithm was proposed & evaluated for accurate computer-aided size measurement of lesions in CE. The overall accuracy on a public dataset was ~92%. This algorithm can be incorporated as a novel measurement tool in contemporary CE reading software.

## REFERENCES


1 Iakovidis DK, Koulaouzidis A. Software for enhanced video capsule endoscopy: challenges for essential progress. *Nat Rev Gastroenterol Hepatol*. 2015;**12**:172–8.

2 Achanta R, *et al*. Slic superpixels compared to state-of-the-art superpixel methods. *IEEE Transactions on Pattern Analysis and Machine Intelligence*. 2012;**34**:2274–8.


**Disclosure of Interest** None Declared

## PTH-007 NON-RADICAL, STEPWISE COMPLETE ENDOSCOPIC RESECTION OF BARRETT'S EPITHELIUM IN SHORT SEGMENT BARRETT'S OESOPHAGUS IS EFFECTIVE WITH LOW STRICTURE RATE


[1]A Koutsoumpas*, [2]B Sgromo, [2]R Gillies, [3]LM Wang, [1]AA Bailey, [2]R Marshall, [2]N Maynard, [1]B Braden. *[1]Translational Gastroenterology Unit; [2]UGI Surgery; [3]Pathology, Oxford University Hospitals NHS Foundation Trust, Oxford, UK*


10.1136/gutjnl-2016-312388.412

**Introduction** Radical endoscopic ablation of Barrett's epithelium performing 4–6 endoscopic resections during the same endoscopic session has been shown to result in complete Barrett's ablation but has a high stricture rate (40–80%). Therefore radiofrequency ablation is preferred for the ablation of Barrett's epithelium after endoscopic mucosal resection (EMR) of visible nodules.

We investigated whether non-radical, stepwise endoscopic mucosal resection with maximal 2 endoscopic resections per endoscopic session can result in complete remission of intestinal metaplasia and dysplasia in short segment Barrett's oesophagus.

**Methods** We analysed our database of patients undergoing oesophageal EMR for early neoplasia in Barrett's oesophagus from 2009 to 2014. Patients showing poorly differentiated cancer or advanced cancer (>T1sm$_2$) after staging EMR were

excluded. In patients suitable for further endoscopic therapy, EMR was performed using maximal two band ligation mucosectomies per endoscopic session; thereafter followup was 3 monthly and EMR was repeated as required for Barrett's ablation. If no dysplasia was detected after a year, the follow up interval was increased to 6 months.

**Results** 118 patients underwent staging EMR for early Barrett's neoplasia. Subsequently, 27 patients underwent surgery/chemotherapy due to deep submucosal or more advanced tumour stages or were managed conservatively depending on patient's fitness, comorbidities and choice.

91 patients with HGD (48), intramucosal (38) or submucosal cancer (5) in the resected nodule underwent further endoscopic therapy with a mean follow-up of 24 months (8–36 months IQR). Remission of dysplasia/neoplasia was achieved in 94.5% after 12 months treatment.

Stepwise endoscopic Barrett's resection resulted in complete Barrett's ablation in 36 patients (39.6%) in a mean of 4 sessions. 40 patients (43.9%) had a short circumferential Barrett's segment (C < 3 cm). In this group, repeated EMR achieved complete Barrett's ablation in 85.0%. One patient developed a stricture (1.1%), one a delayed bleeding, there were no perforations.

**Conclusion** In patients with short Barrett's segment, non-radical endoscopic Barrett's resection at the time of scheduled endoscopy follow up allows complete Barrett's ablation with very low stricture rate.

**Disclosure of Interest** None Declared

## PTH-008 ENDOSCOPIC RESECTION OF LARGE COLORECTAL POLYPS IN A UK TERTIARY REFERRAL UNIT

[1]A Emmanuel*, [2]S Gulati, [1]M Burt, [1]B Hayee, [2]A Haji. [1]*King's College Hospital, London*; [2]*King's College Hospital, Lonodn, UK*

10.1136/gutjnl-2016-312388.413

**Introduction** Whilst the extensive experience of endoscopic resection of large colorectal polyps in Japan has resulted in clear and consistent indications for various techniques depending on polyp size and morphology, practise in western Europe is less well defined. We report the results of a prospective series of endoscopic resections using a variety of techniques from one of only a few tertiary referral centres in the UK providing advanced interventional endoscopy. The patients in this series present some unique challenges, for example the high proportion of patients referred with deeply scarred lesions after previous failed attempts at resection, and the large mean polyp size.

**Methods** A prospective series of colorectal endoscopic resections form a tertiary referral centre in the UK. Surveillance endoscopy was performed at 3 months and 12 months after resection.

**Results** 363 polyps with a mean size of 56 mm were resected in 326 patients who had a mean age of 71 years: 309 by EMR, 38 by ESD and 16 by hybrid procedures involving ESD. The mean follow up was 12.2 months. Almost all patients were referred after their polyps were at least biopsied and 38% of polyps were deeply scarred from previous intervention. Despite this, adenoma recurrence occurred in only 9.7% of patients, 17% of which were diminutive. 6 patients with recurrence required surgery, 2 right hemicolectomies, 1 TEMS and 1 anterior resection and 2 declined surgery. 67% of patients with recurrence were treated successfully endoscopically with no further recurrence. Of those patients without invasive cancer at their first endoscopic resection, 95% were free from recurrence and had avoided surgery at last follow up. There was only one clinically significant perforation. 2 patients were admitted with post-procedure bleeding, 1 managed conservatively and 1 with endoscopic clips.

**Conclusion** These data demonstrate the effectiveness of a tertiary interventional endoscopy unit in a western setting in treating large and complex colorectal polyps, with low recurrence rates and very few significant complications. In contrast to practise in the east, more education is required to prevent multiple attempted interventions before referral to a highly specialised unit.

**Disclosure of Interest** None Declared

## PTH-009 NEW GENERATION HIGH DEFINITION COLONOSCOPES INCREASE ADENOMA DETECTION WITHIN THE BOWEL CANCER SCREENING PROGRAMME

[1]A Bond*, [1]G Fisher, [1]S Subramanian, [1]P O'Toole, [1]N Haslam, [1,2]C Probert, [3]T Cox, [1]S Sarkar. [1]*Gastroenterology, Royal Liverpool and Broadgreen University Hospital*; [2]*Gastroenterology, Translational medicine, University of Liverpool*; [3]*Clinical Cancer Trials Unit, University of Liverpool, Liverpool, UK*

10.1136/gutjnl-2016-312388.414

**Introduction** Adenoma detection rate (ADR) is the most important quality indicator for screening colonoscopy, due to its association with colorectal cancer outcomes. As a result a number of techniques and technologies have been proposed that have the potential to improved ADR. The aim of this study was to assess the potential impact of the new generation high definition colonoscopies (Olympus LUCERA ELITE H290) on ADR within the Bowel Cancer Screening Programme (BCSP) in one UK centre.

**Methods** This was a retrospective observational study in patients undergoing an index screening colonoscopy within the Liverpool & Wirral BCSP. The examination was performed with either the standard definition (SD) colonoscopes (Olympus 240/260 series) or the high definition (HD) colonoscope (Olympus H290 system) with the primary outcome measure of ADR and mean adenoma per procedure (MAP) between the 2 groups. Logistic regression modelling was used to assess the impact of variable on ADR.

**Results** 395 patients (60.5% male, mean age 66.8 years) underwent screening colonoscopy with 45% performed with HD colonoscopies. A caecal intubation rate of 97.5% was recorded. The mean mean adenoma per procedure (MAP) in the HD groups was 2.1 (+/-±2.0), whilst in the SD group it was 1.6 (+/-±1.8) ($p = 0.01$). The overall ADR for the 394 patients was found to be 68.6%. ADR with SD was 63.13%, compared to 75.71% with HD ($p = 0.007$). There was no significant difference in withdrawal time. In the logistic regression only the high definition scopes ($p = 0.03$) and male gender ($p = 0.04$) was found to impact upon ADR.

**Conclusion** Whilst it's established males have greater adenoma burden then females, our study has highlighted the impact of the new generation High Definition colonoscope (H290 Series) on improving adenoma detections rates, thus potentially improving long-term outcomes within the BCSP.

**Disclosure of Interest** None Declared

## PTH-010 OUTCOMES AFTER USE OF PATENCY CAPSULES PRIOR TO VIDEO CAPSULE ENDOSCOPY

A Bond*, P Collins. *Gastroenterology, Royal Liverpool and Broadgreen University Hospital Trust, Liverpool, UK*

10.1136/gutjnl-2016-312388.415

**Introduction** Capsule retention is an important complication in patients attending for video capsule endoscopy (VCE). It may necessitate endoscopic, surgical or medical intervention. Successful passage of a Patency capsule (PC) predicts the safe passage of the video capsule in the majority of patients with a high risk of stricturing disease. The PC disintegrates after 30 h exposure to GI secretions. It contains a radiofrequency tag that can be detected by a hand-held scanner. Its position in the gastrointestinal tract may be misinterpreted if plain abdominal X-ray is used to assess the position of the PC. Its position can be reliably detected by a limited, targeted CT scan. This strategy has been associated with a requirement for targeted CT scan in 46% of patients attending for PC.[1]

**Methods** This was a retrospective observational study performed in a tertiary referral centre. Data was collected on all patients undergoing patency capsule from July 2013 to October 2015, at the Royal Liverpool University Hospital. Patients attended the hospital 30 hours after ingestion of the PC. Patients with a PC detected by hand-held scanner underwent a targeted, limited CT scan to identify the position of the capsule. Patients were referred for VCE if the PC had passed into the colon.

**Results** 101 patients underwent investigation with PC. The commonest indication for a patency capsule test was known or suspected IBD in 22/101 and 54/101 patients, respectively. 55 / 101 patients required a low dose CT scan to identify the site of PC within the GI tract. 10 of 101 patients failed to achieve passage of the PC (9.9%). 9/10 patients had suspected or known small bowel Crohn's disease. 4/9 patients had undergone prior small bowel imaging. (3 MR small bowel examinations and one barium study.) One MR scan had suggested a possible short stricture, but with no pre-stenotic dilatation to suggest functional obstruction. Of the remaining 91 patients, 76 had VCE examination. In 8 (10.5%) examinations, the capsule failed to reach the caecum within the recording period. In all 8, the capsule subsequently passed. 42 of the 76 VCE examinations were reported as normal.

**Conclusion** 54% of patient attending PC required a targeted low dose CT scan to identify the site of the PC in the GI tract. Suspected or known small bowel Crohn's disease is a risk for failure of the PC to leave the small bowel. Small bowel imaging does not reliably predict successful passage of the PC which correlates with previous reports indicating that normal small bowel imaging may not exclude lesions that cause retention of the video capsule. No capsule retentions were identified in patients with a successful patency test, supporting its use as a test in patients with clinical characteristics that increase concerns for capsule retention.

### REFERENCE

1 Assadsangabi A, *et al*. *J Gastroenterol Hepatol*. 2015;**30**(6):984–9

**Disclosure of Interest** None Declared

## PTH-011 NOVEL ENDOSCOPIC ULTRASOUND-GUIDED INTERVENTIONAL TECHNIQUES FOR THE PALLIATIVE MANAGEMENT OF MALIGNANT BILIARY TRACT OBSTRUCTION: A SINGLE UK CENTRE EXPERIENCE

B Paranandi*, KW Oppong, J Rammell, JJ French, C Wilson, M Dawwas, MK Nayar. *HPB Unit, Freeman Hospital, Newcastle upon Tyne Hospitals NHS Trust, Newcastle, UK*

10.1136/gutjnl-2016-312388.416

**Introduction** Endoscopic retrograde cholangiopancreatography (ERCP) is used as the first-line modality for biliary drainage in patients with obstructive jaundice. However, anatomical or technical factors may preclude conventional trans-papillary biliary access in less than 10% of cases. Endoscopic ultrasound-guided biliary drainage (EUS-BD) has recently emerged as an alternative method to percutaneous transhepatic biliary drainage (PTBD) or surgical biliary bypass after unsuccessful ERCP in patients with inoperable pancreatobiliary malignancies. We present initial experience of EUS-BD in our unit.

**Methods** A prospectively collected database, of consecutive patients undergoing EUS-BD in our unit, was analysed. Data was retrieved from electronic, clinical and endoscopy records.

All EUS-BD procedures were undertaken in the endoscopy department, under conscious sedation, using Pentax echoendoscopes and Hitachi ultrasound workstations. In all cases, conventional diagnostic EUS procedure was performed followed by trans-luminal EUS-guided placement of metal stents. One of three endoscopists (KO/MN/MD) performed the procedures.

The primary outcome measurements were technical success, clinical success and adverse events.

**Results** 4 EUS-BD procedures were performed in 4 patients – ¾ were female (75%) with median age 70 years (range 51–79). The primary indication in all patients was malignant biliary obstruction, which was not amenable to either PTBD or surgery. One patient had symptomatic cystic duct obstruction with gallbladder empyema. 1 patient received a Hot AXIOS™ covered lumen apposing metal stent (cLAMS), 1 had a Wallflex™ biliary fully covered self-expanding metal stent (fcSEMS) and the others had NAGI™ covered self-expanding metal stents (cSEMS) inserted.

Technical and clinical success was 100% across all procedures with symptomatic improvement noted in all patients. Serum bilirubin measurements decremented post EUS-BD by median 89% (range 85–98%). No procedure related complications were seen.

During follow up, 3/4 patients have died (median 7 months (range 3–8) from date of EUS-BD) of end-stage disease (unrelated to the EUS-BD procedure). The 4th patient remains clinically stable on follow-up (2 months after EUS-BD) with no evidence of further biliary symptoms.

**Conclusion** Our early experience of EUS-BD confirms that it is a safe and effective palliative procedure in patients with malignant biliary tract obstruction, in whom surgery and/or PTBD are less favourable. We recommend that EUS-BD is performed after multidisciplinary team discussion and by experienced therapeutic endosonographers.

**Disclosure of Interest** None Declared

## PTH-012 ERCP TRAINING – ACHIEVING BETTER OUTCOMES FOR PATIENTS AND TRAINEES THROUGH A NEW TRAINING GUIDE

BR Chinnathurai*, L Dwyer, R Saleem, N Stern, S Hood, R Sturgess. *HPB Medicine, Aintree University Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.417

**Introduction** It is acknowledged that ERCP is challenging to train both for the trainers and the trainees. Recent evidence has suggested that a much longer period of focused training is required to achieve competence, particularly cannulation of the native ampulla.[1] There is also significant variability in training and performance. Unlike other endoscopic interventions, such as colonoscopy there is a lack of coherent strategy to guide training. The traditional model is unstructured and intuitive, largely conforming to the notion of 'start the trial at the incisors and continue until failure' at which point the trainers take over the scope to complete the procedure. Our model identifies a range of individual skills that can be developed in a structured manner.

**Methods** Our model in practice, was borne of multiple informal focus groups involving experienced and training ERCPists, both in service and in training courses.

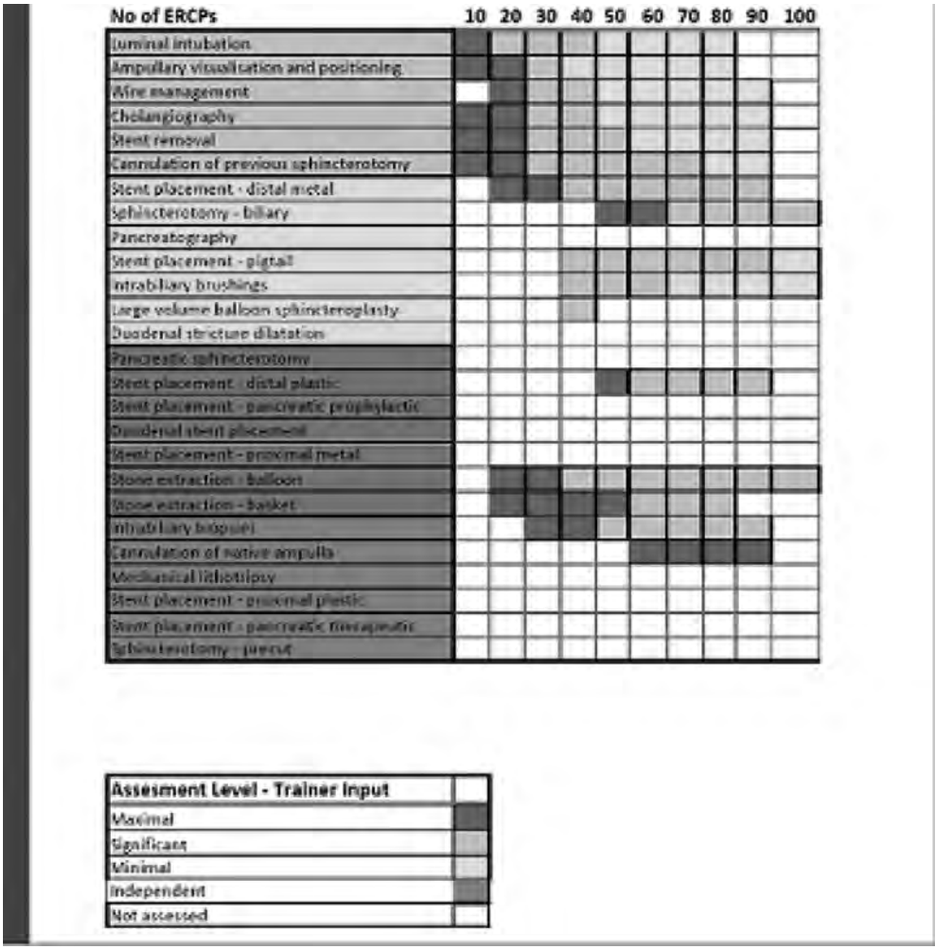
**Results** Our model of graded progression in ERCP training takes into account the broadly agreed complexity of the each skill set in a deconstructed ERCP.We allocate skills to 4 different domains of increasing complexity, which requires increasing dexterity and cognitive awareness from the endoscopist. In each procedure the trainee would have the opportunity to gain exposure to aspects of ERCP that is appropriate to the stage/level of training, gradually moving along a spectrum of skills of increasing complexity, associated with higher risk of complications. Such a graded progression ensures that the trainee is set up to learn each increasing complex skill with appropriate level of preparedness, enabling smoother progression in training. Trainees are assessed every 10 ERCP for progression. An example of an ERCPist at early stage of training (Pic A) is as shown below.

**Conclusion** Our training guide could be a component of much needed structure to drive streamlined ERCP training in UK. Adoption of the guide or similar will enable enhanced continuity in training when trainees move between training centres, from initiation to independence.

### REFERENCE

1 Verma D, *et al*. Establishing a true assessment of endoscopic competence in ERCP during training and beyond: a single-operator learning curve for deep biliary cannulation in patients with native papillary anatomy. *Gastrointest Endosc.* 2007.

**Disclosure of Interest** None Declared




**Abstract PTH-012 Figure 1**

## PTH-013 ENDORINGS™ IN SCREENING COLONOSCOPY: RESULTS OF A SINGLE CENTRE PILOT STUDY

B Hayee*, G Chung-Faye. *Gastroenterology, King's College Hospital NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.418

**Introduction** Colonoscopy remains the gold standard procedure for screening and polyp detection, with adenoma detection rate (ADR) being a widely-accepted key performance indicator (KPI). It has long been recognised that even experienced endoscopists incur an appreciable 'miss-rate' and a number of novel devices have been marketed to assist this aspect of practice. The Endorings™ device is a simple soft silicone, single-use device consisting of a series of rings arranged around a central tubular core. As the colonoscope is inserted the rings fold backward to allow intubation and flare on withdrawal to flatten colonic folds and aid inspection.

**Methods** Prospective data was collected during screening colonoscopy (performed by two accredited colonoscopists) when the Endorings™ device was used and compared the KPI results to outcomes from the previous few months, for the same two colonoscopists) when the device was not in use (ie. historical controls).

**Results** The ADR without Endorings™ (n = 85) was 49.4% with a per-procedure detection rate (ppr) of 0.97. With Endorings (n = 66) 66.7% (p = 0.0006) with ppr of 1.625. This represents a 35% increase in ADR and a 68% increase in the number of polyps detected at any given procedure. There were no significant differences in completion rates, withdrawal time, use of sedation or comfort scores. The device was removed in 5/66 procedures due to interference with intubation (in the presence of either an angulated sigmoid or diverticulosis). No complications were recorded.

**Conclusion** Use of the Endorings™ device was associated with a significant increase in ADR. Qualitatively, the three-ring design was felt to interfere with normal intubation such that insertion technique had to be modified. An updated design iteration with two rings in slightly different positions along the central tube, has been produced and appears to offer a significant advantage in this regard. Furthermore, the central tube can be pushed further along the distal end of the colonoscope to allow the terminal ileum to be intubated with the device in place. The Endorings™ may offer an advantage in screening colonoscopy and, in this cohort, further prospective investigation is warranted.

**Disclosure of Interest** None Declared

## PTH-014 FOOD BOLUS OBSTRUCTION: AN EXPERIENCE FROM A LARGE TEACHING HOSPITAL

CO Langoya*, A O'connor, B Rembacken. *Gastroenterology, St.James University Hospital, Leeds, UK*

10.1136/gutjnl-2016-312388.419

**Introduction** Food bolus obstruction is a common problem encountered by endoscopists with an annual incidence estimated to be around 13 per 100,000.[1] Several means of endoscopic management have been proposed including extraction, using a snare or a roth net, or pushing, occasionally with dilatation. The aim of this audit was to determine the common types of foodstuffs causing food bolus obstruction (FBO), the prevalence of eosinophilic oesophagitis (EO) among those cases and how different endoscopists in St. James' University Hospital, Leeds handle FBO cases in terms of treatment and subsequent endoscopy follow up.

**Methods** Two years' data (2014 and 2015) was retrieved from the endoscopy data base in St. James' University Hospital and a total of 33 cases of endoscopy for food bolus obstruction within the specified period were generated and analysed. Excel was used to construct graphs and tables and draw the descriptive statistics (mean, standard deviation, mode and median) of variables.

**Results** Younger males are found to be more likely affected than females or elderly patients. In 8 cases no food bolus was seen at endoscopy, leaving 25 cases for analysis. In 10 cases (40%) the type of food causing the bolus was not documented. Among the others in 11 cases meat was the cause, 3 times fish and only once vegetables. In 13 cases (52%) the bolus was retrieved with either a snare or Roth net. In 12 cases (48%) it was pushed through, having first been crushed in 5 of these cases. All attempts were successful with no serious adverse events. EO was diagnosed in 24% (n = 6). Reflux was present in 28% (n = 7). One patient had an oesophageal cancer. 4 patients had a pre-existing diagnosis of oesophageal cancer, 1 had a peptic oesophageal stricture and another had a radiation induced stricture. Paired biopsies from upper and lower oesophagus were taken in 68% (n = 17) of cases, of the other 8 five had already been given a histologic diagnosis for their oesophageal stricture (4 malignant, 1 benign) and biopsies were not judged to be needed. Eosinophilic oesophagitis was suspected endoscopically in five cases and confirmed histologically in four of those. In two cases, endoscopic appearances were normal and random paired biopsies identified eosinophilic oesophagitis.

**Conclusion** FBO is a relatively uncommon presentation even in a large acute unit. The majority of cases are due to benign disease. Endoscopic treatment modalities vary and pushing and removal methods seem to be of equally of good efficacy and safety. Meat bolus is the commonest cause of food bolus obstruction. There is a good diagnostic yield from biopsy.

### REFERENCE

1 Longstreth GF, Longstreth KJ, Yao JF. Esophageal food impaction: epidemiology and therapy. A retrospective, observational study. *Gastrointest Endosc*. 2001 Feb; **53**(2):193–8

**Disclosure of Interest** None Declared

## PTH-015 DEVELOPING THE RECORDED IMAGE QUALITY INDEX (RIQI) TOOL – MEASURING RECORDED IMAGE QUALITY, DEGREE OF REPRESENTATION AND UTILITY

D Samuel, JB Berrill, J Hurley, B Lee, E Hawkes, S Yosief, N Hawkes*. *Gastroenterology, Cwm Taf University Health Board, Mid Glamorgan, UK*

10.1136/gutjnl-2016-312388.420

**Introduction** Endoscopic images saved on the Electronic Reporting System are the only visible representation of completeness of examination and pathological findings. Together with the endoscopy report these become the only reference for other clinicians not present at the original endoscopy on which to base further decisions. Given the importance of these images, we aimed to develop a systematic scoring system for quality of images recorded at endoscopy and to validate this Recorded Image Quality Index (RIQI) scoring system

**Methods** We searched the HICCS Endoscopic Reporting System for all colonoscopists performing regular colonoscopy (n = 11). All procedures performed between July and December 2015 were identified (screening cases were excluded). All images and the endoscopy report for the first 10 cases with pathological findings for each colonoscopist were obtained, ordered into folders and data anonymised. A RIQI scoresheet was devised assessing 4 domains (Representation (REP), Image Labelling (LAB), Caecal landmarks (CL) and Image Quality (QUAL)) and rating the utility (U) of the information set further decision-making. 110 image sets were scored by 3 independent assessors. Cohen's kappa values for intra observer variation were calculated each domain. Correlation between domain and utility scores was calculated using Cohen's kappa values for inter-rater agreement (IRA); these informed the score weighting in the final RIQI tool.
**Results** 110 data sets were reviewed by 3 assessors generating 330 domain scores. IRA for assessors by domain was: REP 0.53, 0.53 & 0.53 (moderate); LAB 0.82, 0.84 & 0.73 (very good); CL 0.44, 0.49 & 0.52 (moderate); QUAL 0.53, 0.39 & 0.44 (moderate). Agreement for utility scores were 0.68, 0.42 and 0.36 (good-moderate). IRA was optimal using 3 point scales (c.f. 4 or 5 point domain rating scales). REP and QUAL domains closely correlated with utility scores (r = 0.68 & 0.64) and were weighted accordingly in the final scoring system. Derived RIQI scores for each assessor correlated closely with clinical utility scores (r = 0.62, 0.63 & 0.73).
**Conclusion** The RIQI tool provides a method for assessing the quality of image capture across ten procedures with scores in 4 domains. The RIQI score correlates well with clinical utility of the images, with acceptable inter-rater reliability. It shows potential both as an audit and training tool to improve performance in this area of endoscopic practice.
**Disclosure of Interest** None Declared

## PTH-016 FACTORS ASSOCIATED WITH UPPER GASTROINTESTINAL CANCER OCCURRENCE AFTER OGD THAT DID NOT DETECT CANCER IN THE WEST MIDLANDS

[1]D Cheung*, [1]J Rees, [2]T Evans, [1]N Trudgill. *[1]Department of Gastroenterology, Sandwell and West Birmingham Hospitals NHS Trust, West Midlands; [2]Public Health England, Birmingham, UK*

10.1136/gutjnl-2016-312388.421

**Introduction** Up to 14% of upper gastrointestinal cancer (UGIC) subjects had an OGD that did not diagnose cancer up to 3 years prior to diagnosis. The rate of and associated risk factors for post-OGD upper gastrointestinal cancer (POUGIC) in the West Midlands were examined.
**Methods** Computerised OGD records from 8 NHS trusts in the West Midlands between 1998 and 2010 were retrieved and submitted to the West Midlands Cancer Intelligence Unit (WMCIU) for UGIC registrations linkage. Subjects undergoing OGD 3 to 36 months before diagnosis were identified as POUGIC and subjects with no OGD 3 to 36 months prior to diagnosis served as controls. The influence of age, gender, indication, endoscopist specialty, trainee involvement, sedation, number of biopsies taken from focal abnormalities, site and histology of UGIC on POUGIC were examined by logistic regression analysis.
**Results** 115,113 OGD records were submitted to WMCIU and 3870 UGIC were linked. After exclusions, 2909 UGIC subjects were analysed. There were 275 (9.5%) POUGIC subjects (154 oesophageal cancer (OC) and 121 gastric cancer (GC)). The POUGIC rate ranged from 7.6 to 11.8% between the trusts. Of the POUGIC subjects, 143 (52.0%) had OGD 3 to 12 months and 132 (48.0%) 12 to 36 months prior to UGIC diagnosis. POUGIC subjects were younger (69.6±11.7 yrs) compared with controls (72.0±11.6 yrs) (p = 0.001). There were no association between POUGIC and OC or GC (GC OR 1.15, 95%CI 0.89–1.48, p = 0.289) or subject gender (female 1.14, 0.88–1.48, p = 0.312). Subjects with alarm symptoms (0.33, 0.26–0.43, p < 0.0001) were three times less likely to be associated with POUGIC. POUGIC subjects had less biopsies taken from focal lesions (4.2±2.2) compared with controls (5.4±2.6)(p < 0.0001). There was no association between POUGIC and endoscopist speciality (surgical 1.00, 0.71–1.40, p = 0.998) or nurse endoscopist (0.74, 0.43–1.29, p = 0.291). Trainee involvement was not associated with POUGIC (0.80, 0.60–1.07, p = 0.130). There were also no significant association between POUGIC and sedation (1.30, 0.97–1.76, p = 0.084) or sedation and topical anaesthesia (1.07, 0.76–1.49, p = 0.708), compared with topical anaesthesia alone. POUGIC subjects were more likely to undergo surgery (1.75, 1.33–2.29, p = 0.0001) but not chemotherapy (0.81, 0.62–1.06, p = 0.122) or radiotherapy (1.07, 0.79–1.46, p = 0.667). However, there was no significant survival difference at 1 yr (1.24, 0.97–1.60, p = 0.087) between POUGIC and controls.
**Conclusion** The POUGIC rate in the West Midlands was 9.5% between 1998 and 2010 and varied between 7.6 and 11.8% between trusts. POUGIC was associated with younger age, a lack of alarm symptoms and less biopsies from abnormalities. There was no significant survival difference between POUGIC subjects and controls at 1 yr.
**Disclosure of Interest** None Declared

## PTH-017 COLONOSCOPY FOR ABDOMINAL PAIN: IS IT WORTH PERFORMING?

E Dhesi*, K Besherdas. *Royal Free London NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.422

**Introduction** Colonoscopy is accepted as the gold standard imaging modality for colonic symptoms of altered bowel habit, anaemia, rectal bleeding and for the detection of colorectal cancer. Abdominal pain is a common presenting complaint in secondary care, and is generally accepted to be non-specific, with a low predictive value for significant pathology in the absence of other symptoms (altered bowel habit, bleeding). The American Society for Gastrointestinal Endoscopy in their guidelines for appropriate use of colonoscopy advise that this procedure is not indicated in "Chronic, stable, irritable bowel syndrome or chronic abdominal pain". In observed practice, however, abdominal pain seems to be a common reason for referral for colonoscopy. For an endoscopy unit to be successful and with pressures of waiting times growing it is important not to overburden this with inappropriate referrals. We hypothesise that colonoscopy performed solely for abdominal pain has a low diagnostic yield and should therefore be avoided.
**Methods** The aim of the study was to assess abdominal pain as an indication for colonoscopy. A single centre, retrospective analysis of patients undergoing colonoscopy for abdominal

pain in a North London NHS Hospital Trust was performed. Patients were identified using the Unisoft Endoscopy reporting software across a 5 year period (March 2010-March 2015 inclusive). Data was scrutinised for procedure findings and result of histology obtained. If abnormal, the patient's electronic record was scrutinised for documentation of additional symptoms prior to colonoscopy.

**Results** A total of 1021 patients underwent colonoscopy for abdominal pain. 38 were diagnostic of Inflammatory Bowel Disease. 7 were diagnostic of adenocarcinoma. All of these patients had at least one other indication (diarrhoea, bleeding, weight loss or anaemia). Adenomatous polyp detection rate in this study was 6%, comparable to asymptomatic individuals.

**Conclusion** From this study we can conclude that a large number of colonoscopies are performed for patients with abdominal pain. When pathology is detected it is always with other symptoms. This study suggests that colonoscopy is not a useful investigation in patients presenting solely with abdominal pain, as the diagnostic yield is poor. Avoiding such a procedure in this group of patient would free up space within the endoscopy units and reduce waiting times. Colonoscopy as an investigation for abdominal pain as the sole indication should not be performed.

**Disclosure of Interest** None Declared

## PTH-018 ENDOCLOT PROPHYLAXIS FOLLOWING COMPLEX ENDOSCOPIC RESECTION OF GASTROINTESTINAL NEOPLASIA: NO NEED TO BLEED!

F Chedgy*, K Kandiah, S Subramaniam, S Thayalasekaran, F Thursby-Pelham, G Longcroft-Wheaton, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.423

**Introduction** EMR / ESD of large lesions creates large mucosal defects and is associated with significant post-procedural bleeding. Endoclot™ is a topical hemostatic powder that rapidly absorbs water creating a high concentration of platelets, red blood cells and clotting factors – accelerating the natural coagulation cascade. Routine application of Endoclot™ to ESD or EMR defects is hypothesised to reduce the risk of significant post EMR/ESD bleeding.

**Methods** A prospective registry was set up to record all EMR / ESD procedures since 2006. Prophylactic use of Endoclot™, following endoscopic resection of lesions >20 mm, to prevent delayed bleeding was introduced in June 2014. The bleeding rate since the introduction of this strategy was compared with the bleed rate of our historic cohort since 2006. Bleeding was defined as significant if it required: readmission, transfusion or further intervention. SPSS was used for statistical analysis of data.

**Results** Pre-Endoclot cohort: 496 patients underwent lower gastrointestinal EMR/ESD at our institution between 2006 and 2013 with a mean polyp size of 43 mm and 12% of these polyps were scarred due to previous intervention. Significant delayed bleeding was seen in 21/496 patients (4%). 264 patients underwent upper gastrointestinal EMR/ESD at our institution between 2006 and 2013. Significant delayed bleeding was seen in 9/264 patients (3%).

Endoclot cohort: 71 patients have undergone colonic EMR/ESD (mean polyp size 46 mm, 38% scarred) (Table 1). 61 patients have undergone upper gastrointestinal resection (mean lesion size 33 mm, 37% scarred).

**Abstract PTH-018 Table 1** Colonic ER Outcomes

| | Mean Lesion Size (mm) | Scarring % | Delayed Bleeding % |
|---|---|---|---|
| Pre-Endoclot n = 496 | 43 | 12 | 4 |
| Post-Endoclot n = 71 | 46 | 38 | 1 |
| P-value | NS | <0.01 | NS |

There was 1 significant delayed bleed in the colonic group (1%) requiring further endoscopic therapy. There were 2 bleeds (3%) in the upper GI group, which were managed with further endoscopic therapy without the need for blood transfusion. There have been no complications related to Endoclot™ use. Device clogging was experienced in 5% of upper gastrointestinal cases and 15% of lower gastrointestinal cases.

**Conclusion** Endoclot™ shows promise in reducing the risks of delayed bleeding following endoscopic resection of large neoplastic lesions from the gastrointestinal tract. Our data demonstrates a 75% reduction in risk of delayed bleeding following EMR/ESD for large colonic polyps in a group with a significantly higher rate of scarring and therefore bleeding risk. A randomised controlled trial is required to clarify the role of routine use of Endoclot™ following EMR/ESD.

**Disclosure of Interest** None Declared

## PTH-019 DOES RECTAL DICLOFENAC REDUCE POST ERCP PANCREATITIS IN THE UK?

G Sheiybani*, M Toolan, P Brydon, J Linehan, M Farrant, B Colleypriest. *Gastroenterology, Royal United Hospital, BATH, UK*

10.1136/gutjnl-2016-312388.424

**Introduction** Post ERCP pancreatitis(PEP) occurs in up to 10% of unselected cases and carries significant morbidity. PEP is significantly higher in certain patient groups, for example females, young age, Sphincter of Oddi dysfunction, previous pancreatitis and following pancreatic duct cannulation. There is a growing body of evidence that NSAIDS should be used in PEP prophylaxis but use is still uncommon in the UK. The 2010 European Society for Gastrointestinal Endoscopy Guidelines on PEP recommends routine use of rectal NSAIDs in all patients. There is only one published RCT from the UK demonstrating the efficacy of NSAIDS in reducing PEP. Rectal diclofenac was introduced into ERCP practice at the RUH in two phases. Firstly, a selective use in patients determined to be at high risk as determined by criteria above. Secondly diclofenac was used routinely in all patients without contraindication.

**Methods** A retrospective analysis of 5 years ERCP data was performed using readmission data, blood results, radiology reports and discharge summaries to identify patients with PEP from August 2010 – December 2015. The administration of rectal diclofenac post procedure was recorded from the endoscopy reporting system. Fisher's exact test was used to statistically analyse categorical data.

**Results** 1318 ERCPs were performed by 4 endoscopists during the study period with 66 (5.0%) cases of pancreatitis. 445 ERCPs were performed prior to the introduction of NSAID use during which time there were 35 (7.9%) episodes of PEP. During the selective period of NSAID use (only used if patient deemed high risk by endoscopist) 539 ERCPs were

performed and 72 (13.4%) patients received NSAIDS. 17 (3.2%) developed PEP. 334 ERCPs were performed when NSAIDS were given to all patients without contraindication. 289 (86.5%) of patients received rectal diclofenac and 13 (3.9%) developed pancreatitis. There is a statistically significant decrease in PEP comparing the groups of patients receiving NSAIDS selectively (p = 0.0009) or routinely (p = 0.0172) when compared with none. There is no difference between the selective and routine group (p = 0.571).

**Conclusion** The use of rectal diclofenac post ERCP decreases the rate of PEP when used in a selective or routine protocol. Despite a growing body of evidence for NSAIDS use routine administration is used by the minority of endoscopists in the UK. The evidence for use of NSAIDS in PEP is heterogeneous a number of factors including diagnostic criteria for pancreatitis, type and route of NSAID and selective high risk or routine use. We believe that this heterogeneity and lack of UK evidence accounts for the slow uptake of NSAIDS for PEP. Our data demonstrates that the introduction of a selective or routine use of NSAIDS for PEP in a DGH significantly decreases the risk of pancreatitis (RR 43.7%).

**Disclosure of Interest** None Declared

## PTH-020 TOO OLD TO PUSH? A PROSPECTIVE COMPARISON STUDY ON THE SAFETY OF DOUBLE BALLOON ENTEROSCOPY WITH PROPOFOL VERSUS STANDARD SEDATION IN THE ELDERLY

[1]H-L Ching*, [2]F Branchi, [1]DS Sanders, [3]D Turnbull, [1]R Sidhu. *[1]Gastroenterology, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK; [2]Pathophysiology and Transplantation, Fondazione IRCCS Ca' Granda, Milan, Italy; [3]Anaesthetics, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.425

**Introduction** Propofol sedation is increasingly being used for complex endoscopy. Double balloon enteroscopy (DBE) has been shown to be poorly tolerated using standard sedation. We investigated the feasibility and safety of DBE in the elderly compared to the young, using propofol versus standard sedation in our routine small bowel service.

**Methods** Between March 2013 and December 2015, all patients undergoing DBE were prospectively recruited. Standard sedation with fentanyl and midazolam or anaesthetist-assisted propofol sedation was decided based on patient history and the expected complexity of procedure. Patients were categorised by age into elderly: ≥70 years and young: <70 years and the type of sedation used. Patient data from the four cohorts were collected and compared including hospital and anxiety and depression scores (HADS). Pain, discomfort and distress scores were measured post-DBE.

**Results** A total of 183 patients underwent DBE. Ten elderly patients (50% male, 80% oral) and 72 young patients (43% male, 79% oral) received propofol respectively whilst 25 elderly patients (44% male, 80% oral) and 76 young patients (51% male, 83% oral) received standard sedation. Background demographics, comorbidities and HADS were comparable. There was no difference in the mean dose of propofol used in elderly or young patients (mean 1032 mg vs 1097 mg, p = 0.651) or the procedure time in any group (p = 0.081). The most common indications for DBE were iron deficiency anaemia (57.1%), overt gastrointestinal bleeding (20%) and suspected Crohn's disease (11.4%) in elderly patients; akin to that in young patients (31.8%, 7.4%, 23.6% respectively). The most common findings at DBE (elderly vs young) were angioectasias (37.1% vs 18.9%, p = 0.025), tumours/masses (17.1% vs 17.6%, p = 1), ulcers (17.1% vs 13.5%, p = 0.593) and a normal examination (22.9% vs 39.2%, p = 0.080). Diagnostic and therapeutic yields were also comparable in all groups (range 60–90%, p = 0.205 and 24–50%, p = 0.054 respectively). There were no complications in elderly patients receiving propofol. One elderly patient receiving standard sedation had a significant troponin rise. Propofol gave lower patient pain, discomfort and distress scores compared to sedation (p < 0.05).

**Conclusion** This is the first study to compare sedation types for DBE in the elderly. Our data suggests that not only is safety comparable in the elderly receiving propofol compared to standard sedation during DBE but tolerability is significantly better. This would support the use of propofol sedation for DBE in elderly patients.

**Disclosure of Interest** None Declared

## PTH-021 REASSESSING THE VALUE OF GASTROSCOPY FOR THE INVESTIGATION OF DYSPEPSIA

H-L Ching*, MF Hale, R Sidhu, ME McAlindon. *Gastroenterology, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.426

**Introduction** The National Institute of Health and Clinical Excellence (NICE) first recommended a policy of *H. pylori* test and treat or empirical full dose proton pump inhibitor therapy for uninvestigated dyspepsia in 2004.[1] Following an initial fall in demand for gastroscopy (OGD), there has been a 30% increase in the last five years.[2] Whilst regarded as the gold standard, it is uncomfortable, costly, may require sedation and carries the risks of intubation. In an era when non-invasive tests are emerging, the role of OGD requires re-evaluation.

**Methods** Data from consecutive OGDs performed between September 2015 and January 2016 to investigate dyspepsia was analysed. We determined the percentage of patients in whom OGD ± biopsy changed management as defined by an approach other than the non-invasive NICE recommendations.[1]

**Results** 500 patients (39.8% male; mean age 58±16.1) underwent OGD for dyspepsia, some of whom also had dysphagia (6%), anaemia (4%), vomiting (4.2%) or suspected gastrointestinal (GI) bleeding (0.6%). 145 (29%) were sedated (midazolam (mean±SEM) 2.0 mg±1.0; fentanyl (when used) 50 mcg ±23). 381 patients (76.2%) had abnormal endoscopy; 417 (83.4%) had biopsies taken (15.8% for histological assessment, 27.4% for rapid urease tests, 40.2% for both). Findings of uncertain relevance, or which could have been managed with empirical therapies, were seen in 299 patients (59.8%; including oesophagitis (n = 122), hiatus hernias (n = 178), gastric polyps (n = 34), gastritis (n = 236), gastric ulcers (n = 9), gastric erosions (n = 32), duodenitis (n = 40), duodenal ulcer (n = 1), duodenal erosions (n = 15) and a duodenal polyp (n = 1)). Diagnoses which would not have been appropriately managed by empirical therapies numbered 82 (16.4%). These included 71 (14.2%) patients with Barrett's oesophagus (n = 39), oesophageal stricture (n = 2), oesophageal cancer (n = 1) and gastric cancer (n = 4) diagnosed at the time of endoscopy. An additional 11 (2.2%) diagnoses were made solely by histology, which included eosinophilic oesophagitis

(n = 1), eosinophilic gastritis (n = 1), intestinal metaplasia (n = 3) and coeliac disease (n = 6).

**Conclusion** Diagnoses which alter management are made by endoscopy in only 14.2% of patients with dyspepsia. Although the majority of patients have biopsies taken, the added value increases the yield to only 16.4%. Non-invasive, cost-effective diagnostic strategies are needed to better guide patient management and select the minority of patients who need endoscopic biopsy or therapy.

**REFERENCES**

1 www.nice.org.uk/guidance/CG184 (2014 update)
2 https://www.england.nhs.uk/statistics

**Disclosure of Interest** None Declared

## PTH-022 A NOVEL EXPERIENCE OF THE PILLCAM® ESO 3 CAPSULE ENDOSCOPE IN PATIENTS UNWILLING TO UNDERGO CONVENTIONAL UPPER GI ENDOSCOPY

H-L Ching*, V Phillips, A Healy, R Sidhu, ME McAlindon. *Gastroenterology, Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.427

**Introduction** Gastroscopy (OGD) is the gold standard test for investigating dyspepsia, but is uncomfortable, incurs the risk of intubation and sedation and has a diagnostic yield in our practice in 16.4% (data submitted). Capsule endoscopy is safe, non-invasive and well-tolerated. Furthermore, capsules to image the oesophagus are now used in routine clinical practice. We test the feasibility and safety of a novel protocol using the ESO3 upper gastrointestinal (GI) capsule (Given Imaging Ltd) which boasts an improved field of view and battery life compared to earlier models.

**Methods** All consecutive patients undergoing investigation with the ESO3, between December 2015 and February 2016, were prospectively recruited. All patients required upper GI investigation but had declined conventional OGD ± barium studies. Patients were asked to drink 1 L of water containing simethicone prior to the procedure. They were then asked to swallow the ESO3 and adopt lying positions in 3 different directions at 3 angles (30° head down/up and horizontal) for 3 minutes each. Data on patient demographics, procedural data and patient tolerance was reviewed.

**Results** 10 patients (mean age 49±17.3 years, 50% male) were included. Indications for the ESO3 included investigation for dyspepsia (n = 2), iron deficiency anaemia (n = 2), variceal screening (n = 3), suspected gastric Crohn's disease (n = 1), subjective dysphagia (n = 1) and assessment of oesophageal ulcer healing (n = 1). Pathologies detected at CE included oesophagitis (n = 2), hiatus hernias (n = 3), oesophageal ulcers and erosions (n = 3), oesophageal varices (n = 3) and gastric and Cameron ulcers (n = 1, each). The mean time of the ESO3 transit in the oesophagus, stomach and small bowel was 12±9 secs, 58±27 mins, 23±22 mins respectively. The mean reading time for the capsule video was faster with the accelerated reading mode (39±18.4 mins) than with standard mode (79±14.6 mins) using the RAPID® software ($p < 0.05$). Mean post-procedural anxiety, discomfort and pain scores were excellent (scores from worst-best =0-10; 0, 0.7, 0 respectively). Visualisation (grade from worst-best =1-5) of all areas of the upper GI tract was also excellent; oesophagus (5±0), gastric cardia (5±03), fundus (4±1.1), body (5±0.6), antrum (5±0.3) and the first and second part of the duodenum (both 5±0). Complete examination to D2 was achieved in 80%. No complications were seen.

**Conclusion** We report the first study of a novel protocol demonstrating the feasibility and safety of the ESO3. Further protocol amendments are necessary to improve reading time and visualisation while randomised control trials are needed to compare diagnostic yield to conventional OGD. However, the excellent patient tolerance affords an alternative upper GI investigative tool worth pursuing.

**Disclosure of Interest** None Declared

## PTH-023 HISTOLOGY, CYTOLOGY OR BOTH FOR SAMPLING OF SOLID PANCREATIC MASSES? PROSPECTIVE EVALUATION OF A NEW 22G BIOPSY NEEDLE

[1]I Penman*, [1]N McAvoy, [2]P Fineron, [1]S Siddhi, [3]U Basavaraju, [4]G Murray. *[1]Centre for Liver & Digestive Disorders, Royal Infirmary of Edinburgh; [2]Pathology Department, Western General Hospital, Edinburgh; [3]Gastroenterology Dept; [4]Pathology Department, Aberdeen Royal Infirmary, Aberdeen, UK*

10.1136/gutjnl-2016-312388.428

**Introduction** For solid pancreatic masses (SPM), EUS-fine needle aspiration cytology (FNA-C) has a variable diagnostic yield and sensitivity for diagnosis of malignancy, given the limited material, presence of inflammation and inherent difficulties in cytologic interpretation. Histology of formalin-fixed biopsies is simpler, cheaper and may allow extra marker studies more often. This study evaluated the ability of a new EUS biopsy needle (1) to obtain histological biopsies (FNB) with a limited number of passes; (2) to compare specimen adequacy and diagnostic sensitivity with FNA-C; (3) compare specimen quality between FNA-C and FNB.

**Methods** Over 5 months, consecutive patients with SPM underwent EUS biopsy sampling using a standardised protocol. Patients in whom lesions were predominantly cystic, taking anticoagulants or in whom access with a 22 g needle was deemed impossible were excluded. Using a 22 g 'Sharkcore' needle (Medtronic, Dublin, Ireland), 4 passes were made, using slow stylet withdrawal and material expelled into Cytolyt cytology fixative (2 passes) or into formalin for histology processing. Sampling sequence was randomised (passes 1&3 into cytology with passes 2&4 into formalin, or vice versa). Pathological assessment was performed by one of 2 specialist GI pathologists using a structured proforma, to rate specimen adequacy, sample quality, diagnosis and subjective superiority.

**Results** 43 patients were included (23 M, 20 F, mean age 66 years, range 46–83 y). One patient was excluded from analysis due to incomplete follow-up. Final diagnoses were pancreatic malignancy (35, 83.3%) and benign pancreaticobiliary disorders (7, 16.7%). Results (n = 42) are shown in Table 1:

In 2 cases FNA-cytology was negative for malignancy but FNB histology was positive; in contrast there were no cases where cytology was positive but histology was negative. Subjectively, FNB histology samples were scored as superior in 28 cases (66.7%), compared to FNA-C samples (4, 9.5%). In the remainder, samples were judged to be of equivalent quality (10, 23.8%).

**Conclusion** The 22 g Sharkcore needle provides histological-quality samples in almost all cases of pancreatic or peripancreatic masses, with only 2 passes. Samples are more often superior to those obtained by cytology. This offers the prospect of

**Abstract PTH-023 Table 1**

| | Specimen adequacy (n, %) | Samples rated as excellent (n, %) | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) | Overall superiority (n) |
|---|---|---|---|---|---|---|---|---|
| FNA-C | 41 (95.3) | 3 | 86.8 | 100 | 100 | 44.4 | 90.2 | 4 |
| FNB | 42 (97.6) | 12 | 92.1 | 100 | 100 | 57.1 | 92.8 | 28 |
| P-value* | 1.0 | 0.02 | 1.01 | 1.0 | 1.0 | 1.0 | 0.86 | 0.001 |

*Fisher's exact test (two-tailed)

shorter procedure times, easier sample processing and more reliable diagnosis.

**Disclosure of Interest** None Declared

## PTH-024 THE ROLE OF PREASSESSMENT IN BOWEL PREPARATION

I Stasinos*, J Britto, S Gulati, G Chang-Faye, D Joshi, P Dubois, A Haji, B Hayee. *Endoscopy, Kings College Hospital, London, UK*

10.1136/gutjnl-2016-312388.429

**Introduction** Inadequate bowel preparation reduces the diagnostic accuracy of colonoscopy. This has a significant impact on patients' safety and the endoscopy units waiting lists. 90% adequate bowel preparation is a quality and safety indicator for endoscopy according to the Joint Advisory Group (JAG).

The aim of this study is to determine the effect of patient pre-assessment on the quality of bowel preparation. The role of the cleansing agent was also assessed.

**Methods** This is a retrospective observational study on consecutive patients undergoing elective colonoscopy in our centre from October 2014 until September 2015. Adults undergoing routine diagnostic colonoscopy, bowel cancer screening colonoscopy and chromoendoscopy were included.

Sodium picosulphate (PIC) was used as cleansing agent in the first two groups whereas pegylated ethylene glycol with senna (PEG) was used in the latter. According to duration pre-assessment was either limited (LIM, 15 mins) or prolonged (PRO, 45 mins). Quality of bowel preparation was rated as inadequate, adequate and excellent.

**Results** 2900 procedures were evaluated. 60% of the patients were male and the mean age was 58.8 +/- 15.68 years. 1670 (57.58%) were pre-assessed, of which 1329 received LIM/PIC, 280 PRO/PIC and 65 LIM/PEG. 1230 (42, 42%) were not preassessed and had PIC (NO/PIC).

Inadequate bowel preparation was reported in 13.31% (n = 386) of the whole cohort. The rate of inadequate bowel preparation in each group was: NO/PIC (17.8%), LIM/PIC (11.51%), LIM/PEG (10.77%), PRO/PIC (2.53%).

Pre-assessment showed significant association with bowel preparation outcome ($p < 0.001$), while the type of cleansing agent used had no impact on the quality of bowel preparation ($p = 0.241$).

Further multiple regression analysis showed that patients who had no pre-assessment were more likely to present with inadequate bowel preparation (OR 15.46, CI [7.15–33.4]) compared to patients who underwent prolonged preassessment. Patients undergoing limited preassessment were more likely to present with inadequate bowel preparation (OR 8.16, CI [3.76–17.70]) compared to patients who underwent prolonged pre-assessment.

**Conclusion** This study identifies a prognostic role of preassessment in bowel preparation for colonoscopy. The cleansing agent seems to have no effect but only a small number of patients receiving preparation with PEG were included in this study. Further analysis of more categorical independent variables is required to formulate a predictive model for inadequate bowel preparation.

### REFERENCE

1 R. Valori. BSG Quality and Safety Indicators for Endoscopy, March 2007 Joint Advisory Group.

**Disclosure of Interest** None Declared

## PTH-025 ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP): A POINT PREVALENCE STUDY OF HOSPITALS IN ENGLAND

[1]J Morgan*, [2]T Wardle. [1]*Gastroenterology*; [2]*Countess of Chester Hospital, Chester, UK*

10.1136/gutjnl-2016-312388.430

**Introduction** While ERCP is a common therapeutic procedure, to date no studies have ever been conducted which examine its availability, the types of technique or nature of training. This is a prospective study which uses descriptive data from NHS hospitals in England.

**Methods** Between February and August 2015 a questionnaire was sent to consultants who perform ERCP. Further information was obtained from support staff by telephone, email or freedom of information request. The questions concerned the number of dedicated ERCP lists, personnel performing ERCP, the techniques used, the type of anaesthesia or sedation available, opportunities for trainees and availability of dedicated training lists.

**Results** 146 trusts were contacted and 126 consultants responded. These consultants provided ERCP services for 170 hospitals. Not all questions were answered.

Hospitals: 139 hospitals (82%) offered ERCP services of between 1 and 10 lists per week (mean 2.8, mode 2), though 1 hospital did not have a dedicated list. All 31 hospitals that did not offer ERCP (18%) did have access via a neighbouring hospital, usually within the same trust.

Practitioners: Of the 373 practitioners who performed ERCP, 316 (85%) were physicians, 46 (12%) surgeons, 7 (1%) radiologists, 1 nurse and 3 unspecified. The number of practitioners per hospital ranged between 1 and 7, though most hospitals had 2.

Trainees: Of the 139 hospitals performing ERCP, 69 (50%) had trainees, but only 33 (48%) of these had dedicated training lists.

Techniques: Most hospitals (121/136; 89%) use short wire technique, while 69 (51%) use long wire and 54 (40%) use

both. 110 hospitals practice post sphincterotomy balloon sphincteroplasty (81%).

Sedation: Propofol sedation was available for ERCP in only 46/136 (34%) hospitals and general anaesthetic was available in only 70 (51%) hospitals. 90/136 (66%) hospitals had no access to propofol and 66/136 (49%) hospitals had no access to a general anaesthetic list.

**Conclusion** This point prevalence study has shown that ERCP is widely available in England. Physicians perform the majority of ERCPs. Only 69 hospitals (50%) were training practitioners. Although relatively new, both short wire technique and post sphincterotomy balloon sphincteroplasty are commonly used. Only a quarter of hospitals had propofol lists for ERCP, despite guidance from the British Society of Gastroenterology and the Royal College of Anaesthetists 2011.[1,2]

## REFERENCES

1 http://www.bsg.org.uk/images/stories/docs/clinical/guidance/rcoa_bsg_propofol_11.pdf
2 http://www.bsg.org.uk/sections/bsg-endoscopy-articles/propofol-for-ercp-an-update.html

**Disclosure of Interest** None Declared

## PTH-026 PRE-OPERATIVE ENDOSCOPIC MANAGEMENT OF BILIARY OBSTRUCTION IN PANCREATIC CANCER: ARE ESGE GUIDELINES RELEVANT AND ACHIEVABLE IN THE UK?

J Chalmers*, M James, T Archer, D Gomez. *Queens Medical Centre, Nottingham, UK*

10.1136/gutjnl-2016-312388.431

**Introduction** The risks of routine preoperative biliary drainage in pancreatic cancer patients without cholangitis and bilirubin <250μmol/L are established. However, access to early resection without prior biliary stenting is challenging in most UK hepatobiliary (HPB) centres. We evaluated adherence to the European Society of Gastrointestinal Endoscopy guidelines (ESGE 2012) and reviewed clinical and stent outcomes in patients referred through the East Midlands Cancer Network.

**Methods** Patients with a diagnosis of pancreatic cancer during 2014 were identified and cross-referenced with our HPB surgical database. We examined patient demographics, diagnostic modality, tumour site and type, whether pre-operative drainage was performed with endoscopic retrograde cholangio-pancreatography (ERCP) or percutaneous trans-hepatic cholangiography (PTC) and stent choice. Clinical outcomes included ERCP and surgical technical success as well as re-intervention rates.

**Results** 135 pancreatic cancer cases (70 men; mean age 69±8 years, 65 women; mean age 72±7 years) were identified. Pathological diagnosis from EUS-FNA (n = 42), EUS-FNB (n = 34) or brush cytology (n = 24) was adenocarcinoma (n = 95), adenosqamous carcinoma (n = 2), mucinous adenocarcinoma (n = 2), neuroendocrine tumour (NETs; n = 9), squamous carcinoma (n = 2) and 25 radiological diagnosis alone. 50/135 (37%) patients underwent ERCP with technical success in 29/50 (58%): 14 plastic stents; 10 fr (n = 10), 7 fr (n = 4); and 15 self-expanding metal stents (SEMS); 10 mm fc-SEMS; 4 cm (n = 2), 6 cm (n = 2), 8 cm (n = 2); 10 mm uc-SEMS; 4 cm (n = 3), 6 cm (n = 5) were inserted. ERCP failure was due to either unsuccessful CBD cannulation and stenting (15/21; 71%) or duodenal obstruction (6/21; 29%) and 16/21 (76%) of these had PTC, were resected 2/21 (9%) or palliated 3/21 (14%). Re-intervention following ERCP stenting was required in 8/29 (28%): plastic stents 6/8 (75%) obstruction/cholangitis, SEMS 2/8 (25%) distal migration. 10/15 (67%) with SEMS inserted died <4 months after ERCP.

27/135 (20%) cases underwent surgery: complete resection 10/27 ($R_0$; 37%), incomplete resection 7/27 ($R_1$; 26%), palliative bypass 7/27 (26%) after a mean delay of 26 d (adenocarcinoma) and 90 d (NETs). 3/27 (11%) developed disease recurrence. In patients with biliary obstruction (9/27 who underwent surgery), 5/9 (55%) had surgical resection without attempted pre-operative drainage, with mean bilirubin 144μmol/L.

**Conclusion** Following diagnosis of pancreatic cancer, few patients had surgical resection without prior drainage and overall <10% achieved cure. Success in ERCP biliary drainage should be improved and EUS-guided biliary access explored. Although patency rates are higher with SEMS, a high proportion died <4 m, suggesting better case selection for SEMS is required.

**Disclosure of Interest** None Declared

## PTH-027 ANALYSIS OF LOOPING PATTERNS IN COLONOSCOPY USING SCOPEGUIDE; THEIR RELATION TO COMPLETION TIMES AND CONFIGURATIONS IN CADAVERIC COLONS

[1]J Lam, [1]J Wilkinson*, [1]C Brassett, [2]J Brown. *[1]Department of Physiology, Development and Neuroscience, Cambridge University, Cambridge; [2]Gastroenterology, Gloucestershire Royal Hospital, Gloucester, UK*

10.1136/gutjnl-2016-312388.432

**Introduction** ScopeGuide™ magnetic imaging provides a real-time 3 D reconstruction of the position and configuration of the endoscope within the colon, and enables rapid identification and resolution of newly-formed loops. Previous studies have shown benefits in terms of completion rates and comfort scores and the technology has an established role in training.[1]

This study aims to analyse the looping patterns of the sigmoid and transverse colons during colonoscopy, their relation to completion times in experienced hands and the configurations of these colonic segments in undisturbed cadavers.

**Methods** 103 ScopeGuide™ videos of consecutive normal colonoscopies performed by one bowel cancer screening (BCS) colonoscopist with comfort scores on the BCS 50$^{th}$ centile were analysed. Repeated inspection of the videos enabled standard definitions to be introduced for looping patterns of the sigmoid and transverse colons. In addition, the configurations of the sigmoid and transverse segments of the colons in the undisturbed abdomens of 81 cadavers were investigated and their relation to the colonoscopic data explored. The association between completion time and the different configurations seen at colonoscopy were analysed with a one-way ANOVA and sex differences in mobility in live cases and cadavers by Fisher's exact test.

**Results** For the colonoscopies, significant sex differences were found in both sigmoid (p = 0.0233) and transverse (p = 0.0006) colonic configurations. While sigmoid loops in this sample conformed to the usual four categories of straight, N-, alpha and reverse alpha loops, a supplementary classification is proposed for the transverse colon, with straight,

intermediate and deep loops which are distinct and clearly defined. In the cadaveric data, there was a significant sex difference in the mobility of the transverse colon ($p < 0.0001$) but not the sigmoid. There were no significant differences in the proximal or distal completion times in both sexes with regards to colonic configuration.

**Conclusion** This study supports the role of ScopeGuide™ in real time analysis of colonic looping patterns and introduces a supplementary classification for transverse loops. There are significant sex differences between the transverse looping configurations for both in vivo and cadaveric colons. However, no significant correlation between looping configurations and completion times were observed in experienced hands. Familiarity with the looping patterns and the techniques for resolution may explain these results which remain a significant challenge to intermediate trainees.

## REFERENCE

1 Holme *et al*. Magnetic endoscopic imaging versus standard colonoscopy in a routine colonoscopy setting: a randomised, controlled trial. *Gastrointest Endosc* 2011 Jun;**73**(6):1215–22.

**Disclosure of Interest** None Declared

## PTH-028 HOW ABOUT RESURRECTING THE RESEARCH OF MECHANICALLY ACTUATED ROBOTIC CAPSULE ENDOSCOPY BY DESIGNING NOVEL PRESSURE CRYSTALLISED SELF-POWERING COMPOSITE STRUCTURES?

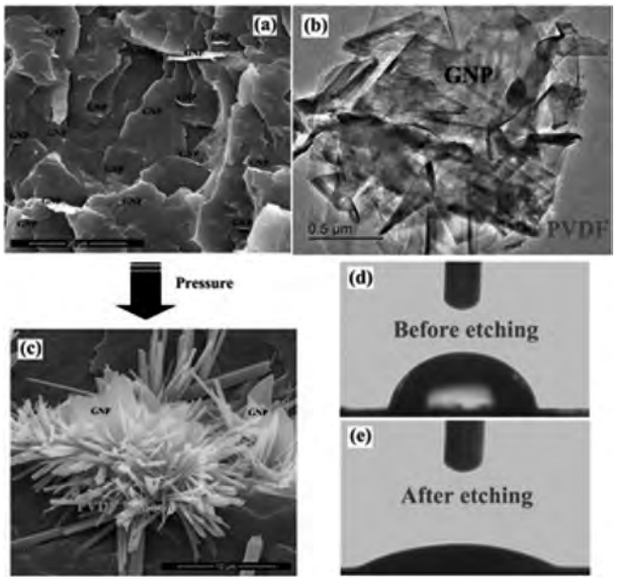
[1]P Tian, [1]C Xu, [1]H Huang, [1]X Chen, [2]L Zhao, [1]J Lyu*. *[1]Key Laboratory of Advanced Technologies of Materials, Ministry of Education, School of Materials Science and Engineering, Southwest Jiaotong University, Chengdu; [2]Huashan Hospital, Fudan University, Shanghai, China*

10.1136/gutjnl-2016-312388.433

**Introduction** Mechanically actuated robotic capsule endoscopes for active locomotion have demonstrated considerable clinical potential for conducting biopsies or therapeutic intervention in human gastrointestinal (GI) tract.[1] Nevertheless, the research began to slow down owing to on-board power limitations and mechanical complexity in miniaturising electronic elements incorporated in the capsule body.[2] Ideally, such swallowable capsules should be self-powered in vivo by converting the numerous GI-providing energy, such as the energy from the peristalsis near gastroesophageal junction and the high shear intestinal fluid flow.[3]

**Methods** Graphene nanoplatelet (GNP), consisting of stacked layers of graphene to enable the delivery of a broad range of therapeutics, was pre-mixed and then melt blended with poly (vinylidene fluoride) (PVDF). The as fabricated binary composites were crystallised at pressure with a piston-cylinder apparatus.

**Results** Controllable rapid growth of unique self-powering 3 D hybrid nanoarchitectures, assembled from 1 D PVDF micro/nanowires on GNPs, was achieved by the pressure crystallisation of GNP/PVDF composites (Figure 1 a-c). By controlling the crystallisation conditions, the PVDF nanowires, with piezoelectric crystalline beta phase, were obtained respectively with folded- and extended-chain lamellae as their substructures. The GNPs may play the role as a catalyst in the composite system, due to their size effect, which catalysed the self-assembly of the PVDF molecules into nanowires and then resulted




**Abstract PTH-028 Figure 1**

in the radial nanowire clusters. Although the original surfaces of GNP/PVDF composites were high hydrophobic, they were successfully converted into hydrophilic surfaces through the pressure treatment followed by appropriate etching process (Figure 1 d and e).

**Conclusion** The pressure crystallised GNP/PVDF composites may permit niche applications in the fabrication of a new-generation of self-powering robotic capsule endoscopes to meet the environmental conditions of each section of GI tract for energy scavenging. This study was funded by the National Natural Science Foundation of China (51373139).

## REFERENCES

1 Munoz F, Alici G, Li WH. *Adv Drug Deliver Rev* 2014;**71**:77–85.
2 Slawinski PR, Obstein KL, Valdastri P. *World J Gastroentero* 2015;**21**:10528–41.
3 Wang ZL, Song J. *Science* 2006;**312**:242–6.

**Disclosure of Interest** None Declared

## PTH-029 AMPULLARY CHARACTERISTICS AS A NOVEL MEANS OF PREDICTING ERCP COMPLEXITY

[1,2]KA Mcwhirter*, [1]J McLaughlin, [2]A Makin. *[1]University of Manchester; [2]Gastroenterology, Central Manchester NHS Foundation Trust, Manchester, UK*

10.1136/gutjnl-2016-312388.434

**Introduction** ERCP is a technically demanding procedure, with significant risk of complications. Cannulation success is widely regarded as a key performance indicator of high- quality ERCP practice (1). Multiple factors affecting the complexity of a complete ERCP procedure have been suggested as a way of adding relevance to success rates and complication incidence. We propose a novel concept where complexity stratification is used to predict outcome based on ampullary characteristics.

**Methods** 200 ERCPs performed on a virgin ampulla were prospectively recorded. We classified ampulla as non-prominent, prominent or distorted by tumour. Cannulation method and number of ampullary contacts were recorded. Cannulation

success and incidence of complications were the primary outcome measures.

**Results** The most common indication was biliary duct stones (54%). Ampullae were classified as non-prominent in 107 cases, prominent in 78 and involving tumour in 15.

Overall deep cannulation was successful in 189 cases (94%), with significant variation between ampullary groups. Non-prominent and prominent ampullae were more likely to be cannulated successfully, (95.3%, 94.9% respectively), than those involving tumour (80%) ($p = 0.004$).

Fewest contacts prior to cannulation were made on the non-prominent ampullae and most on those involving tumour ($p < 0.001$). Needleknife assisted cannulation was used most frequently on ampullae involving tumours and least often on non-prominent ampullae ($p = 0.044$).

The presence of a peri-ampullary diverticulum or a covering mucosal fold, did not reduce cannulation success.

15 patients had complications (7.5%) - pancreatitis (10), perforation (3), infection (1) and bleeding (1). 12 complications occurred in the non-prominent group, with increased incidence of perforation, pancreatitis and bleeding ($p = 0.04$). Complications were more likely in younger patients ($p = 0.03$). Complication rate was not affected by patient gender, cannulation outcome, number of ampullary contacts or trainee involvement. Neither presence of diverticulae nor covering folds increased complication rate.

**Conclusion** The assessment of ampullary characteristics may prove to be a novel means of predicting cannulation difficulty and anticipating risk of complication. Non-prominent ampullae appear to be easier to cannulate, with fewer ampullary contacts and less use of needleknife fistulotomy, but complication rates appear highest. Statistical significance is limited by the sample size and low incidence of cannulation failure and complications, so further study is required. These findings may have implication for case selection in ERCP training, and may add validity to key outcome quality indicators in practice.

## REFERENCE

1 ASGE. Quality Indicators for ERCP. 2015.

**Disclosure of Interest** None Declared

## PTH-030 HOW DOES DELIVERY OF APPROPRIATE ENDOTHERAPY AT INDEX ENDOSCOPY AFFECT OUTCOME IN PATIENTS WITH NON-VARICEAL BLEEDING?

K Waddell*, G White, A Stanley, AJ Morris. *Gastroenterology, Glasgow Royal Infirmary, Glasgow, UK*

10.1136/gutjnl-2016-312388.435

**Introduction** NICE recommends that patients with non-variceal acute upper gastrointestinal bleeding (AUGIB) and stigmata of recent haemorrhage (SRH) are offered endoscopic treatments (combination or mechanical method).[1]

We audited the appropriateness and outcomes of endoscopic therapy in patients with non-variceal bleeding in a University Hospital with a dedicated consultant led out of hours endoscopy service.

**Methods** AUGIB patients who underwent an emergency endoscopy (OGD) were identified from endoscopy, theatre and electronic records between 01.01.15 and 30.04.15. Our electronic clinical database was used to ascertain clinical details and outcomes.

**Results** A total of 116 patients received an emergency OGD. Rebleeding occurred in 18 (15.5%) and 30 day mortality was 11%.

24 patients had non-variceal bleeding with SRH. 22 (92%) of these patients received endotherapy. Haemostasis was achieved after endotherapy in 20 (91%) patients.Two patients required CT angiography/embolization of the gastroduodenal artery. Two received no therapy.

19/24 (79%) patients received at least dual endoscopic therapy with 9/24 (37.5%) patients >2 modalities. 5/24 (9%) patients did not receive minimal recommended therapy; 3 patients (13%) received single (non-mechanical) modality. 2 patients received no treatment.

In patients with endoscopic therapy, haemostasis was achieved in 13/22 (59%) patients at first OGD, 5/22 (27%) at second OGD and 2 (9%) at third OGD.

In the two patients who failed endoscopic therapy, haemostosis was achieved at CTA.

7/22 patients (32%) did not achieve haemostasis at index endoscopy and required repeat endoscopy. Of these patients 5 (71%) had suboptimal endoscopic therapy at index endoscopy. In the 15 patients who achieved haemostasis 3 (20%) had suboptimal therapy at index endoscopy. ($p = 0.05$, Fisher's exact test)

**Conclusion** In this audit he failure to deliver effective endoscopic therapy at the index endoscopy led to ongoing bleeding in patients with non-variceal bleeding and SRH. In this audit we found 37% of patients needed triple endoscopic therapy to achieve haemostasis. The impact of such intensive endotherapy requires further study.

## REFERENCE

1 NICE: https://www.nice.org.uk/guidance/gs38

**Disclosure of Interest** K. Waddell: None Declared, G. White: None Declared, A. Stanley Conflict with: Cook Medical, Boston Scientific, A. Morris Conflict with: Cook Medical, Boston Scientific.

## PTH-031 KNIFE ASSISTED RESECTION FOR DYSPLASIA ASSOCIATED LESION OR MASS: A VIDEO ABSTRACT

K Kandiah*, S Subramaniam, FJQ Chedgy, S Thayalasekaran, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.436

**Introduction** The risk of colonic neoplasia is increased in inflammatory bowel disease. Dysplasia-associated lesion or mass (DALM) can be difficult to detect and challenging to resect endoscopically. Conventional endoscopic mucosal resection (EMR) has been used but as these lesions are often flat morphologically, the snare slips off. Endoscopic submucosal dissection (ESD) has been shown to be able to resect flat lesions, however, they carry a high perforation rate outside the rectum. Knife assisted snare resection (KAR) is a novel technique that combines the principles of EMR and ESD. We aim to evaluate the safety and efficacy of this technique in resecting DALMS as well as demonstrate the technique in the accompanying video abstract.

**Methods** Data of all KARs undertaken by a single endoscopist in our institution from 2012 to 2014 were prospectively

compiled in a pre-designed database. 2 independent researchers interrogated the database. Endoscopic follow-up was performed to identify recurrence.

**Results** 9 patients underwent KAR during this period. 8 patients had ulcerative colitis and 1 had Crohn's colitis. The mean polyp size was 29 mm (10–60 mm). Scarring was noted in 89% of resections despite no previous resection attempts. En-bloc resection was achieved in 7 patients (78%). Endoscopic curative resection was achieved in 7 patients and 1 patient is awaiting endoscopic follow-up. 1 patient experienced a delayed perforation, which was managed surgically. Histological assessment of the resected polyps revealed 8 adenomas with low grade dysplasia and 1 cancer.

**Conclusion** DALMs are difficult to detect and challenging to resect endoscopically using conventional methods. We have demonstrated that KAR as a novel technique is safe and effective in resecting DALMs. As the learning curve of KAR is not as steep as ESD, we believe that is a viable endoscopic resection technique of DALMs in inflammatory bowel disease.

**Disclosure of Interest** None Declared

## PTH-032 KNIFE ASSISTED RESECTION OF RIGHT-SIDED COLONIC POLYPS: THE RIGHT WAY ROUND!

K Kandiah*, S Thayalasekaran, FJQ Chedgy, S Subramaniam, R Bhattacharyya, P Bhandari. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.437

**Introduction** Endoscopic resection of right-sided colonic polyps carries a higher risk of complications including bleeding and perforation. This risk is heightened in the resection of polyps that are tethered, flat or on background of colitis (complex polyps). In the West, complex polyps in the right colon are frequently managed by endoscopic mucosal resection (EMR) or surgery although recurrence rates can be as high as 20%. Endoscopic submucosal dissection (ESD) is an effective technique in the resection of complex polyps. However, ESD is technically challenging with a long learning curve and carries a significant perforation rate (6% in Eastern series and 17% in Western series) leading to a poor uptake of this technique in the West.[i]We aim to examine the safety and efficacy of a novel technique of knife assisted snare resection (KAR) in resecting complex polyps in the right colon.

**Methods** Data of all KARs undertaken by a single endoscopist in our institution from 2009 to 2015 were prospectively compiled in a pre-designed database and interrogated by independent researchers blinded to the technique. Polyps in the right colon (distal transverse to caecum) were included in the analysis. Polyp characteristics and procedure details were prospectively recorded. Endoscopic follow-up was performed to identify recurrence.

**Results** A total of 52 patients with complex polyps 10–80 mm in size were resected by KAR. The mean follow up time was 35 months. 42% of the polyps were >40 mm in size, and 51% were scarred from previous attempts. The majority of the polyps resected (91%) exhibited flat morphology (Paris Classification IIa, IIa+IIb, IIa+IIc). Table 1 shows the patient baseline and lesion characteristics. There were 2 cases of delayed bleeding (4%) neither of which required surgery. The endoscopic cure rate was 96% after single procedure, improving to 98% with further attempts.

**Abstract PTH-032 Table 1**

| Patient baseline and lesion characteristics | |
|---|---|
| Age years, (mean) | 46-83 (70) |
| Sex (M:F) | 2.7:1 |
| Mean polyp size, mm (range) | 35 (7–80) |
| En Bloc Resection, n (%) | 24 (45%) |
| Scarring, n (%) | 28 (51%) |
| Histology, n | 36 |
| • Adenoma | 12 |
| • SSP | 3 |
| • DALM | 4 |
| • Cancer | |

**Conclusion** This is the first reported Western series of KAR of complex polyps in the right colon. Our data demonstrates that this novel technique is safe and effective for resection of complex polyps in the right colon. The recurrence rates are superior to EMR and complication rates are lower than ESD. As the learning curve for KAR is shorter than that for ESD, we believe that this technique is ideal for the Western setting.

### REFERENCE

1 Saito Y, Uraoka T, Yamaguchi Y, *et al*. A prospective, multicenter study of 1111 colorectal endoscopic submucosal dissections. *Gastrointest Endosc*. 2010;**72**: 1217–1225

**Disclosure of Interest** None Declared

## PTH-033 HOW GOOD IS EMERGENCY ENDOSCOPY? AN OBSERVATIONAL STUDY OF TECHNICAL AND NON-TECHNICAL PERFORMANCE AND PROCEDURE QUALITY

[1]MK Matharoo*, [2]A Haycock, [3]N Sevdalis, [2]S Thomas-Gibson. *[1]Endoscopy, St Mark's Hospital; [2]Endoscopy, St. Mark's Hospital; [3]Implementation Science and Patient Safety, King's College London, London, UK*

10.1136/gutjnl-2016-312388.438

**Introduction** Patients undergoing emergency endoscopy are acutely unwell, often comorbid with higher mortality compared to routine cases. Therapeutic intervention is likely and procedures may be conducted out of hours in less familiar environments. There is a longer learning curve, posing challenges for skill acquisition and retention. NCEPOD identified good decision-making and teamwork as areas for improvement for patient safety in urgent cases. The Upper GI Bleed Toolkit sets quality standards for 24/7 service provision. However, variation exists on when urgent procedures are performed, equipment availability, endoscopy teams, procedure setting and access to senior supervision. This study investigated whether the endoscopist's performance in technical and non-technical skill is also implicated.

**Methods** Aims: To compare performance in urgent/emergency (E) and routine (R) GI endoscopy in a tertiary unit. A prospective observational comparative study was conducted with live ratings of technical skill (DOPS 1–4*) non-technical skill (ENTS 1–4*), degree of completion of a 13 item endoscopy safety checklist (SC) and Patient Safety Incidents (PSI). Over 2 months, consecutive E cases were live rated by an independent trained observer using validated tools. R cases matched for endoscopist experience and procedure were rated within the following 24 h. Wilcoxon and t tests were used to compare

Spearman's correlational analyses for emergency and routine cases combined (n=82)

| Variable 1 | Variable 2 | Correlation Coefficient | p |
|---|---|---|---|
| ENTS | DOPS | 0.43 | <0.001 |
| ENTS | PSIs no | -0.54 | <0.001 |
| ENTS | SC | 0.42 | <0.001 |
| DOPS | PSIs no | -0.51 | <0.001 |
| DOPS | SC | 0.40 | <0.001 |
| PSIs no | SC | -0.55 | <0.001 |

**Abstract PTH-033 Figure 1**

paired E and R data and Spearman's rank was used to examine correlation between the different variables. (*1 = poor 4 = excellent)

**Results** 41 E & 41 R cases performed by independent endoscopists on the on-call GIB rota were assessed. All variables were poorer for E compared to R cases (Table). ENTS, DOPS and SC completion were positively correlated. PSI were inversely correlated with ENTS, DOPS and SC completion (Image)

**Abstract PTH-033 Table 1**

| Variable | Category (1–4) | Routine R n (%) | Emergency E n (%) | p |
|---|---|---|---|---|
| ENTS | 2 | 1 (2%) | 15 (37%) | <0.001 |
| | 3 | 24 (59%) | 19 (46%) | |
| | 4 | 16 (39%) | 7 (17%) | |
| DOPS | 2 | 0 | 1 (2%) | <0.001 |
| | 3 | 4 (10%) | 19 (46%) | |
| | 4 | 37 (90%) | 21 (51%) | |
| Checklist items | | Mean (SD) | Mean (SD) | |
| | | 6.9 (1.9) | 5.1 (2.7) | 0.001 |
| n PSI | | Median (IQR) | Median (IQR) | |
| | | 0 (0,1) | 4 (3,5) | <0.001 |

**Conclusion** Performance in urgent/emergency endoscopy was significantly poorer than for routine procedures and resulted in more PSI. Different technical and non-technical skills may be required for emergency endoscopy. In these complex higher-risk cases, poorer non-technical skills and suboptimal checklist completion may be negatively impacting technical performance in endoscopists who perform well in the routine setting. These offer targeted training opportunities and performance assessments to enhance safety and quality.

**Disclosure of Interest** None Declared

## PTH-034 BLINDED COMPARISON OF MAGNETICALLY ASSISTED GASTRIC CAPSULE ENDOSCOPY AND CONVENTIONAL ENDOSCOPY IN RECURRENT AND REFRACTORY IRON DEFICIENCY ANAEMIA: A FEASIBILITY STUDY

MF Hale*, K Drew, M Kurien, R Sidhu, ME McAlindon. *Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.439

**Introduction** Magnetically assisted capsule endoscopy (MACE) of the stomach has been demonstrated to be safe and feasible.[1] The aim of this prospective feasibility study was to compare the ability of MACE to recognise gastric landmarks compared to conventional flexible endoscopy in patients with recurrent or refractory iron deficiency anaemia.

**Methods** Twenty patients with recurrent/refractory iron deficiency anaemia were enrolled between Jan-Nov 2015. After conventional oesophagogastroduodenoscopy, MACE was performed using MiroCam Navi (Intromedic, Seoul, Korea). Visualisation of major upper gastrointestinal landmarks was graded on a 1–5 scale (1 = poor, 5 = excellent), abnormalities were recorded. Primary outcome measure: gastric landmark recognition. Secondary outcome measures: pathology detection, patient tolerance.

**Results** MACE achieved satisfactory visualisation (grade 4 or 5) in 11% for the gastro-oesophageal junction, 21% for the cardia, 16% for the fundus, 79% for the anterior wall of the gastric body, 79% for the posterior wall, 79% for the greater curvature, 84% for the lesser curvature, 95% for the antrum and 89% for the pylorus. 38 pathological findings were identified (*Table 1*). Patients experienced less pain, discomfort and distress during MACE compared to flexible endoscopy (p = 0.0009, p = 0.001 and p = 0.006 respectively).

**Abstract PTH-034 Table 1** Pathological findings detected during each procedure

| Findings | MACE only | OGD only | Both MACE & OGD |
|---|---|---|---|
| Erythema | 0 | 0 | 7 |
| Bleeding | 1 | 0 | 1 |
| Hiatal hernia | 0 | 9 | 2 |
| Erosion(s) | 4 | 3 | 3 |
| Polyp(s) | 0 | 1 | 2 |
| Bile reflux | 1 | 1 | 1 |
| Metaplasia | 1 | 0 | 0 |
| Angioectasia | 1 | 0 | 0 |
| **Total** | 8 | 14 | 16 |

Abbreviations: MACE = magnetically assisted capsule endoscopy, OGD = oesophagogastroduodenoscopy

**Conclusion** MACE can visualise gastric landmarks, detect a variety of gastric pathology and is better tolerated than conventional endoscopy. Capsule identification of hiatal hernias is

difficult and may improve with experience.[2] Better oesophageal visualisation is possible with other models and it seems likely that Mirocam Navi could be developed to this end. Proximal gastric views may be more reliable using a double ended capsule, better depth of illumination, and perhaps with control of capsule movement, all of which need further study before MACE becomes a viable alternative to conventional endoscopy.


**REFERENCES**

1 Hale MF, Drew K, Sidhu R, McAlindon ME. Does magnetically assisted capsule endoscopy improve small bowel capsule endoscopy completion rate? A randomised controlled trial. *Endosc Int Open*. 2016 Feb; **4**(2):E215–21.
2 Marelli L, Jaboli FM, Jackson L, Palmer H, Erian G, Hamilton M, Epstein O. A pilot study comparing ESO-2 capsule endoscopy with conventional upper endoscopy for the assessment of uncomplicated heartburn and dyspepsia. *Frontline Gastroenterol* **201**;4:96–101.


**Disclosure of Interest** None Declared

## PTH-035 DOES REPEAT GASTROSCOPY FOR GASTRIC ULCERATION HAVE AN IMPACT ON CANCER DETECTION AND MORTALITY ACROSS LINCOLNSHIRE?


NS Aslam*, RJM Ingram, A Mandal. *Gastroenterology, United Lincolnshire Hospitals NHS Trust, Lincoln, UK*



10.1136/gutjnl-2016-312388.440


**Introduction** Gastric cancer typically presents late when few options for curative treatment remain. Therefore, emphasis is placed on early detection. Gastric ulceration identified at gastroscopy (OGD) can be a feature of malignancy, which is reported to cause 3% of ulcers (1). Repeat OGD to confirm ulcer healing is recommended within 6–8 weeks by NICE and within 12 weeks as a JAG quality standard. Our aim was to identify the utility of follow-up OGD in the diagnosis of gastric cancer and its impact on patient outcomes at our Trust.
**Methods** We analysed follow-up OGDs conducted over a 14 month period (21/02/2013 to 28/04/2014) in patients with gastric ulceration identified and reported at index OGD. Endoscopies were performed at three centres (Boston, Grantham and Lincoln). We consulted electronic histology records and the EndoSoft® patient database.
**Results** 171 patients underwent follow-up endoscopy (45% male, mean age 66 years). Two patients had underlying malignancy at follow-up OGD (gastric adenocarcinoma). Initial biopsies were negative in both. Patient one (44 years, female) was diagnosed by histology. Patient two (69 years, male) had macro- and microscopic evidence of malignancy.

Staging for patient one at time of diagnosis was cT3/4 cN0 M1. She underwent explorative laparotomy, which revealed linitis plastica. She received 6 cycles of chemotherapy. The time from diagnosis to death was 436 days

Patient two was staged with T3 N2 M0 disease and he underwent a total gastrectomy. Unfortunately an interval CT scan subsequently revealed metastatic spread to the liver. He died 398 days after his diagnosis.
**Conclusion** Although our cohort was limited in size, malignancy detection rate at repeat OGD was 1.2%. Furthermore, follow-up OGD in this cohort did not impact on 5 year survival. Standardised reporting of gastric ulcer could improve local audit and be useful in JAG assessment of future OGD quality standards. The UK gastroenterology community should also consider whether recommended biopsy protocols should be implemented (2) and whether there is a cohort of our patients for whom repeat OGD can be safely avoided.


**REFERENCES**

1 Ingram, *et al*. *PUD Ch 56 Yamada's 6th edition*. 2015.
2 Loughrey BM, Johnston BT. Guidance on the effective use of upper gastrointestinal histopathology. *Frontline Gastroenterol*. **5**(2):88.


**Disclosure of Interest** None Declared

## PTH-036 SINGLE CENTRE EXPERIENCE OF THE USE OF NEEDLE KNIFE PAPILLOTOMY DURING DIFFICULT ERCP: IS IT SAFE AND SHOULD IT BE USED BY, AND TAUGHT TO TRAINEES


N Rabb*, C Beckett, S Jowett, S Moreea. *Digestive Diseases Centre, Bradford Royal Infirmary, Bradford, UK*



10.1136/gutjnl-2016-312388.441


**Introduction** Despite previous concerns regarding the safety of needle knife papillotomy (NKP) there is data to support its efficacy and safety in the context of increasing bile duct cannulation at ERCP.[1] This data predominantly originates from high volume tertiary centres outside the UK. We audited our experiences of using NKP in a secondary care centre where wire-guided cannulation is the standard method for accessing the bile duct and the overall ERCP complication rate is <5%, focusing on success of bile duct cannulation in relation to pathology, safety of the procedure and complication rate.
**Methods** Electronic databases and medical records were interrogated to retrieve data for analysis on all ERCP cases using NKP between 2010–2015. The following data was collected: patient (pt) demographics, indications for ERCP and subsequent complications.
**Results** 1843 ERCP were performed on 1362 pts (817 female (F), 545 male (M), age range (AR) 16–103). NKP was performed in 69 cases (3.7% 37F 32 M, AR 21–98). In the papillotomy cohort indications for ERCP were stone disease (40); stricturing disease (22); others including unexplained pancreatitis (4), bile leak (2), sphincter of Oddi dysfunction (1). Successful bile duct cannulation was achieved during the index procedure in 50 cases (25M 25 F). Of the remaining 19 cases, 11 (5M 6 F) had bile duct cannulation achieved during a repeat procedure via the papillotomy: global success rate 88%. The remaining 6 cases (4F 2 M) were managed with alternative interventions (5 PTC, 1 surgical). NKP was more successful for stone disease: an initial procedure success rate of 73% vs. 64% for non-stone disease, increasing to 95% with repeat procedure. 5/6 (83%) cases requiring alternative interventions had non-stone disease.

Complications: 4/69 (5.8%) cases were complicated by pancreatitis; all were managed conservatively with no associated mortality. 3/4 (75%) required hospitalisation for <3 days and 1 for >10 days. There were 4 cases of bleeding (5.8%) with 2/4 (50%) requiring blood transfusion and endoscopic therapy to achieve haemostasis. Perforation occurred in 2 cases (2.8%); both were managed conservatively, 1 case died.
**Conclusion** The global success rate for bile duct cannulation after pre-cut NKP was 88% which supports its efficacy for obtaining bile duct access in otherwise difficult ERCP cases. The overall complication rate of 13% associated with the technique is high, though comparable to other published data. Acknowledgement that NKP may be less fruitful in cases of

non-stone related disease may help to guide our practice further, particularly by helping identify cases that may be more appropriate for trainees to tackle.

**REFERENCE**
1 Baillie J. *GIE* **79**(5): 2014.

**Disclosure of Interest** None Declared

## PTH-037 THE SHOCK INDEX: A NOVEL AND USEFUL PREDICTOR OF MORTALITY AND MORBIDITY IN UPPER GASTROINTESTINAL BLEEDS?

N Jawad*, S Horlick, A Robbins, E Seward. *Department of Gastroenterology, University College London Hospital, London, UK*

10.1136/gutjnl-2016-312388.442

**Introduction** The aim of this study was to evaluate the usefulness of the Shock Index (heart rate/systolic blood pressure), a widely used measure of haemodynamic stability in trauma and sepsis, in triaging patients with suspected upper gastrointestinal (UGI) bleeds. Compliance with assigning Blatchford and Pre-Rockall scores, the current risk assessment scores for UGI bleeds, is poor despite being mandated by national guidelines. We therefore wished to assess whether the Shock Index, a quick and easy measure, was as accurate at triaging these patients in determining the severity of the bleed.
**Methods** Data from 46 patients who underwent oesophago-gastro-duodenoscopies (OGD) between January and October 2015 was retrospectively analysed and the Blatchford, Pre-Rockall and Shock Index scores calculated. In our cohort, 19 patients were admitted via A&E and there was only one incidence of variceal bleeding and an additional case of cirrhosis. Sensitivity and specificity were calculated and Fischer's Exact Test was performed to ascertain which of the scores was most correlated with adverse outcome (defined as needing transfusion). The cutoff point for an abnormal Shock index score was defined as >0.7, as used in the 2015 NCEPOD report.
**Results** Of the 46 patients reviewed, 17 had adverse outcomes indicating a severe UGI bleed. The Shock Index was raised in 8/17 of these patients (sensitivity 47.1%) whereas the Blatchford score was elevated (>0) in 16/17 (sensitivity 94.1%) and the Pre-Rockall score was raised (>0) in 15/17 (sensitivity 88.4%). However, of the 29 patients without a severe UGI bleed, the Shock index was <0.7 in 16/29 (specificity 55.2%) while 19/29 had a raised Blatchford score in the absence of a severe bleed (specificity 34.2%) and 17/29 had a raised Pre-Rockall (specificity 41.3%). Fischer's Exact Test showed that the Blatchford and Rockall scores were correlated with severe outcomes with p values of 0.0356 and 0.0487 respectively, the Shock Index had a p value of 0.8834 demonstrating a non significant correlation with bleed severity.
**Conclusion** The Shock Index, a novel tool to assess the severity of UGI bleeds, lacks the sensitivity of the Blatchford and Pre-Rockall scores but is a better differentiator of those with mild UGI bleeds, as reflected in its greater specificity. The 2015 NCEPOD study demonstrated a sensitivity of 64.2% for the shock index when looking at patients requiring 4 or more units of blood, suggesting that it is better at identifying more serious bleeds. The role of the shock index could be as a useful adjunct to the more widely used Blatchford and Pre-Rockall scores and have a role in stratifying patients in which these scores are raised.
**Disclosure of Interest** None Declared

## PTH-038 BOWEL SCOPE SCREENING PROGRAMME; DEPTH OF INSERTION AND COMFORT SCORES ARE RELATED TO TYPE OF ENDOSCOPE USED

R Warburton*, R Tighe. *Bowel Cancer Screening Programme, Norfolk and Norwich University Hospital, Norwich, UK*

10.1136/gutjnl-2016-312388.443

**Introduction** The Norwich Bowel Cancer Screening Centre was one of the initial pilot sites for launch of the Bowel Scope screening programme (BCSP) commencing in May 2014. Two key performance indicators of the Bowel Scope programme is the adenoma detection rate (ADR) and patient comfort scores. It has been shown previously that the depth of insertion correlates positively with the ADR.[1] Speculation has been made that the use of paediatric and slim colonoscopes allow for deeper insertion, possibly due to better comfort scores. It has also been suggested that deeper insertion may lead to higher levels of reported discomfort.
**Methods** We have analysed data on BCSS from the last 2 years derived from the Norwich Screening Centre. In total 8 different types of endoscopes were used; Olympus 240, 260, 240 imager, 260 High definition, paediatric, superslim, Pentax colonoscopes and gastroscopes. A total of 4462 procedures were performed. The procedures were stratified by type of scope used and examined for depth of insertion and comfort scores.
**Results** Procedures terminated in the splenic flexure were associated with less discomfort when compared to those terminated in the descending colon and sigmoid (mild to moderate discomfort 5.3% splenic flexure, 13.1% descending colon, 37.6% sigmoid colon). This suggests that it is discomfort that prevents deep insertion rather than deep insertion causing discomfort.

Procedures using paediatric or superslim colonoscopes have higher reported rates of no discomfort when compared to standard colonoscopes (76.8% vs 65.8%, $x^2$ =5.98, p = 0.05). Pentax gastroscopes were also reported as having better comfort scores when compared to Pentax colonoscopes (68.8% vs 63%) although this was not statistically significant, mainly due to the small numbers of procedures using gastroscopes.

Paediatric and super slim scopes are also associated with deeper insertion (42.4% to splenic flexure vs 32.8% in standard colonoscopes, $x^2$ = 5.85, p = 0.05)

**Abstract PTH-038 Table 1**

| Endoscope | Comfort Score | | | | Depth of Insertion | | |
|---|---|---|---|---|---|---|---|
| | No Discomfort | Minimal | Mild | Moderate | Sigmoid | Descending Colon | Splenic Flexure |
| Pentax Gastroscope | 68.8% | 22.4% | 7.3% | 1.6% | 3.7% | 79.5% | 16.8% |
| Poentax Colonoscope | 63.0% | 22.5% | 10.7% | 3.6% | 6.4% | 68.8% | 24.8% |
| 240 | 61.9% | 19.9% | 14.7% | 0.3% | 9.9% | 59.5% | 30.6% |
| 260 | 64.4% | 21.5% | 9.9% | 4.0% | 6.8% | 58.3% | 34.9% |
| 240 Imager | 63.3% | 20.6% | 0.9% | 0.9% | 6.1% | 55.6% | 38.2% |
| 260 High Def | 66.2% | 20.8% | 7.8% | 5.2% | 14.5% | 44.9% | 40.6% |
| Paediatric | 76.2% | 14.6% | 6.5% | 2.6% | 5.1% | 52.6% | 42.3% |
| Superslim | 77.2% | 13.8% | 6.4% | 2.6% | 5.4% | 52.1% | 42.5% |

**Conclusion** Paediatric, Pentax gastroscopes and superslim endoscopes are associated with better comfort scores and deeper insertion. Therefore they should be used routinely on the Bowel Scope Screening Programme.

## REFERENCE

1 Warburton R, Meagher U, Tighe R. Bowel Scope Screening Programme: Depth of Insertion and Withdrawal Times vs Adenoma Detection Rate. *Gut*. 2015 June;**64** (Suppl 1):A411.1–A411

**Disclosure of Interest** None Declared

## PTH-039 THE FIRST RANDOMISED CONTROLLED TRIAL OF ENDOCUFF VISION® ASSISTED COLONOSCOPY VERSUS STANDARD COLONOSCOPY FOR POLYP DETECTION IN BOWEL CANCER SCREENING PATIENTS (E-CAP STUDY)

[1,2]R Bhattacharyya*, [1]F Chedgy, [1]K Kandiah, [2]C Fogg, [2]B Higgins, [1]L Gadeke, [1]F Thursby-Pelham, [1]R Ellis, [1]P Goggin, [1]G Longcroft-Wheaton, [1]P Bhandari. *[1]Portsmouth Hospitals NHS Trust; [2]University of Portsmouth, Portsmouth, UK*

10.1136/gutjnl-2016-312388.444

**Introduction** Up to 25% polyps are missed during colonoscopy. The Endocuff Vision® is a cap with soft flexible arms that attaches to the colonoscope tip and improves views during withdrawal. We have performed the first randomised controlled trial to identify the role of Endocuff Vision® in improving polyp detection.

We aim to investigate the impact of Endocuff Vision® assisted colonoscopy on polyp detection, as compared to standard colonoscopy, in the UK Bowel Cancer Screening Programme (BCSP).

**Methods** Single centre, parallel group, randomised controlled trial. Ethics ref: 14/SC/0207. Adopted on UKCRN portfolio (ID: 16985). Patients attending for BCSP colonoscopy were stratified based on attendance for index screening colonoscopy or for polyp surveillance. Within each stratum participants were randomised to either Standard or Endocuff assisted colonoscopy. All procedures were performed by accredited BSCP endoscopists, who have carried out > 5000 colonoscopies and have caecal intubation rates of >90%.

**Results** 534 patients recruited from Sep 2014 to Sep 2015. 3 excluded due to new diagnosis of polyposis syndrome. 531 were included and randomised to the 2 study arms. No significant difference was seen between the 2 groups for the primary endpoint of number of polyps per patient.

Secondary endpoints: No significant difference was observed between the 2 groups for adenoma detection rate (ADR) or number of adenomas per patient (Table 1).

**Abstract PTH-039 Table 1**

| | Standard | Endocuff |
|---|---|---|
| No. participants | 265 | 266 |
| No. of polyps | 470 | 436 |
| Polyps/patient | 1.77 | 1.63 |
| Adenomas | 364 | 343 |
| Adenomas/patient | 1.37 | 1.28 |
| Polyp detection rate | 185/265 = 69.8% | 187/266 = 70.3% |
| Adenoma detection rate | 167/265 = 63% | 162/266 = 60.9% |
| Cancer detection rate | 15/265 = 5.7% | 14/266 = 5.3% |

No significant adverse events were encountered during the study in either arm. The cecal intubation time was not prolonged and patients did not experience any additional discomfort due to the Endocuff Vision.

**Conclusion** In the UK, bowel cancer screening is performed by highly experienced endoscopists. Our results suggest that in expert hands, ADR exceeds 60% even without Endocuff. In such settings, Endocuff Vision did not improve polyp detection rates (PDR) or ADR. However, it did not cause any adverse events, prolong procedure duration or cause additional discomfort. These data demonstrate the safety and feasibility of Endocuff.

However, no additional gain was demonstrated in expert hands.

**Disclosure of Interest** None Declared

## PTH-040 MANAGEMENT OF COMMON BILE DUCT (CBD) STONES IN PATIENTS UNFIT FOR CHOLECYSTECTOMY, DOES ELECTIVE STENT CHANGE PROGRAMME PROTECT AGAINST FURTHER BILIARY COMPLICATIONS AFTER CLEARANCE OF CBD STONES IN THIS GROUP?

[1]S Mahmood*, [2]J Krentz, [2]C Kong, [2]N Wang, [2]H Kaltsidis, [2]J Iqbal. *[1]Gastroenterology, Pennine Acute Hospitals NHS Trust; [2]Gastroenterology, University hospital of south Manchester, Manchester, UK*

10.1136/gutjnl-2016-312388.445

**Introduction** Cholecystectomy is recommended in patients with biliary ductal stones after clearing the CBD with ERCP (endoscopic retrograde Cholangiopancreatography) due to increased risk of further recurrent biliary complication if gallbladder left in situ. There are no randomised controlled trials (RCTs) to date on the post ERCP management of biliary ductal stones in patients who are deemed unfit for cholecystectomy. Practice varies amongst ERCPists from routine ERCP with regular stent changes in this group to ERCP only when there is evidence of recurrent biliary complication due to recurrent ductal stones.

**Methods** Retrospective review of ERCP database between Jan 2010 to Dec 2013 to review whether elective stent changes after CBD stone clearance offer any protection against biliary complications in patients deemed unfit for cholecystectomy.

Inclusion criteria were, index ERCP for confirmed or suspected CBD stones, complete clearance of CBD at ERCP, gall bladder in situ and patient deemed unfit for cholecystectomy.

Exclusion criteria were, gall bladder absent, patient fit for cholecystectomy but declined surgery, stricture seen at ERCP.

Complications were defined as any subsequent unplanned ERCP from their index ERCP which achieved the inclusion criteria.

**Results** A total of 1628 ERCPs in 1090 patients were reviewed. 356 patients fulfilled the inclusion criteria. 143 patients were in the regular stent change group (RSCG) and 213 patients in the non-stented group (NSG).

The number of complications episodes leading to unplanned urgent or emergency ERCPs in RSCG were 40 (28%) whilst in NSG were 22 (10%). Median time between ERCPs was 7 months for the RSCG whilst it was 9 months for the NSG.

A complete analysis of the data can be seen in the table below.

**Abstract PTH-040 Table 1**

| *Results* | RSCG | NSG |
|---|---|---|
| *Number of Patients* | 143 | 213 |
| *Male* | 64 (45%) | 95 (45%) |
| *Median ASA Score* | 2 | 2 |
| *Median Age (years)* | 81 | 72 |
| *Median follow up* | 36 months | 36 months |
| *Patients with stones in gallbladder* | 66 (46%) | 39 (18%) |
| *Unplanned urgent or emergency ERCPs* | 40 (28%) | 22 (10%) |
| *Reasons for Unplanned ERCP* | Cholangitis 23 | Cholangitis 6 |
| | Blocked Stent 9 | Choledocholithiasis |
| | Worsening Liver Function 2 | 15 |
| | Haemorrhage 1 | Acute Pancreatitis 1 |
| | Acute Pancreatitis 1 | |
| | Jaundice 4 | |
| *Median Time Between Repeat ERCP* | 7 months | 9 months |

**Conclusion** This study shows that patients who were on regular CBD stent change programme had more complications leading to unplanned ERCPs compared with patients who did not have a biliary stent placed. Therefore regular biliary stent changes in this group of patients with clear ducts offer no benefit in reducing complications. A randomised trial is needed to guide on the management of such patients

**Disclosure of Interest** None Declared

## PTH-041 PER ORAL ENDOSCOPIC MYOTOMY: FIRST UK EXPERIENCE

[1]S Gulati*, [2]A Emmanuel, [3]H Inoue, [4]T Wong, [4]J Jafari, [1]B Hayee, [2]A Haji. *[1]Gastroenterology; [2]Colorectal Surgery, King's College Hospital, London, UK; [3]Endoscopy, Showa University Hospital, Yokohama, Japan; [4]GI Physiology, Guys and St Thomas' Hospital, London, UK*

10.1136/gutjnl-2016-312388.446

**Introduction** Per-oral endoscopic myotomy (POEM) has been adopted as a minimally invasive treatment option for achalasia. The first case of POEM was performed at King's College Hospital in late 2013. Here we present our initial case series with video demonstration of technique.

**Methods** Prospective data was collected for consecutive patients undergoing POEM including demographics, procedure technique, the use of Endoluminal Functional Lumen Imaging Probe (EndoFLIP) and adverse events. Follow up data at 3 months and 12–24 months post-POEM including Eckardt scores and lower oesophageal sphincter integrated resting pressure (IRP-4s) were compared with pre-POEM findings. Post-POEM Gastro-oesophageal Reflux Health-Related Quality of Life scale (GORD-HQL) was recorded. Statistical analysis was achieved using Wilcoxon matched-pairs signed rank test.

**Results** POEM was performed in 33 patients (12 F, age 49.5 ±13.25 years). Pre-operative high-resoloution manometry confirmed type II achalasia in all patients. 19 patients had previous treatment (Botulinum n = 8, Pneumatic dilatation n = 10, Heller myotomy n = 5, POEM n = 1, >1 treatment n = 2). Median pre-POEM Eckardt Score 8, range 3–12.

Median gastric and oesophageal myotomy was 3 cm (range 2–4) and 12 cm (range 5–16) respectively with a selective circular myotomy in all cases and a posterior approach in n = 5.

There was significant reduction in post-operative Eckardt score at 3 months Median 0, range 0–6 ($p < 0.0001$) and IRP-4s ($p = 0.0078$, figs. 1 and 2). Sustained improvement in Eckardt score was observed at 12–24 months post-POEM ($p = 0.0005$). One patient required revision of POEM at 6 months.

EndoFLIP

Intra-operative EndoFLIP measurements before and after myotomy have been implemented to aid confirmation of adequate myotomy (Figure 3).

Adverse Events

One patient underwent single clip displacement and was replaced at gastroscopy day 1 post POEM. There were no cases of perforation, infection or major bleeding.

Gastro-oesophageal reflux

Post-POEM GORD-HQL score was collected in 26 patients with a median score of 2.5, range 0–31. Two cases of reflux (positive 24 hr pH at 3 months) were identified and successfully managed with maintenance proton pump inhibitor.

**Conclusion** POEM was performed successfully in 33 patients in whom 57.5% had prior endoscopic or surgical treatment representing a potentially more challenging patient population. This study is in line with international consortia and ASGE findings[1] that POEM is a safe and efficacious procedure for the treatment of achalasia for both short term and sustained symptomatic benefit.

### REFERENCE

1 Stavropoulos S, Desilets D, Fuchs KH *et al*; Per-oral endoscopic myotomy white paper summary; *Gastrointestinal Endoscopy.* 2014;**1**:1–15.

**Disclosure of Interest** None Declared

**Abstract PTH-041 Figure 1**

## PTH-042 A FEASIBILITY, PILOT STUDY OF ENDOSCOPIC ULTRASOUND GUIDED SOLID GOLD MARKER FIDUCIAL PLACEMENT IN OESOPHAGEAL CANCER IN RADIOTHERAPY PLANNING

[1]S Paterson*, [2]D McIntosh, [2]D Grose, [2]V MacLaren, [3]AJ Stanley. [1]*Department of Gastroenterology, Forth Valley Royal Hospital, Larbert*; [2]*Beatson Oncology Centre*; [3]*Department of Gastroenterology, Glasgow Royal Infirmary, Glasgow, UK*

10.1136/gutjnl-2016-312388.447

**Introduction** There have been several different methods proposed for image guided radiotherapy in oesophageal cancer patients. One method described recently has been a fiducial solid gold marker sited under direct EUS guidance.[1]

**Methods** This was a single centre, prospective, feasibility pilot study in a tertiary care cancer centre in Glasgow. Patients with oesophageal cancer, in whom radiotherapy was being planned between October 2015 and February 2016, underwent EUS to place solid gold fiducial markers of length 5 mm. 4 of these fiducials, in a new multi-fiducial delivery system (Cook®) with a 22 g delivery needle, were inserted through the channel of a linear EUS scope. The needle was inserted into the tumour and fiducials placed into the tumour under EUS guidance. 2 markers were placed at both the distal and proximal margin of the tumour where possible. The Five-point Likert scale[2] was used to determine technical outcomes from EUS placement at both EUS and planning CT. Median Likert scores are reported. Time to place the fiducial at time of EUS and any complications were recorded.

**Results** A total of 25 fiducials have been placed in 7 patients. In 2 patients the tumour limited the passage of the EUS scope distally; therefore only proximal placement of the fiducials was undertaken. The median EUS accuracy of fiducial placement was within 5 mm from the outer rim of the target (Likert 2) and fiducials were deployed with minimal difficulty (Likert 2). The needle was clearly seen and easy to distinguish from surrounding tissue (Likert 1) and the fiducial markers were easy to see with minimal adjustments to the scope (Likert2). Mean time for fiducial deployment at EUS was 345 seconds. Mean time from EUS to planning CT scan was 28 days. At the planning CT fiducials were visualised in the tumour region in 6 of 7 patients. In these 6 patients they were visible in the tumour areas where placement was undertaken. The total number of fiducials identified was 15 out of 25 sited and they were easy to distinguish from surrounding tissue (Likert 2). There have been no complications reported.

**Conclusion** EUS guided solid gold marker fiducial deployment is safe and feasible in patients with oesophageal cancer. There appears to be good correlation between fiducial position at EUS and subsequent radiotherapy planning CT. This may help to better target radiotherapy delivery.

### REFERENCES

1 Endoscopy/EUS-guided fiducial marker placement in patients with esophageal cancer. *GastrointestEndosc*. 2015 Oct;**82**(4):641–9. doi:10.1016/j.gie.2015.03.1972.
2 Evaluation of a new endoscopic ultrasound-guided multi-fiducial delivery system: *Digestive Endoscopy*, **25**:615–621. doi:10.1111/den.12046

**Disclosure of Interest** None Declared

## PTH-043 A COMPARATIVE STUDY OF RISK ASSESSMENT SCORES FOR ACUTE UPPER GI BLEEDS, IN PREDICTING NEED & TIME FOR INTERVENTION

[1]SAA Gardezi*, [1]C Tibbatts, [2]A Foliaki, [1]L Chase. [1]*Gastroenterology*; [2]*Upper GI surgery, Cardiff & Vale University health board, Cardiff, UK*

10.1136/gutjnl-2016-312388.448

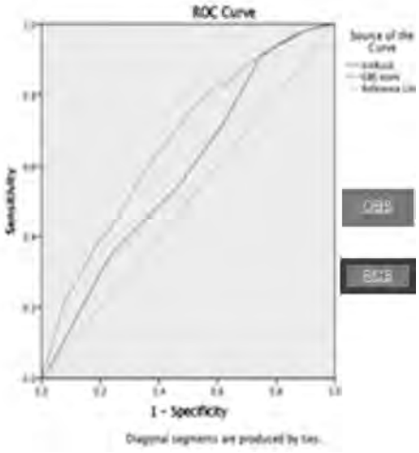
**Introduction** While managing patients with acute upper GI bleed (AUGIB) a simple numerical score can be helpful to identify high risk groups & need for intervention as recommended by NICE.Recent NCEPOD report for AUGIB reported that only 32% patients had a Pre-endoscopy risk assessment performed. Two commonly used scoring systems in UK are GBS (Glasgow Blatchford score) and RCS (Rockall score). Recent comparisons have shown that the GBS was superior in identifying need for hospital-based intervention[1] while RCS was better in predicting mortality.[2]

**Methods** We conducted a retrospective study of 893 patients, admitted to the hospital and treated in endoscopy unit of Cardiff & Vale health board between September 2010 to

Time to scope vs outcome in high risk group

| Hours to OGD | Patients with GBS>10 (362) | | |
|---|---|---|---|
| | Total | Ther Intervention | Died |
| >24 hours | 240 | 61 (25.4%) | 45(18.75%) |
| 6-24 Hours | 108 | 52 (48.1%) | 8 (7.4%) |
| <6 hours | 14 | 8 (57.14%) | 4 (28%) |

GBS vs RCS for intervention




**Abstract PTH-043 Figure 1**

September 2013 with AUGIB. We calculated the GBS and pre & post endoscopy RCS for each and compared several outcomes.

**Results** Overall, GI bleed related mortality was only 3.1% in our study, with chronic liver disease being one of the main risk factor. GBS was superior in identifying patients suitable for safe discharge with outpatient management. The GBS was also better at predicting the need for endoscopic intervention. Our study also found that very early endoscopy (ie < 6 hours) compared to rapid endoscopy (6–24 hours), did not improve survival in the highest risk patients (ie GBS > 10), and in fact had a significantly worse mortality rate of 28% versus 7.4% .

**Conclusion** The GBS score is superior to the pre-endoscopy Rockall in rationalising need & timeliness of intervention. The post-Rockall score is shown to be the better predictor of mortality. This study also reinforced the importance of access to rapid endoscopic intervention within 24 hours, but did not demonstrate the need for very early gastroscopy.


**REFERENCES**

1 Camellini L, *et al*. *Dig Liver Dis*. 2004;**36**(4):271–7.
2 Rockall TA, *et.al*. *Gut*. 1996;**38**(3):316–21.


**Disclosure of Interest** None Declared

## PTH-044 THE NATIONAL ENDOSCOPY DATABASE (NED) PROJECT


[1]TJW Lee*, [2]L Macdougall, [3]R Broughton, [4]P Rogers, [2]M Rutter. *[1]Gastroenterology, Northumbria Healthcare, Newcastle-upon-tyne; [2]Gastroenterology, North Tees and Hartlepool Hospitals, Stockton upon tees; [3]Royal College of Physicians, London; [4]Weblogik, Ipswich, UK*


10.1136/gutjnl-2016-312388.449

**Introduction** The UK National Endoscopy Database (NED) Project will enable prospective automatic data collection from endoscopy reporting systems in individual hospitals to a national database. Comprehensive national endoscopy data is vital for quality assurance, benchmarking, audit and research. Once fully deployed NED will accept 1 million procedures per year from over 300 hospitals.

**Methods** The National Endoscopy Database is based on the successful JAG Endoscopy Training System (JETS). It has been developed to gather data for calculation of key performance indicators (KPIs) for OGD, flexible sigmoidoscopy, colonoscopy and ERCP. All the major endoscopy reporting system (ERS) manufacturers have engaged with the project and are modifying their systems to allow a mandatory minimum dataset to be automatically uploaded to a central database. The new data schema terms are based on MST 3.0 allowing mapping to a standardised terminology.

**Results** Testing of the upload methodology has demonstrated it is secure, robust, scalable and accurate. To date, two of the major ERS manufacturers have implemented NED compatible software at designated pilot sites. Pilot testing is ongoing. Further roll out and pilot testing is planned over forthcoming months.

**Conclusion** Initial results from the NED project demonstrate that the proposed upload methodology is reliable and accurate.

Modifications to existing ERS are currently being performed by all major manufacturers and testing of uploading real time clinical data underway.

The ability to centrally collect endoscopy performance data will be an invaluable tool for monitoring and improving endoscopy quality and will provide a platform for endoscopy research.

**Disclosure of Interest** None Declared

## PTH-045 DO NON-TARGETED GASTRIC BIOPSIES AFFECT PATIENT MANAGEMENT, AND CAN EDUCATION AND PROTOCOL REDUCE THE RATE OF NON-TARGETED BIOPSIES?


V Gibson*, S Needham, M Nayar, N Thompson. *Newcastle Hospitals NHS Trust, Newcastle upon Tyne, UK*


10.1136/gutjnl-2016-312388.450

**Introduction** We have previously shown that non-targeted gastric biopsies seldom contributed to patient management. We developed a local protocol for indications for gastric biopsy, which was distributed to endoscopy theatres trust-wide, and provided education via presentation of results, followed by re-audit.

**Methods** We retrospectively analysed all gastric biopsies taken within a 3 month period in 2015, across 2 sites within Newcastle, using our histopathology and endoscopy databases. This included patient demographics, endoscopy findings, grade of endoscopist, biopsy result, and whether urease-based Helicobacter test (UBHT) was performed and the outcome. We accessed patients electronic medical records to determine whether the result of the biopsy altered diagnosis or management. We compared this to the results from our identical audit undertaken in 2013. A targeted biopsy was defined as the presence at OGD of a polyp, ulcer or any other lesion. Non-targeted biopsy was any other appearance, including gastritis. The cost of a biopsy included manpower and histopathology processing costs. We looked separately at the cost of UBHT testing plus forceps use.

**Results** The table below compares outcomes for the 2 cycles of audit. $\chi^2$testing showed a significant reduction in the proportion of non targeted biopsies from 2013 to 2015 ($p = 0.001$).

**Abstract PTH-045 Table 1**

| | 2015 | 2013 |
|---|---|---|
| No. of endoscopies | 2244 | 2265 |
| No. of patients undergoing biopsy | 317 | 408 |
| Biopsy rate | 14.8% | 18.5% |
| % targeted biopsies | 8.2% (n = 183) | 8.0% (n = 181) |
| % non targeted biopsies | 6.7% (n = 150) | 10.5% (n = 238) |

Of non-targeted biopsies in 2015, 0.07% (n = 1) showed lymphoma in a patient under surveillance. In 2013, 0.8% (n = 2) revealed adenocarcinoma; both biopsies from the same patient under surveillance for gastric carcinoma. No other serious diagnosis was made. Of non-targeted biopsies in 2013, 94% (n = 223) had no management alteration based on histology compared with 90% (n = 135) in 2015. Aside from patients under cancer surveillance, histology results leading to management alteration were based on presence of Helicobacter. The proportion of non targeted biopsies taken

by nurse endoscopists reduced from 55% to 43%, and by SpRs, 44% to 28%. The development of a protocol appears to have led to a 36% reduction in non-targeted biopsies. This results in an annual saving of £36,432 (assuming single biopsy set cost of £103.51).

**Conclusion** The majority of non-targeted gastric biopsies taken for histology do not contribute to the management of patients who are not under cancer surveillance. Limiting these biopsies can save significant resources. Education techniques with use of protocol can safely reduce the numbers of non-targeted biopsies. Reinforcement of this message would be expected to further reduce the rate of non-targeted biopsies.

**Disclosure of Interest** None Declared

## PTH-045a THE ACCURACY OF WAVSTAT VERSION 4 OPTICAL BIOPSY FORCEPS IN CHARACTERISING COLORECTAL POLYPS LESS 10 MM: A PROSPECTIVE BLINDED STUDY

[1]N Mohammed*, [1]R Sood, [1]SV Venkatachalapathy, [1]F Abid, [1]N Burr, [2]J Meadows, [3]J Carbonell, [1]P Luthra, [4]O Rotimi, [1,5]V Subramanian. *[1]Gastroenterology; [2]Advanced nurse practitioner; [3]Clinical research nurse; [4]Histopathology, Leeds Teaching Hospitals NHS Trust; [5]Molecular Gastroenterology, Leeds Institute of Biomedical and Clinical Sciences, University of Leeds, Leeds, UK*

10.1136/gutjnl-2016-312388.451

**Introduction** WavSTAT version 4 is an optical biopsy system designed for prediction of histology based on laser induced autofluorescence spectroscopy. The primary aim of this study was to demonstrate the accuracy of WavSTAT4 in characterising colorectal polyps <10 mm. The secondary aim was to compare the real time diagnostic performance of WavSTAT4 with NBI and a combination of endoscopic and WavSTAT assessments.

**Methods** Adult patients referred for lower gastrointestinal endoscopy were included in the study. Patients with inflammatory bowel disease or colorectal cancer were excluded. Polyps sized <10 mm were assessed in real time by high definition white light, NBI and WavSTAT4 optical biopsy forceps. Histopathological specimens were read separately by two expert GI pathologists blinded to the results of the NBI and WavSTAT assessments.

**Abstract PTH-045a Table 1** Diagnostic performance of WavSTAT4, Endosocpic assessment and combined alogithmic assessment for characterisation of colorectal poylps < 10 mm and prediction of surveillance intervals

| | WavSTAT alone | WLE+NBI assessment | Combination of WavSTAT + endoscopic assessment (algorithmic approach) |
|---|---|---|---|
| Sensitivity | 97.6% | 85.0% | 95.8% |
| Specificity | 46.9% | 77.2% | 78% |
| NPV | 96.8% | 91% | 98.5% |
| PPV | 54.7% | 66% | 89.3% |
| Surveillance interval (% of patients coded correctly) | 81.2% | 97% | 100% |
| Surveillance interval (% of patients called earlier) | 18.8% | 3% | 0% |

**Results** 156 polyps were found in 70 patients (Males-44, females-27, average age 65). After applying exclusion criteria a total of 126 polyps <10 mm were included in the analysis.

Wavstat4 had a NPV of 96.8% but lacked specificity. Endoscopic assessment had a NPV of 91% and was more specific. Since the specificity of WavSTAT was poor mainly for hyperplastic recto-sigmoid polyps we evaluated an algorithmic approach where we classified the polyps according to the WavSTAT4 result when proximal to the recto-sigmoid junction. We classed them according to the endoscopic classification if WavSTAT4 predicted an adenomatous polyp in the recto-sigmoid area.

This combined algorithmic approach met the PIVI thresholds and had a NPV of 95.8% and predicted 100% of surveillance intervals correctly.

**Conclusion** WavSTAT version 4 has a high NPV for characterising colorectal polyps less than 10 mm in size but only predicts surveillance intervals correctly in 81.2% of patients. . An algorithmic approach combining Wavstat4 and endoscopic assessment had a high NPV with accurate prediction of surveillance intervals.

**Disclosure of Interest** None Declared

## PTH-046 COMPARISON OF OUTCOMES OF CO-THERAPY ALLOPURINOL WITH LOW DOSE THIOPURINES WITH AND WITHOUT METABOLITE PROFILING IN INFLAMMATORY BOWEL DISEASE

[1]A Taylor Gonzalez, [2]P Kerr, [1]A Ansari*. *[1]Gastroenterology, Surrey and Sussex Healthcare NHS Trust; [2]East Surrey Commissioning Group, Redhill, UK*

10.1136/gutjnl-2016-312388.452

**Introduction** Failure of Thiopurine (TP) therapy could be said to be the gatekeeper to unwanted outcomes in Inflammatory Bowel Disease (IBD) as it often leads to treatment with costlier anti-TNF's, higher steroid use and hospitalisations that could be reduced by improvement of response to TP therapy. Current use of low-dose Azathioprine (AZA) or 6 mercaptopurine (6 MP) with allopurinol (LDAA) has restricted its use to a patient group with a selected TP metabolite profiles: 15% of TP non-responders and 50% of hepatotoxic patients. A review of current literature of LDAA in IBD will be compared to our own experiences at East Surrey Hospital (ESH) where metabolite profiling is not used to assess differences in outcomes.

**Methods** A search of MEDLINE and EMBASE between January 2010 and February 2014 was performed to yield investigations of treatment with LDAA in IBD. Studies and participant numbers that use metabolite profiling prior to treatment with LDAA will be compared by response rates (achievement of steroid free remission (SFR)), to studies that use LDAA treatment without metabolite profiling. Only studies with robust numbers of participants will be considered in this preliminary investigation.

**Results** Searches identified 27 studies (14 complete papers, 8 abstracts, 5 case reports) of LDAA co-therapy. In total, 244 IBD patients came from studies that restricted use of LDAA co-therapy by metabolite profiling. The two largest studies Smith et al. 2012 JCC (n = 110) and Hoentjen et al. 2013 IBD (n = 77) showed SFR rates of 76% and 65% respectively. 368 patients were treated with LDAA without metabolite profiling allowing universal access where TP's are

clinically indicated. The largest study came from ESR Stamoulos et al. 2011 Gut (n = 300), and saw comparable SFR rates of 70%, comparable rates were also seen in smaller studies.
**Conclusion** Metabolite profiling creates an unnecessary barrier to treatment with LDAA. SFR rates appear comparable between the two groups, thus drawing in to question the utility of this selection tool. Data from ESR suggests that a majority proportion of patients with the potential to benefit from LDAA (approximately 59%) will be screened out and moved to alternative costlier treatment pathways on the NHS. A paradigm shift in thinking is necessary to address the compulsion of metabolite profiling prior to LDAA therapy and whether it offers any true benefit for the patient; our experience suggests perhaps not and warrants further investigation.
**Disclosure of Interest** None Declared

## PTH-047 THE EFFECT OF PATIENT'S LEVEL OF ANXIETY AND KNOWLEDGE ON THEIR EXPERIENCE OF COLONOSCOPY: A QUESTIONNAIRE SURVEY

NTV Hoang, AA Soubières*, A Poullis. *gastroenterology, St George's Hospital, London, UK*

10.1136/gutjnl-2016-312388.453

**Introduction** This was a descriptive study on how patient's pre-procedure anxiety and understanding affect experience and post procedural satisfaction of colonoscopy. Colorectal cancer is the fourth leading cancer in the UK in terms of incidence accounting for 33,765 new cases in 2013. Colonoscopy plays a major role in the prevention and management of colorectal cancer. However, patient uptake of colonoscopy has been shown to be adversely affected by anxiety and lack of knowledge. Post procedure satisfaction which can affect compliance to treatment, has been shown to be affected adversely by procedure discomfort and long wait times.The bowel cancer-screening programme (BCSP) aims to detect bowel cancer at an early stage where treatment is most likely to be effective. Patients are offered a colonoscopy after positive faecal occult blood testing. Prior to the procedure they are seen by a specialist nurse, and during a lengthy consultation the risks and benefits of the procedure are explained.Symptomatic patients referred from clinic will not receive such an in depth discussion regarding the procedure, although this may vary from physician to physician.Patients undergoing surveillance colonoscopy (previous polyps, family history, inflammatory bowel disease) may undergo no further discussion prior to their repeat procedure.
**Methods** Over a month period (June 2015), patients undergoing colonoscopy at the Endoscopy Unit of St. George's Hospital were identified. They were asked to complete a questionnaire before and after their procedure.

Questions were asked to gather data on: patient demographics, purpose of having colonoscopy, patient's awareness of the benefits and risks of the procedure, level of anxiety and level of satisfaction following their colonoscopy.
**Results** 133 patients participated in the study. 71 patients were male. The mean age was 62.3 years (range of 22–83 years). 43 patients were invited as part of the BCSP, 49 were symptomatic from clinic and 41 were undergoing surveillance. Patients invited through the BCSP had the highest rate of awareness of the benefits at 76.7%. Symptomatic patients from clinic had the lowest rate of awareness of benefit at 53.1%. In contrast, the symptomatic patients had the highest understanding of risks at 67.3% compared with the lowest rate of 60.5% in the BCSP group. 96% of the referral group reported a low level of anxiety compared with 88.4% of the BCSP group. 73.1% of patients in the surveillance group reported no or mild discomfort. 68% of the BCS group reported no or mild discomfort BCS group with 68.9%. The referral group recorded the highest level of moderate to severe discomfort at 36.8% There was a high level of procedure satisfaction with 92% recorded in the surveillance group, 86% in the BCSP group and 94% in the referred group. 85% of the surveillance and 79% of the BCSP group were happy to have the procedure with a slightly lower rate of 75% of the referral group. 8.2% of the referral group would prefer to avoid a repeat procedure compared with whereas the rate were 7.3% of the surveillance group and 4.6% of the BCSP group.
**Conclusion** Colonoscopy remains the most accurate tool in diagnosing and managing bowel disease. The BCSP can help to significantly reduce morbidity and mortality from CRC. However, patient uptake of colonoscopy can be adversely affected for a number of reasons. Our study emphasised the importance of explaining the benefits and risks of colonoscopy, to reduce pre-procedural anxiety in an attempt to improve patient satisfaction and further compliance.
**Disclosure of Interest** None Declared

## PTH-048 TOWARDS UNDERSTANDING PSYCHOLOGICAL DISTRESS IN INFLAMMATORY BOWEL DISEASE: A QUALITATIVE STUDY OF PATIENTS AND HEALTHCARE PROFESSIONALS

[1]A Fischer*, [2]P Irving, [1]R Moss-Morris, [1]LD Hughes. *[1]Health Psychology, King's College London; [2]Department of Gastroenterology, St Thomas' Hospital, London, UK*

10.1136/gutjnl-2016-312388.454

**Introduction** Inflammatory Bowel Diseases (IBD) are chronic inflammatory autoimmune conditions resulting in sickness, diarrhoea, weight loss, abdominal pain and fatigue. Depression and anxiety are high at 21% and 41% respectively resulting in further reduced quality of life. However, most IBD services do not have access to psychological support or dedicated resources for distress. This study aimed to identify modifiable factors associated with the occurrence of distress in IBD to inform a guided self-management intervention.
**Methods** Semi-structured interviews were carried out with 29 people with IBD (pwIBD) and twelve healthcare professionals. Interviews were audio-recorded and transcribed verbatim. Data were analysed using thematic analysis with elements of grounded theory.
**Results** A model of factors identified by pwIBD contributing to distress was developed. Themes included; symptoms which can be embarrassing and uncontrollable during flares; unpredictability and progression of IBD, creating uncertainty for the future; social factors including lack of understanding and the negative impact on social relationships; navigating the healthcare system; medical procedures which can be unpleasant and invasive. Some themes were also recognised as being potential buffers to distress such as having good social support and healthcare staff. Healthcare professionals acknowledged their role in holistic care but cited a lack of knowledge and resources to adequately promote psychological support.

**Conclusion** PwIBD identified areas acting as potential promoters and buffers to distress in IBD which were mostly supported by healthcare professionals. The results were used to inform the content of a self-management intervention targeting psychological distress. Further we seek to develop guidelines for the successful introduction of the intervention into the NHS standard care.

**Disclosure of Interest** None Declared

## PTH-049 SUCCESSFUL REVERSAL OF HIGH TITRE ANTIBODIES TO INFLIXIMAB AND ADALIMUMAB WITH THE ADDITION OF IMMUNOMODULATOR THERAPY

[1]A Bond*, [1]K Clark, [1]B Gregg, [1]P Collins, [1]M Dibb, [1,2]C Probert, [1]S Subramanian. [1]*Gastroenterology, Royal Liverpool and Broadgreen University Hospital Trust*; [2]*Gastroenterology, Translational Medicine, University of Liverpool, Liverpool, UK*

10.1136/gutjnl-2016-312388.455

**Introduction** Immunogenicity is a common problem associated with anti-tumour necrosis factor (TNF) therapy and is often associated with loss of clinical response. Concomitant immunomodulatory therapy reduces the rate of anti-drug antibody (ADA) formation with infliximab and is associated with better outcomes.[1] However, the impact of immunomodulator initiation specifically to reverse established ADA has not been adequately investigated. Current guidelines recommend switching of anti-TNF agent or class switch in the presence of ADA titre >9 u/ml. However, outcomes with further biologics are poor and reversal of ADA may be preferable. We report the successful reversal of very high titre ADA with immunomodulator initiation.

**Methods** This was a retrospective study of patients with established ADA on infliximab or adalimumab monotherapy, in whom an immunomodulator was commenced. Levels of ADA and trough levels of drug were monitored by ELISA (Theradiag).

**Results** Four patients were included (3 Crohn's disease and 1 ulcerative colitis), of which two patients were receiving infliximab and 2 adalimumab. There were 3 males and 1 female with a mean age of 50 years (SD ±17.6). All patients had initial titres of ADA > 200 ng/ml for infliximab and >160 ng/ml for adalimumab, with undetectable trough levels (<0.1 μg/ml). Three patients were treated with thiopurines and one with methotrexate. Three patients (2 thiopurines, 1 methotrexate) had successful reversal of antibodies accompanied by an increase in trough levels and clinical improvement. One infliximab and one adalimumab patient also had dose escalation after reversal of ADA to achieve therapeutic drug concentration. One patient who achieved reversal stopped their thiopurine due to side effects and had recurrence of ADA and a subsequent loss of response.

**Conclusion** In patients undergoing monotherapy with anti-TNF treatment who develop ADA, the addition of an immunomodulator agent has the potential to reverse even high antibody titres and regain clinical response. This strategy is particularly useful as the risk of ADA with a subsequent anti-TNF is higher in patients with ADA to one anti-TNF agent[2].

### REFERENCES

1 Ruffolo C, Scarpa M, Bassi N. Infliximab, azathioprine, or combination therapy for Crohn's disease. *N Engl J Med* 2010;**363**:1086–8. doi:10.1056/NEJMoa0904492

2 Frederiksen MT, Ainsworth MA, Brynskov J, Thomsen OO, Bendtzen K SC. Antibodies against infliximab are associated with de novo development of antibodies to adalimumab and therapeutic failure in infliximab-to-adalimumab switchers with IBD. *Inflamm Bowel Dis* 2014;**20**:1714–21.

**Disclosure of Interest** None Declared

## PTH-050 SHOULD THE CUT OFF VALUES OF FAECAL CALPROTECTIN FOR INITIATING FURTHER INVESTIGATIONS BE HIGHER THAN CURRENT PRACTICE?

A Mukhtar*, N Sivaramakrishnan, F Hassan. *Dewsbury Hospital, Dewsbury, UK*

10.1136/gutjnl-2016-312388.456

**Introduction** Faecal calprotectin (FC) is a calcium binding protein found mainly in the neutrophil cytosol. It is a non-invasive marker to differentiate between IBS and IBD and can avoid need for specialist referral or further investigations. Current cut off for the FC normal limit in initiating further investigations is 50–59 μg/g. Studies have shown low diagnostic yield of colonoscopy in patients with borderline FC (50–100 μg /g). If the current FC cut off is raised, this would prevent subjecting patients to unnecessary colonoscopies and also reduce the financial burden on the health services. The aim of the study was to determine diagnostic yield of investigations in patients presenting with new lower GIT symptoms and mildly elevated FC 100–200 μg /g to assess if it is justifiable to expose patients to colonoscopy at levels less than 200 μg /g.

**Methods** Retrospective study was conducted on 251 patients with FC more than 60μg/g from October 2014 to December 2014 in West Yorkshire. Data was collected from the biochemistry department's database in Midyorks Hospital and analysed.

**Results** 251 patients were identified with FC > 60 μg /g. Out of these, 109 patients had further investigations. 142 were not investigated due to miscellaneous reasons. Out of 109, 37 patients (33.9%) had FC between 60–100 μg /g, 27 patients (24.8%) had FC between 101–200 μg /g, 17 patients (15.6%) had FC between 201–300 μg /g and 28 (25.7%) had it between 301–1700 μg /g. In patients with FC 60–100 μg /g, only two patients (5%) had mild localised inflammation not requiring treatment. In 27 patients with FC between 101–200 μg /g, only two had findings on colonoscopy. One had rectal tumour and had initially presented with PR bleed. The other one had mild inflammation not requiring treatment.

In our study, in the group of patients between FC 200–300 μg /g, only 2/17 had findings (1 had proctitis and the other had focal active inflammation). However, in patients with FC > 300, 13 /28 (46%) were found to have abnormalities on colonoscopy (4 with colitis, 3 with ileitis, 3 had proctitis, 1 SRUS, 1 collagenous colitis and 1 focal active inflammation).

**Conclusion** In patients with FC < 200 μg /g, there was no diagnostic yield of invasive investigations like colonoscopy in the absence of any warning signs. In patients with FC 200–300 μg /g, diagnostic yield increased slightly. We recommend all patients with FC > 300 μg /g and new GIT symptoms to be referred for colonoscopy. Any figures less than that should be individually assessed for warning signs before investigating further with colonoscopy.

**REFERENCE**

1 Seenan JP, Thomson F, Smith K, Gaya DR. "Are we exposing patients with a mildly elevated faecal calprotectin to unnecessary investigations?" *Frontline Gastroenterology* 2015;**6**(3):156–160

**Disclosure of Interest** None Declared

## PTH-051 INFLUENCE OF IRON SUPPLEMENTATION ON THE NATURAL HISTORY OF COLITIS

A Mahalhal*, BJ Campbell, DM Pritchard, CS Probert. *Department of Gastroenterology, University of Liverpool/Institute of Transitional Medicine, Liverpool, UK*

10.1136/gutjnl-2016-312388.457

**Introduction** Iron deficiency anaemia is common in IBD. Iron supplementation may induce or exacerbate colitis in rats (*APT* 2001;15:1989–99).Dysbiosis of the microbiota is common in IBD and iron contributes to this as it is a growth factor for pathogenic bacteria.We investigated the effect of dietary iron supplementation and/or reduction on the severity of chronic colitis in a murine model using clinical, histological and biochemical parameters.

**Methods** Studies were performed on 6 groups of 8 wild type (WT) C57BL/6 mice.Chronic colitis was induced with 1.25% Dextran Sodium Sulphate (DSS) for 5 days,followed by16 further days on water [for 3 consecutive cycles]. DSS-treated mice were fed one of three diets:low iron [LI] (100 ppm), normal iron [NI] (200 ppm) and high iron[HI] (400 ppm) supplemented chow. Also, 3 non-DSS-treated groups were studied and fed similarly. Half of the mice in each control group were treated with 1 cycle of acute 2% DSS for 5 days at day 53, followed by 5 further days on water. All mice were sacrificed at day 63. Daily weights and clinical features were recorded. Histological colitis was scored using the Bauer score(*Gut* 2010; 59:1192–99).Faecal calprotectin was measured by ELISA and faecal iron by immunoassay at various time points [day (d) 1, 21, 42 & 63]. Statistical analyses used the Kruskal–Wallis test with post-hoc analysis.

**Results** Oral DSS administration induced colitis in all treated mice. While chronic DSS colitis was not associated with weight loss, there was severe weight loss in acute DSS mice which was greatest in the low iron diet group ($p = 0.001$ LI vs. HI; $p = 0.01$ for LI vs. NI). Histologically, the colitis features were more prominent in acute DSS-treated mice ingesting low and high iron diets, with median colitis scores 6 & 5.5 respectively.Cyclic administration of DSS in drinking water resulted in a significant rise in faecal calprotectin, from baseline to d63 in LI ($p = 0.05$) and for HI ($p = 0.01$), but this was not significant in the NI group. In acute DSS, the rise was greater in LI and HI ($p = 0.001$) and less in NI ($p = 0.01$).Total faecal iron was increased in a dose-dependent manner within 9 weeks in all non-DSS groups. Nevertheless, in chronic DSS groups, $p = 0.001$ at d1 vs. d63 for all groups [382% change for LI, 331% for NI and 355% for HI].However, in acute DSS $p = 0.05$ for LI, $p = 0.001$ NI & HI (d1 vs. d10).

**Conclusion** Changes in nutritional luminal iron exacerbate colitis.Oral administration of DSS causes a reproducible acute colitis, followed by a slow recovery phase with a concomitant chronic inflammation. Chronic colitis was worse in mice fed low or high iron diets, as shown by elevated calprotectin. Faecal iron rose equally in all 3 groups: with iron increases likely arising from diet and bleeding during colitis. Dysbiosis may be a consequence of this change in luminal iron.

**Disclosure of Interest** None Declared

## PTH-052 EFFICACY OF VEDOLIZUMAB WITH AND WITHOUT CONTINUED IMMUNOSUPPRESSANT USE IN GEMINI 1 AND GEMINI 2

[1]B Feagan, [2]C Siegel, [3]G Melmed, [4]K Isaacs, [5]K Lasch, [6]M Rosario, [7]A James*, [7]B Abhyankar. *[1]Robarts Clinical Trials, Robarts Research Institute, University of Western Ontario, London, Canada; [2]Dartmouth-Hitchcock Medical Centre, Hanover; [3]Cedars-Sinai Medical Centre, Los Angeles; [4]UNC School of Medicine, Chapel Hill; [5]Takeda Pharmaceuticals International Inc, Deerfield; [6]Takeda Pharmaceuticals International Co, Cambridge, United States; [7]Takeda Development Centre Europe Ltd, London, UK*

10.1136/gutjnl-2016-312388.458

**Introduction** In GEMINI 1 and GEMINI 2, vedolizumab (VDZ) was safe and effective in patients (pts) with ulcerative colitis (UC) or Crohn's disease (CD), respectively, on stable doses of immunosuppressants (IS).[1,2] The effect of discontinuing IS in pts who responded to VDZ induction therapy in these studies has not been characterised.

**Methods** Pts who responded to VDZ at week (wk) 6 were re-randomised to placebo (VDZ/PBO) or VDZ every 4 or 8 wks (VDZ/VDZ Q4W or Q8W) for 46 wks. At United States (US) sites, re-randomised pts discontinued IS use at wk 6. At non-US sites, pts could continue IS use. Efficacy, VDZ serum concentration, and immunogenicity data (via an enzyme-linked immunosorbent assay) were evaluated post hoc in pts with baseline IS use stratified by region.

**Results** At wk 52, rates of clinical remission and response (**Table**), mucosal healing (UC), durable clinical remission, and corticosteroid-free remission were numerically higher with VDZ, mostly irrespective of IS use. The US and non-US sites had similar numbers of patients who were positive for anti-VDZ antibodies during VD maintenance therapy (**Table**). Mean trough concentrations were similar between US and non- US pts at wk 46.

**Abstract PTH-052 Table 1** Maintenance VDZ with and without continued IS use

| | UC | | CD | |
|---|---|---|---|---|
| | US (Discontinued IS) | Non-US (Continued IS) | US (Discontinued IS) | Non-US (Continued IS) |
| | VDZ/PBO n = 10; VDZ/VDZ n = 18 | VDZ/PBO n = 41; VDZ/VDZ n = 70 | VDZ/PBO n = 5; VDZ/VDZ n = 9 | VDZ/PBO n = 44; VDZ/VDZ n = 94 |
| **Efficacy endpoints** | **% Difference from PBO (95% CI) at wk 52** | | | |
| Clinical remission[a] | 28.9 (-10.5, 63.3) | 25.2 (8.0, 42.4) | 4.4 (-49.6, 54.7) | 17.3 (0.4, 34.1) |
| Clinical response[b] | 18.9 (-20.8, 54.7) | 35.0 (17.1, 52.9) | 15.6 (-39.9, 63.8) | 17.7 (0.2, 35.3) |
| **Immunogenicity** | **No. of pts with ≥1 positive sample** | | | |
| VDZ/PBO | 3 | 1 | 1 | 4 |
| VDZ/VDZ | 1 | 2 | 0 | 0 |

a UC: complete Mayo score of ≤2 and no individual subscore > 1. CD: CD Activity Index (CDAI) score ≤150.
b UC: durable clinical response is a reduction in complete Mayo score of ≥3 and ≥30% from wk 0 with a decrease in rectal bleeding subscore (RBS) of ≥1 or absolute RBS of ≤1 at wks 6 and 52. CD: enhanced clinical response is a ≥100-point reduction in CDAI score from wk 0.

**Conclusion** Discontinuing IS did not appear to substantially affect efficacy of VDZ maintenance therapy. Interpretation of

these post hoc analyses is limited by potential IS discontinuation in non-US pts and the relatively small sample sizes.


**REFERENCES**

1 Feagan BG, *et al*. *N Engl J Med*. 2013;**369**:699-710; NCT00783718.
2 Sandborn WJ, *et al*. *N Engl J Med*. 2013;**369**:711-721; NCT00783692.


**Disclosure of Interest** B. Feagan Grant/research support from: Abbott/AbbVie, Amgen, AstraZeneca, Bristol-Myers Squibb (BMS), Janssen Biotech (Centocor), JnJ/Janssen, Roche/Genentech, Millennium, Pfizer, Receptos, Santarus, Sanofi, Tillotts, UCB Pharma, Consultant for: Abbott/AbbVie, Actogenix, Albireo Pharma, Amgen, AstraZeneca, Avaxia Biologics Inc., Avir Pharma, Axcan, Baxter Healthcare Corp., Biogen Idec, Boehringer-Ingelheim, Bristol-Myers Squibb, Calypso Biotech, Celgene, Elan/Biogen, EnGene, Ferring Pharma, Roche/Genentech, GiCare Pharma, Gilead, Given Imaging Inc., GSK, Ironwood Pharma, Janssen Biotech (Centocor), JnJ/Janssen, Kyowa Kakko Kirin Co Ltd., Lexicon, Lilly, Merck, Millennium, Nektar, Novartis, Novo Nordisk, Pfizer, Prometheus Therapeutics and Diagnostics, Protagonist, Receptos, Salix Pharma, Serono, Shire, Sigmoid Pharma, Synergy Pharma Inc., Takeda, Teva Pharma, TiGenix, Tillotts, UCB Pharma, Vertex Pharma, Warner-Chilcott, Wyeth, Zealand, Zyngenia, Speaker bureau with: Abbott/AbbVie, JnJ/Janssen, Takeda, Warner-Chilcott, UCB Pharma, Conflict with: Directorship as CEO and Senior Scientific Director, Robarts Clinical Trials Inc, Western University, London, Ontario, C. Siegel Grant/research support from: AbbVie, Janssen, Salix, Takeda, UCB, Consultant for: AbbVie, Amgen, Janssen, Lilly, Pfizer, Takeda, UCB, Speaker bureau with: AbbVie, Janssen, Takeda, G. Melmed Grant/research support from: Prometheus Labs, Consultant for: AbbVie, Celgene, Genentech, Given Imaging, Janssen, Luitpold, Takeda, UCB, K. Isaacs Grant/research support from: AbbVie, Given Imaging, Janssen, Luitpold, Pfizer, Takeda, and UCB, K. Lasch Employee of: Takeda Pharmaceuticals U.S.A., Inc., Deerfield, IL, USA, M. Rosario Employee of: Takeda Pharmaceuticals U.S.A., Inc., Deerfield, IL, USA, A. James Employee of: Takeda Development Centre Europe Ltd, London, UK, B. Abhyankar Employee of: Takeda Development Centre Europe Ltd, London, UK

## PTH-053 FACTORS INFLUENCING INFLIXIMAB AND ADALIMUMAB ANTIBODY FORMATION AND 6 MONTH RETROSPECTIVE FOLLOW-UP IN A TERTIARY IBD CENTRE


[1]BD Warner*, [1]E Johnston, [1]J Digby-Bell, [2]Z Arkir, [2]N Unsworth, [1]S Anderson, [1]J Sanderson, [1]P Irving. *[1]Gastroenterology, Guy's and St Thomas' NHS Foundation Trust; [2]Reference Chemistry, Biomedical Sciences, Viapath, St Thomas' Hospital, London, UK*


10.1136/gutjnl-2016-312388.459

**Introduction** Infliximab(IFX) and adalimumab(Ada) are established treatments for IBD.However, immunogenicity can lead to anti-drug antibodies(ADAb) which is associated with a poor clinical response.Little is known regarding the factors which influence ADAb formation or the long term outcomes.

**Methods** Patients with detectable ADAb between May 2012 and October 2014 were identified.Assays had been performed using LISA-Tracker DUO Kits which detects free drug levels (DLs) and ADAb only.Patients were analysed for disease phenotype, prior anti-TNF treatment and ADAb formation,and the use of concomitant immunomodulation(IM).

**Results** 330 IFX DLs and ADAb levels from 199 patients and 143 Ada DLs and ADAb levels from 105 patients were analysed.21 positive ADAb, 19 IFX(9.5%) and 2 Ada(1.9%), were detected with a median ADAb of 141.8 U/ml(range 11–200),all DLs were >1.0μg/ml. 47.6% were male, age range 21–84,median 33.85.7% had Crohn's Disease.In the majority of patients DL and ADAb were measured due to loss of response(66.7%). 6/19 patients who had IFX ADAb had prior exposure to IFX and 1 had prior exposure to Ada.Time to antibody detection ranged from 2–140 weeks(median 14).Of the 6 patients who had previous exposure to IFX,median time to ADAb detection was 6 weeks.Both patients who developed Ada ADAb had prior exposure to Ada,one also had prior exposure to IFX. 18/21 patients were prescribed concomitant IM(2 methotrexate, 16 thiopurines).8/16 on thiopurines had subtherapeutic TGNs(< 240 pmol/8 x$10^8$RBC).

IFX ADAb group(n = 19): 11 patients were switched to Ada, all of whom had a clinical response(mean HBI at week 26 = 2.1, no ADAb detected). 1 was switched out of class to vedolizumab and responded well. 3 stopped biologic treatment,1 patient continued on IFX at their own request and 1 patient was dose escalated but failed to respond. 2 patients had concomitant IM optimised,1 of whom on subsequent ADAb testing showed loss of ADAb.

Ada ADAb group(n = 2): 1 patient stopped anti-TNF due to recurrent infections and the other was lost to follow up.

**Conclusion** 42.9% of patients with ADAb had been exposed to anti-TNF previously,all with a gap of >6 months prior to repeat exposure suggesting this is a risk factor for earlier ADAb formation.

All patients switched to Ada from IFX responded well without developing ADAb,highlighting that switching to another anti-TNF is an acceptable option before switching out of class.

Our use of concomitant IM is high but 50% of this cohort had subtherapeutic TGNs.The 2 patients in whom a thiopurine was optimised achieved clinical remission while remaining on IFX. However the level at which TGNs should be targeted in this context is still unclear

**Disclosure of Interest** B. Warner: None Declared, E. Johnston: None Declared, J. Digby-Bell: None Declared, Z. Arkir: None Declared, N. Unsworth: None Declared, S. Anderson: None Declared, J. Sanderson: None Declared, P. Irving Grant/research support from: PI has been advisor to, in receipt of educational or research grants from, or invited lecturer for Abbvie, Falk, Ferring, Genetech, Hospira, Merck, Pharmacosmos, Shire, Takeda, Tillotts, Topivert, Vifor and Warner Chilcott, Paid instructor for: as above

## PTH-054 HOME-TESTING OF FAECAL CALPROTECTIN USING THE IBDOC™ SYSTEM: A COMPARATIVE PILOT STUDY


[1]H Parr, [1]P Pavlidis, [1]IY Liew, [1]LM Choong, [1]L Medcalf, [1]G Chung-Faye, [1]P Dubois, [2]R Sherwood, [1]B Hayee*. *[1]Gastroenterology; [2]Biochemistry, King's College Hospital, London, UK*


10.1136/gutjnl-2016-312388.460

**Introduction** Faecal calprotectin (FCAL) is a useful test for monitoring of inflammatory bowel disease (IBD) activity. Providing a stool sample in person to the hospital laboratory is an anecdotally unpopular method with poor uptake. A new FCAL kit (IBDoc™, Bühlmann Labs AG, Switzerland) enables self-testing using a proprietary collection tube, camera smartphone and app. The aim of this study was to assess patient's adherence to, and experience of, a testing regimen using

IBDoc™, as well as benchmarking the assay to the standard laboratory test.

**Methods** After focussed training, participants were asked to test using IBDoc™ once a month for four months and provide a standard stool sample which was posted to the hospital laboratory overnight and refrigerated on receipt, to be tested with standard ELISA (Bühlmann). The following questionnaires were applied before and after testing: GAD-7 (anxiety), PHQ-9 (depression), IBD-control-8, Multi-dimensional Health Locus of control (MHLC) and Cognitive Behavioural Responses to Symptoms (CBSRQ). Patients were also asked to record their experiences and preferences for testing on a proprietary questionnaire. REC reference 15/WA/0168.

**Results** 54 consecutive patients (Crohn's: 23, UC: 31, F = 28, mean age 36.0 ± 9.2 yrs) were enrolled. Participants completed a median of 3 tests (0–4) during the study with 19/54 (35%) completing all four set time points and 17/54 (32%) returning no samples, despite active reminders. There was no difference in any of the questionnaire scores between compliant and non-compliant patients.

There was moderate correlation of numerical FCAL results between the two testing methods (r = 0.77, 95%CI 0.68–0.84, p < 0.0001). Categorising results into disease activity categories (no inflammation, mild, moderate, severe) produced a similar result (weighted $\kappa$ =0.57, p < 0.0001). 63% of respondents stated a preference for IBDoc™, but stated that (in a routine clinical scenario) they would require timely contact from the hospital team in the event of an abnormal result (24–72 hours). A further 22% preferred the IBDoc™ test, but stated that they would not contact until their next scheduled appointment.

**Conclusion** There was reasonable uptake and adherence to a demanding testing regimen (more frequent testing than might be required in routine clinical care) with 85% of respondents preferring the IBDoc™ test over other methods. The home testing kit results show only moderate correlation to laboratory ELISA. While this is a promising and clearly popular technology, therefore, further studies are warranted to correlate results to clinical outcomes.

**Disclosure of Interest** None Declared

## PTH-055 ABO BLOOD GROUP-SPECIFIC IMMUNOGLOBULINS IN CROHN'S DISEASE

[1]CW-T Ting[*], [2]S Hussain, [1]S Wurie, [1]N O'Connell, [1]R Higgins, [3]D Briggs, [1]N Krishnan, [1]R Arasaradnam, [1]S Daga. *[1]UHCW, Coventry; [2]Red Cell Immunology Laboratory; [3]NHSBT, Birmingam, UK*

10.1136/gutjnl-2016-312388.461

**Introduction** The pathogenesis of Crohn's disease (CD) is complex and believed to be interplayed by genetic susceptibility, enteric microflora and tissue injury mediated by abnormal immune response. Several studies have described the association between ABO blood group, enteric microflora composition and predisposition to gastrointestinal (GI) infections. The mucosal layer of the GI tract forms the first layer of immune defenses with mucus abundant in secretory immunoglobulins, and studies have shown that non-O blood group and FUT2-determined ABO antigen non-secretor were linked to more severe CD. It was suggested that ABO antibodies are induced via an enteric route by cross-reactivity from microflora-derived molecules . However, little is known about the role of ABO antibodies in the context of CD. Therefore we assessed whether blood group-specific antibodies are implicated in CD pathogenesis.

**Methods** We compared the immunoglobulin class profile of blood group-specific antibodies in blood group A, B and O individuals. Plasma samples were collected from CD cohort (n = 45, recruited from the FaMIsHED study) with age- and gender-matched healthy donors (n = 89 data from service development study). Medications of CD cohort include none (n = 15), 5 ASA (n = 21), immunosuppressant (n = 12) and biologics (n = 10). A1rr and Brr cells were used, anti-A1 and anti-B IgG, IgA and IgM levels were measured by Relative Median Fluorescence using flow cytometry. Mann-Whitney U test was used to assess statistical significance of different antibody levels between CD and healthy cohorts.

**Results** Blood group O CD patients (n = 20) have significantly lower anti-A1 IgG, IgA and IgM compared to the healthy blood group O cohort with p value of 0.0001, 0.0009 and <0.0001 respectively; but only anti-B IgM was significantly lower (p = 0.005) in the CD patients compared to controls and no significant difference was observed in IgG (p = 0.5197) and IgA (p = 0.626). Blood group A CD patients (n = 19) was found to have lower anti-B IgG response (p = 0.041) and no significant difference was found in anti-B IgA (p = 0.2748) and IgM (p = 0.2012) levels. Blood group B CD patients (n = 6) were found to have lower anti-A1 IgA (p = 0.0131) compared to healthy controls but no significant difference was observed in IgG (p = 0.101) and IgM (p = 0.174).

**Conclusion** CD patients were found to have lower than baseline ABO antibodies. However, it is not known whether these findings represent the cause or effect of disturbed immune modulations, or their roles in modulating intestinal microflora. Further research into the difference in ABO antibodies class profile in a larger cohort, and comparison of ABO antibodies class profile of CD patients in remission and relapse are required.

**Disclosure of Interest** None Declared

## PTH-056 NOVEL MODEL OF CARE: THE IMPACT OF A COMBINED IBD & ANTENATAL CLINIC

[1]C Selinger[*], [1]N Carey, [2]G Ulivi, [2]L Walker, [1]F Shaikh, [2]T Glanville. *[1]Gastroenterology; [2]Obstetrics, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.462

**Introduction** Care for pregnant women with IBD requires complex decision making weighing the risks and benefits of medication. Patients are often exposed to conflicting information from different health care professionals. This novel IBD antenatal clinic provides multidisciplinary care with an IBD clinician, an IBD nurse and an obstetrician all present during the consultation.

**Methods** Prospective data collection for all patients attending the clinic from March 2014 to September 2015 included IBD diagnosis, treatment, adherence (MARS self report scale), disease & pregnancy related patient knowledge (CCPKnow), course of pregnancy, mode of delivery and breast feeding. Patient satisfaction (1 not to 5 very satisfied) was ascertained by formal feedback weeks after delivery.

**Results** Of 48 women (mean age 32 years; range 21–43) 27 had Crohn's disease, 17 ulcerative colitis and 4 IBD-unclassified. Medication exposure during pregnancy included 5 ASA in 19, Thiopurines in 22 and anti-TNF in 11 cases (3 ongoing, 1 continued to birth, 7 stopped at mean week 25). Disease severity during pregnancy was remission in 62%, mild in 18%, moderate in 16% and severe in 4%. Poor medication adherence occurred in 5 of 27 patients providing adherence data. IBD investigations during pregnancy included 2 bowel ultrasound scans, 1 MRI and 2 sigmoidoscopies. Mean CCPKnow scores were 8.9 at 1 st consultation and 10.1 after birth.

Two patients attended for pre-pregnancy counselling and 15 are currently pregnant. There were 27 (17 female) live births, 2 miscarriages, 1 intra-uterine death and 1 medically indicated termination for cardiac abnormalities. Delivery occurred on average at week 39 (range 29–41) with only 2 births before 35 weeks gestation. 19 (70%) patients had a vaginal delivery (5 assisted), 3 underwent elective and 5 emergency caesarean section. Average birth weight was 3099 gram (4 weighed less than 2500 g) and only 3 babies were on the 5 th percentile on personalised growth charts. 18 (66.6%) of mothers breastfed the infant. The average patient satisfaction score was 4.6.

**Conclusion** This novel clinic model offers unique care for pregnant women with IBD. We have demonstrated very good IBD, obstetric and neonatal outcomes. Medication adherence was at least equivalent to non-pregnant patients. In contrast to previous studies showing high caesarean section and poor breast feeding rates in women with IBD our results were close to the national average for healthy women. As patient satisfaction was also high a wider adoption of the model should be considered.

**Disclosure of Interest** C. Selinger Grant/research support from: Abbvie, Warner Chilcott, Consultant for: Abbvie, Warner Chilcott, MSD, Takeda, Speaker bureau with: Abbvie, Warner Chilcott, Dr Falk, Takeda, N. Carey: None Declared, G. Ulivi: None Declared, L. Walker: None Declared, F. Shaikh: None Declared, T. Glanville: None Declared

## PTH-057 PREGNANCY AND IBD; DO WE PROVIDE ENOUGH PATIENT EDUCATION? A BRITISH STUDY OF 1324 WOMEN

I Carbery, C Selinger*. *Gastroenterology, Leeds Teaching Hospitals NHS Trust, Leeds, UK*

10.1136/gutjnl-2016-312388.463

**Introduction** Inflammatory Bowel Disease (IBD) is a complex condition affecting many young women of child bearing age. Knowledge of IBD and pregnancy related issues is key to enable patients to make informed decisions. This study aims to ascertain knowledge and factors influencing knowledge using the validated Crohn's and Colitis Pregnancy Knowledge Score (CCPKnow) in British women with IBD.

**Methods** Approximately 4300 female members of Crohn's and Colitis UK, aged between 18–45 years were sent an online questionnaire via email. Data collection included patient demographics, education, employment, marital status, and disease characteristics. Disease related pregnancy knowledge was recorded using CCPKnow.

**Results** A total of 1324 women completed the survey (response rate 31%) with a mean age of 33 years. Of these 776 (59%) suffered from Crohn's disease (CD), 496 (38%) from ulcerative colitis (UC) and 52 (4%) from IBD-U. CCPknow scores were poor (0–7) in 50.8%, adequate (8–10) in 23.6%, good (11–13) in 17.7% and very good ($\geq$14) in 7.8%. Higher CCPKnow scores were associated with higher educational achievement (masters/PHD 8.67 vs secondary school 5.99, $p < 0.001$), working (full time employment 7.18 vs unemployed 6.12, $p = 0.03$) and marital status (long-term relationship 7.60 vs single 6.26, $p < 0.001$). Patients with CD (7.51 vs UC 6.97; $p = 0.026$) and those with more severe disease had better knowledge (hospital admission 7.59 vs none 6.66, $p < 0.001$; surgery 7.71vs none 7.12, $p = 0.018$; current biological therapy 8.30 vs none 7.05, $p < 0.001$). Speaking to health care professionals was also associated with better CCPKnow scores (Gastroenterologist 9.18 vs no 6.25, $p < 0.001$), (GP 8.44 vs no 6.98, $p < 0.001$), (Specialist IBD nurse 9.27 vs 6.83, $p < 0.001$). Ethnicity and same sex relationships had no influence on CCPKnow scores.

**Conclusion** In this large study of British women with IBD knowledge was poor in over half of patients. Patients with CD and higher disease burden had better knowledge but education, employment and being in a relationship also had a positive influence on CCPKnow score. Speaking with health care professionals about pregnancy was identified as a modifiable factor associated with better knowledge. This study illustrates the importance of disease related education for female patients with IBD and highlights that health professionals, of any vocation, should seek opportunities to educate patients about pregnancy and IBD early in their disease course.

**Disclosure of Interest** I. Carbery: None Declared, C. Selinger Grant/research support from: Abbvie, Warner Chilcott, Consultant for: Abbvie, Warner Chilcott, Dr Falk, Takeda, Speaker bureau with: Abbvie, Warner Chilcott, MSD, Takeda

## PTH-058 RETROSPECTIVE ANALYSIS OF CROHN'S DISEASE RISKS FOR FURTHER SURGERY

[1]D Chan*, [2]M Mendall, [3]D Kumar. *[1]Gastroenterology and Colorectal Surgery, St George's Hospital, London; [2]Gastroenterology, Croydon University Hospital, Croydon; [3]Colorectal Surgery, St George's Hospital, London, UK*

10.1136/gutjnl-2016-312388.464

**Introduction** Surgery plays an important role in the treatment of Crohn's disease. Only a few large surgical series have been published in the literature. We describe our own experience and factors that determine risk of reoperation over a ten-year period.

**Methods** All Crohn's disease surgeries at St George's Hospital from 1 st January 2004 to 31 st December 2013 were identified. A random sample of just over 200 patients was selected; not including patients less than 16 years of age at time of surgery or those who had surgery for perianal disease. Information was collected for weight, height, gender, smoking status as well as their medical and surgical management. Patients whose records were incomplete were contacted by telephone for further information.

**Results** There were a total of 154 patients selected who had completed histories. This accounted to just over 10,000 months of follow-up. Surgeries were for bowel resections, strictureplasties or fistula repairs. 80 were male and 74 were female. Mean age of diagnosis was 23 years and 10 months. Mean time from diagnosis to first ever surgery was 5 years and 5 months. Mean time to further surgery was 31 months.

69% were non-smokers, defined as never having smoked more than 100 cigarettes in their lifetime. At the time of surgery 18% had a low BMI, 60.1% had a normal BMI and 21.9% had a high BMI. 72.72% were receiving treatment with the immunomodulators: azathioprine, 6 mercaptopurine or methotrexate. 7.14% were receiving biologic therapy at the time of surgery. 46.7% had albumin levels <35 at time of surgery and mean CRP was 27.15.

Cox regression analysis was used to assess for risk for further surgery and covariates of: age of diagnosis, number of previous surgeries, time from diagnosis to first ever surgery for Crohn's disease, treatment with immunomodulators, albumin at time of surgery, change in albumin at 1 year follow up, sex, BMI and smoking status. Significant risk for further surgery was found in those that had ever smoked and low BMI (hazard ratio 4.775 and 2.147 respectively).

Importantly previous surgery, albumin and age of diagnosis were not a risk factor for recurrent surgery (hazard ratios 1.016, 0.962 and 1.198 respectively).

**Conclusion** We review over 10,000 months of follow-up in a selection of Crohn's disease patients. We have identified significant risks for further surgery of smoking and low BMI (probably a reflection of more severe disease). It continues to be important to address these risk factors as well as continue to try and identify other cofactors and markers that can be useful in predicting course of disease.

**Disclosure of Interest** None Declared

## PTH-059 THE ABSENCE OF CLEAR PATHWAYS LEADS TO POOR UTILISATION OF FAECAL CALPROTECTIN IN PRIMARY CARE AND FAILURE TO COMPLY WITH NICE GUIDANCE

D Penman*, P Flanagan, G Pritchard, L Harding. *Wirral University Teaching Hospital, Upton, UK*

10.1136/gutjnl-2016-312388.465

**Introduction** Irritable bowel syndrome (IBS) has a prevalence of around 15% in the UK and up to 20% are referred to secondary care. Current practice shows that GPs are excellent at identifying and referring cases of inflammatory bowel disease (IBD) but due to the high prevalence of IBS, 60% of outpatient colonoscopies performed are normal. Faecal Calprotectin (FCP) is recommended by NICE to assist differentiating IBD from IBS in patients where cancer isn't suspected. This was expected to speed the time to diagnosis, reduce referrals and unnecessary endoscopies. Implementation across the UK is patchy. Locally the test was instituted for primary care without the development of an agreed care pathway as recommended by NICE.

**Methods** A retrospective audit of 193 consecutive patients with primary care initiated FCP tests from 01/02/15-02/02/15 were reviewed. Referral information, demographics, blood results, endoscopy and histology reports as well as patient outcomes were extracted from hospital and primary care IT systems using a standardised proforma. 10 paediatric cases were excluded. We aimed to assess the outcomes of testing in the absence of agreed clinical guidelines.

**Results** Complete data was available for 183 adult patients. 29.5% did not meet NICE criteria for FCP testing. 20% met criteria for suspected colorectal cancer referral. 91.2% of patients with negative results (FCP < 50 mcg/g) were managed in primary care and only 54% of patients with a positive result (>100) were referred for further investigation. 28.6% of patients with indeterminate results (50–100) had a repeat test, of which 70% were persistently abnormal but only 20% were subsequently referred. No patients were assessed for factors which may cause false positive results. 82% of endoscopies were performed in patients with a positive FCP. 14% of the patients scoped were diagnosed with IBD, all had a positive FCP but only 37% had abnormal blood tests.

**Conclusion** Use of FCP testing in the absence of a clear pathway leads to poor compliance with NICE guidance and is inappropriate in nearly 1/3rd of patients. There is clear reliance on the negative predictive value to avoid referral but this approach does not account for the highly variable pre-test probability and consequent detrimental effect on reliability. FCP is used too often in patients with unclear indications: upper GI symptoms; short symptom duration or suspected cancer criteria. False positive confounders do not appear to be considered, resulting in inconsistent retesting of indeterminate results. The results suggest that without a clear pathway FCP is commonly misused and misinterpreted, with the potential to delay or even fail to diagnose major GI pathology. This supports the use of a clear pathway for testing which we have now developed.

**Disclosure of Interest** None Declared

## PTH-060 BETTER CARE FOR IBD BIOLOGIC PATIENTS: THE IMPACT OF A MULTI-DISCIPLINARY VIRTUAL CLINIC

[1]E Eliadou*, [2]V Reid, [1]M Kirkbride, [1]J Brooks, [1]F Birchall, [1]K Kemp, [1]S Levison. *[1]Gastroenterology; [2]Pharmacy, Manchester Royal Infirmary Hospital, Manchester, UK*

10.1136/gutjnl-2016-312388.466

**Introduction** The IBD Standards, the Royal College of Physicians national biologic audit, and the NICE IBD quality standard (QS81) all aim to help deliver high quality, safe and appropriate clinical care to IBD patients throughout the UK. In line with these recommendations, and to improve and standardise the care of our IBD patients on biologic therapies we began a weekly multi-disciplinary (physicians, IBD nurses, and pharmacist) virtual biologics clinic (VBC). Here, the response to therapy is monitored (clinical scoring, well-being, laboratory results), the scheduling of investigations are coordinated, and the review and writing of prescriptions undertaken.

**Methods** We prospectively collected data from our VBC for 8 consecutive weeks. Changes to therapy on clinical grounds were noted, and the financial implications of these changes calculated. Calculations for IFX savings were based on an average dose of 300 mg per patient, plus infusion costs. The ordering of required investigations and the occurrence of adverse clinical events were recorded

**Results** In 8 weeks, 360 patient reviews were performed relating to 327 patients (IFX = 207, ADA = 79, VEDO = 41). Therapy was adjusted in 41/327 patients (12.5%). 5 stopped biologic therapy, 19 switched drug, 10 reduced and 7 increased the frequency of therapy. Net saving was £10,928 at week 8 (>£65 K/annum). The coordinated prescribing of medication and pharmacy sign off improved the delivery of therapy and patient satisfaction. 23 colonoscopies, 9 MR scans, and 45 outpatient appointments to assess response to therapy at 3 or 12 months and clinical input were scheduled from the VBC. The ordering of anti-TNF drug and antibody

levels solely through the VBC reduced any duplication of requests and ensured the review and actioning of results. 5 complications were highlighted (recurrent infections; 2 requiring surgery; cancer; severe IBD flare requiring hospitalisation).
**Conclusion** The introduction of a multi-disciplinary VBC has altered the management of 41/327 patients (12.5%) based on clinical findings and the results of investigations. Significant financial savings (£65 K per annum), the streamlining of prescribing, and superior patient monitoring have helped to improve the quality and safety of care provided. With better monitoring, care, NICE compliance, and financial prudence, this will help to sustain or service and practices.
**Disclosure of Interest** None Declared

## PTH-061 THE PROLIFERATION OF HUMAN INTESTINAL MACROPHAGE SUBSETS IN IBD AND CONTROLS

[1]E McDonald*, [1]PB Wright, [2]CC Bain, [1]AM Mowat, [3]DR Gaya, [1]SWF Milling. *[1]Infection, Immunity and Inflammation, Glasgow University, Glasgow; [2]MRC Centre for Inflammation Research, University of Edinburgh, Edinburgh; [3]Gastroenterology Unit, Glasgow Royal Infirmary, Glasgow, UK*

10.1136/gutjnl-2016-312388.467

**Introduction** Inflammatory bowel disease (IBD) is thought to be dependent on cell populations of the mononuclear phagocyte (MNP) system; monocytes, macrophages and dendritic cells (DCs). However, it is not yet fully understood how these functionally different MNP populations contribute to IBD immunopathogenesis. To address this, it is necessary to identify the functional and phenotypic attributes of the different human intestinal MNP populations.
**Methods** Fresh colonoscopic biopsies were taken, after signed informed consent, from patient with Crohn's disease, ulcerative colitis and controls undergoing polyp surveillance scope. Biopsies were rapidly transferred to the lab for analysis. Using 12 parameter flow cytometry we have developed new strategies to identify and differentiate human intestinal MNPs, to enhance our understanding of their involvement in IBD.
**Results** Within the colonic lamina propria, we unambiguously differentiate macrophage populations from dendritic cells (DCs: $CD64^-$ HLA-$DR^+$ $CD11c^+$; macrophages: $CD64^+$ $CD206^+$ HLA-$DR^+$). The colonic macrophages homogeneously express CD33 and CD68, two previously reported markers of human macrophages. Furthermore, we demonstrate heterogeneous expression of CD14 within this macrophage population. Further characterisation of the colonic macrophages identified two distinct groups, identifiable by their differential expression of the mannose receptor, CD206. To address the characteristics of these macrophage populations we assessed their proliferation, by measuring Ki67 expression. Surprisingly, all populations were found to proliferate at higher than expected levels, both in the steady state and during inflammation.
**Conclusion** We have developed novel protocols to isolate and identify MNP populations from human intestinal lamina propria. Human macrophages exhibit significant levels of proliferation under steady state conditions, and in samples from patients with IBD.
**Disclosure of Interest** None Declared

## PTH-062 TREATING TPMT DEFICIENT PATIENTS WITH THIOPURINES: A TERTIARY IBD CENTRE EXPERIENCE

[1]EL Johnston*, [1]BD Warner, [1]SC Fong, [2]PA Blaker, [3]M Arenas-Hernandez, [3]TM Marinaki, [1]S Anderson, [1]PM Irving, [1]JD Sanderson. *[1]Gastroenterology, Guy's and St Thomas' NHS Foundation Trust, London; [2]Gastroenterology, Tunbridge Wells Hospital, Tunbridge Wells; [3]Viapath Pathology Services, Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.468

**Introduction** Thiopurine S-methyltransferase (TPMT) activity is inherited, with around 1 in 300 Caucasian individuals being deficient. Patients with zero TPMT activity are at risk of severe myelosuppression if given standard doses of thiopurines (TP), therefore TP are rarely prescribed. Our unit has treated a small number of these patients with 5–10% of the standard dose. Our experience was evaluated.
**Methods** All patients with TPMT deficiency (enzyme activity <10 pmol/h/mgHb or genotyped as homozygote for deficiency associated alleles) detected between July 2002 and April 2015 were identified. Drug tolerability, TGN profile and long-term outcomes were assessed.
**Results** 23 TPMT deficient patients (8 from Gastroenterology) were identified from 7100 patients. 5 (22%) patients were treated with TP, all of whom had inflammatory bowel disease. Patient 1–32 yr old Caucasian female with ileocolonic Crohn's disease (CD) referred from another centre (TPMT 1). She was prescribed 50 mg/day mercaptopurine (MP) (0.66 mg/kg) before her TPMT was checked. After 10 days she developed severe pancytopenia (Hb 74 g/L, WCC $1.8x10^9$/L, Plts $62x10^9$/L) requiring hospital admission. She made a full recovery after cessation of the drug and is now in remission on infliximab. Patient 2–56 yr old Caucasian male with ileal and perianal CD (TPMT 2). He was prescribed 2.5 mg/day azathioprine (Aza) (0.03 mg/kg) for 1 year with normal FBC and liver function tests. His mean TGNs were sub therapeutic at 161 pmol/mL (normal range 235–450 pmol/$8x108^8$ RBC). He continued to have active disease despite Aza and was switched to methotrexate (MTX). Patient 3–47 yr old black, African female with pan-ulcerative colitis (UC) (TPMT 9). She was prescribed 10 mg/day Aza (0.11 mg/kg), which was increased to 20 mg/day (0.22 mg/kg) after 2 months because of sub therapeutic TGNs (83 pmol/mL). After the dose increase she developed drug-induced hepatitis with ALT 378 IU/L. The Aza was switched to MTX and the hepatitis resolved. Patient 4–32 yr old Caucasian female with pan-UC (TPMT 0). She was prescribed 12.5 mg/alternate days MP (0.1 mg/kg/day) which was decreased to 12.5 mg twice a week (0.06 mg/kg/day) due to supratherapeutic TGNs (1816 pmol/mL). Her FBC and liver function tests were normal but she continued to have active disease and has recently started on anti-TNF therapy. Patient 5–49 yr old Caucasian male with pouchitis after a pan-proctocolectomy for UC (TPMT genotype *3 A/*3 C). He was prescribed Aza 5 mg/day (0.07 mg/kg) with normal FBC and slightly supra therapeutic TGNs (695 pmol/mL). He continued to have active disease after 6 months so Aza was stopped and starting MTX was advised.
**Conclusion** In this small cohort of patients, treatment with thiopurines failed to achieve clinical remission, despite aiming for therapeutic TGNs in 3 patients. Patients prescribed ≤5% of the recommended dose tolerated the drug well but pancytopenia and drug induced hepatitis occurred in doses above that. Low doses of TP may be considered with careful blood monitoring, particularly FBC, however other treatments are

likely to be more beneficial to induce and maintain remission of CD and moderate to severe UC.
**Disclosure of Interest** None Declared

## PTH-063 DIETARY ADVICE IN AN INFLAMMATORY BOWEL DISEASE CLINIC – ARE WE OFFERING WHAT PATIENTS WANT?

[1]E Peck, [2]K Blair, [3]N Reynolds, [3]C Mowat, [3]M Groome, [4]E Robinson*. [1]*University of Dundee*; [2]*Department of Dietetics*; [3]*Department of Gastroenterology, Ninewells Hospital and Medical School, Dundee, UK*; [4]*Department of Gastroenterology, NHS Tayside, Dundee, UK*

10.1136/gutjnl-2016-312388.469

**Introduction** Inflammatory Bowel Disease (IBD) is a lifelong condition; predominantly diagnosed in young adults, adolescents and children it can also commonly involve malnutrition. The IBD Service Standards suggest all patients should have access to dietary advice, during hospital stays and in out-patients, whether in relapse or remission. We wanted to assess the nature and demand for dietary advice within a cohort of out-patients.
**Methods** Over a three week period, consecutive patients attending the IBD clinic in a Teaching Hospital were given an anonymised questionnaire. The questionnaire covered individual demographics, history of their condition, whether they had received dietary advice and from whom. Additionally, we asked for their preferred format of dietary advice. This data was analysed according to the relationships between these categories.
**Results** A total of 136 questionnaires were completed. 80 (59%) were completed by females, aged 20–86 years, and 56 (41%) by males, aged 17–82 years. 78 patients indicated they had Crohn's Disease (CD) (M:F 32:46) and 54 Ulcerative Colitis (UC) (M:F 24:30); 7 marked the field as "unknown".

76% of all patients would like a dietary resource but only 50.7% had received advice previously (58% of patients with CD, and 41% with UC). 50% of those diagnosed in the past year, and 50% who were not, had received dietary advice. The majority of dietary advice was given by a dietician (43%), then a doctor (28%), then friends or from personal research (16%) and finally, IBD nurses gave dietary advice 9% of the time. In 4% the source of advice was unknown. Of those wanting dietary advice the most popular formats were written (35%) followed by no preference and online (both 29%), then electronic (7%). The majority (54%) stated that if a resource was available, they would not need to see a dietician.
**Conclusion** Half of the patients in this cohort have received no dietary advice despite there being a clear demand for it. Additionally, this figure has not improved in the past year. The majority of patients with CD have had formal dietetic advice and this has mainly been delivered by dieticians, which is appropriate. There remains however a high demand within patients with IBD to receive dietary advice. Patients would be happy to receive advice through an accessible resource rather than see a dietician face to face; this should be available to allow limited dietetic time to be focussed on those patients with a specific need. A written, widely available resource proves to be the best format for this.
**Disclosure of Interest** None Declared

## PTH-064 CLOSING THE AUDIT LOOP WITHOUT SOLVING THE PROBLEM: INAPPROPRIATE FAECAL CALPROTECTIN REQUESTS CONTINUE DESPITE AGREED GUIDELINES

[1]H Parr*, [1]D Rampton, [2]D Macdonald, [2]C Scott. [1]*Gastroenterology*; [2]*Immunology, Royal London hospital, London, UK*

10.1136/gutjnl-2016-312388.470

**Introduction** As a non-invasive marker of intestinal inflammation, faecal calprotectin (FCP) is widely used to minimise colonoscopy requests in patients presenting with diarrhoea and to monitor patients with established inflammatory bowel disease (IBD). We performed two successive audits of how well gastroenterologists in a specialist IBD unit adhere to defined agreed guidelines about the indications for FCP.
**Methods** In mid 2014, we devised and circulated 3 criteria for requesting FCP. In early 2015, we audited the adherence of 45 successive requests for FCP to these criteria. On the basis of the results (below), we revised and recirculated the guidelines in early 2015, including 2 further criteria. In late 2015, we completed the audit loop by reviewing 80 recent FCP requests.
**Results** The table shows the numbers of appropriately requested FCPs, as a percentage of all requests for each indication. The guidelines in italics are those added following the initial audit.

**Abstract PTH-064 Table 1**

| Guideline for FCP request | 2014 | 2015 |
|---|---|---|
| New (non-bloody) diarrhoea in new patient aged <45 years: is colonoscopy needed? | 10/22 (45%) | 15/37 (40%) |
| Known IBD out–patient: - o Non-bloody diarrhoea: what is appropriate treatment? | 7/22 (32%) | 34/40 (85%) |
| - o *Non-specific symptoms (eg fatigue, abdominal pain) and normal CRP: is disease active?* | | |
| Annual assessment of asymptomatic patient with IBD on anti-TNF and normal CRP: should anti–TNF be stopped? | 1/1 (100%) | |
| *Asymptomatic Crohn's after ileocaecal resection: monitoring for recurrence at 6–9 months.* | n/a | 2/3 (67%) |
| Totals: | 18/45 (40%) | 51/80 (64%) |

There was a slight improvement in quality of requests for FCP between the first and the second audit. The most frequent and serious issue in FCP ordering was the requesting of colonoscopy simultaneously (15/80 in 2015) and/or ignoring of recent colonoscopy results (5/80 in 2015). There were no abnormal colonoscopies reported when FCP was normal. Consultants, SpRs and IBD nurses were equally prone to making inappropriate FCP requests.
**Conclusion** Despite being issued with guidelines agreed and revised as a result of an initial audit, specialist clinicians continue to request FCP inappropriately. This results in avoidable colonoscopy and consequent unnecessary unpleasantness for patients and expense for health-care providers. Guidelines about when to request FCP need more effective dissemination and requests for colonoscopy should be vetted more stringently.
**Disclosure of Interest** None Declared

## PTH-065 OUTCOMES OF EMERGENCY ADMISSIONS WITH ULCERATIVE COLITIS IN ADULTS IN ENGLAND BETWEEN 2004 AND 2014

[1,1]JG Rees*, [2]F Evison, [2]J Mytton, [2]P Patel, [1]N Trudgill. [1]*Gastroenterology, Sandwell General Hospital*; [2]*Informatics, Queen Elizabeth Hospital, Birmingham, UK*

10.1136/gutjnl-2016-312388.471

**Introduction** Between 2008 and 2014, the UK national audit of adult ulcerative colitis (UC) admissions revealed a fall in mortality from 1.54 to 0.75%, a rise in anti-TNF therapy in steroid non-responders from 12 to 43%, and a fall in emergency surgery from 12 to 11%.

**Methods** Using Hospital Episode Statistics, patients aged between 18 and 60 years coded with a first emergency admission with UC were identified. The influence of demographic factors, comorbidity and infused anti-TNF therapy on mortality, surgery and emergency readmissions was examined using multivariate logistic regression.

**Results** Between 2004 and 2014, 17,344 patients (47.5% female and mean age of 36 (IQR 26–45)) were identified. Mortality was 0.13% at 30 days, 0.17% in hospital and 0.55% within 1 year. During admission, 11.5% of patients had surgery (median time to surgery 6 days (IQR 1–17)) and 1.93% had infused anti-TNF therapy. Surgery during admission fell non-significantly from 12.4 to 11.7% between 2004 and 2014, but the fall in surgery within a year between 2004 and 2013 was significant (OR 0.65 (95% CI 0.52–0.83) $p < 0.001$). Anti-TNF therapy rose from 0.9 to 4.6% between 2006 and 2014. In-hospital and 1 year mortality fell from 0.25 and 0.69% in 2004 to 0.14 and 0.56% in 2014 but this was not statistically significant. Patients aged 35–60 had a higher in-hospital (3.69 (1.37–9.94) p 0.010) and 1 year mortality (2.68 (1.66–4.33) $p < 0.001$) than those aged 18–34. Increased comorbidity was associated with 30 day mortality (29.73 (9.89–89.41) $p < 0.001$) and non-white patients had a lower 1 year mortality (0.59 (0.38–0.92) $p = 0.010$). Females were less likely to have surgery during admission (0.67 (0.61–0.74) $p < 0.001$) or within 1 year (0.87 (0.79–0.96) $p < 0.001$), but gender was not associated with mortality. Patients aged 35–60 (1.17 (1.06–1.29) p 0.001) and those of non-white ethnicity (1.27 (1.12–1.42) $p < 0.001$) were more likely to have surgery during admission. Patients given anti-TNF therapy during admission were more likely to need surgery at the time (1.40 (1.03–1.89) $p = 0.031$) and within 1 year (1.44 (1.04–2.00) $p = 0.030$). Emergency readmissions within 30 days were associated with younger age (35–60 years 0.89 (0.81–0.97) $p = 0.011$) and increased comorbidity (1.78 (1.22–2.62) $p = 0.003$).

**Conclusion** For patients with a first emergency admission for UC, there was no change mortality between 2004 and 2014. Rates of anti-TNF therapy during emergency admission have increased and surgery decreased over time. Older men and non-white ethnicity were associated with surgery during admission and the use of anti-TNF agents was associated with an increased risk of surgery, likely reflecting severe colitis.

**Disclosure of Interest** J. Rees Grant/research support from: £10,000 from Merck Sharp and Dome (MSD) to contribute to costs of HES access, F. Evison: None Declared, J. Mytton: None Declared, P. Patel: None Declared, N. Trudgill: None Declared

## PTH-066 CLINICAL TRIAL: EFFECTS OF ORAL FERROUS SULPHATE ON HAEMOGLOBIN, HEPCIDIN, DISEASE ACTIVITY, MOOD AND QUALITY OF LIFE IN ADOLESCENTS AND ADULTS WITH IRON DEFICIENCY ANAEMIA DUE TO IBD

[1]J Goodhand*, [1]D Rampton, [1]N Joshi, [1]A-B Karim, [1]Y Koodun, [1]L Macken, [1]F Baraket, [2]J Epstein, [2]J Fell, [3]D Ward, [3]T Iqbal, [1]I Sanderson. [1]*Barts Health NHS Trust*; [2]*Chelsea and Westminster NHS trust, London*; [3]*University of Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.472

**Introduction** Iron deficiency anaemia (IDA) is common in inflammatory bowel disease (IBD), can be hard to treat and has a negative impact on quality of life (QOL). Because of previous concerns about the efficacy and safety of oral iron, particularly in young people with IBD, we undertook a trial to assess whether ferrous sulphate is as effective and well-tolerated in adolescents as in adults with IBD.

**Methods** Prospective phase IV, open-label, parallel group, 6 week non-inferiority clinical trial to compare the effects of oral ferrous sulphate 200 mg twice daily on Hb, iron status, serum hepcidin, symptoms, disease activity (Harvey-Bradshaw Index, Simple Colitis Clinical Activity Index, C-reactive protein (CRP), faecal calprotectin (FCP), QOL, mood and fatigue psychometric scores in 43 adolescent (age 13–18 years) and 45 adult (>18 years) IBD patients with IDA who were either oral iron-naïve or previously iron-tolerant.

**Results** On intention-to treat analysis, ferrous sulphate produced similar small but statistically significant rises in serum Hb in the adolescent (before treatment 10.3 g/dl [0.2] (mean [SEM]); after 11.7 [0.2]: $p < 0.0001$) and adult groups (before 10.9 g/dl [0.1]; after 11.9 [0.2]: $p < 0.0001$). There was no statistically significant difference in Hb respone or % transferrin saturation response between the two groups. 24 patients (12 adolescents, 12 adults) failed to complete the protocol, 11 because of iron intolerance. On a per protocol basis, oral iron did not change FCP: adolescents ($n = 22$) (before 324 ug/g [51], after 281 [47]: $p = 0.55$); adults ($n = 22$) (before 359 ug/g [107], after 301 [80]: $p = 0.54$); CRP was also unaffected by oral iron. There was no relation between baseline FCP and baseline Hb or hepcidin, or the Hb response to oral iron. However, baseline hepcidin was negatively associated with Hb response to oral iron ($r = 0.28$, $p = 0.02$). The change in Hb following administration of ferrous sulphate had no effect on the Short IBDQ, Hospital Anxiety and Depression (HADS-A & D), Perceived Stress Questionnaire, or the multi-dimension fatigue inventory (MFI) scores.

**Conclusion** Oral ferrous sulphate is no less effective or well-tolerated in adolescents than in adults with IBD, and does not increase disease activity. Baseline serum hepcidin level is inversely related to the increase in Hb produced by oral iron in patients with IBD: its measurement could indicate which patients would do better with intravenous than oral iron. Change in Hb had no effect on QoL, mood or fatigue scores.

**Disclosure of Interest** None Declared

## PTH-067 INCIDENTAL DIAGNOSIS OF INFLAMMATORY BOWEL DISEASE IN A BRITISH BOWEL CANCER SCREENING COHORT: 6-YEAR CLINICAL OUTCOME OF THE FIRST REPORTED COHORT

J Scott*, U Nosegbe, R Butcher, A Abbasi, R Prudham, R George, J Limdi. *The Pennine Acute Hospitals NHS Trust, Manchester, UK*

10.1136/gutjnl-2016-312388.473

**Introduction** The UK Bowel Cancer Screening programme (BCSP) was launched in 2006 in England and Wales, screening individuals aged 60–69 years with a Faecal Occult Blood test (FOBt) followed by a screening colonoscopy if FOBt positive. We reported the first ever experience of incidental diagnosis of Inflammatory bowel disease (IBD) through screening in 2012. We present a 6 year follow-up of this cohort.
**Methods** We conducted a retrospective case record review of clinical outcomes until 31st December 2015 for patients diagnosed with IBD from the BCSP from April 2008 until September 2011. We reviewed their symptoms at diagnosis, treatment course and compared stage of disease at initial presentation to that at last follow-up.
**Results** Between April 2008 and September 2011, 136,811 patients were invited to the BCSP and 67,485 were screened with a 49.33% uptake and FOBt positivity of 2.02%. Colonoscopy was performed in 1401 patients and 13 patients (3 female) were diagnosed with IBD. Of these, 6 patients had Ulcerative colitis (UC), 5 had Crohn's disease (CD), 2 had IBD-unclassified (IBDU). One IBDU patient was subsequently re-classified as UC during follow-up. At diagnosis 7 (53.8%) patients were asymptomatic. An asymptomatic patient died of an unrelated cause, with follow-up data available for 12 patients. Median follow-up time was 80 months (range 39–87 months). Using the Montreal classification the distribution for UC included E1 (2), E2 (2) and E3 (2) and in CD showed L2 (7). Four CD patients had B1 disease and 1 had B2. Disease progressed in 2 patients and all 6 (100%) asymptomatic patients developed symptoms during follow-up. Treatment included steroids (10), 5 ASA (12), Azathioprine (6); Methotrexate (1) and Anti-TNF (Infliximab (2); Adalimumab (1)). Median time to immunomodulator was 29.5 months and to anti-TNF, 28.0 months. Mean CRP at diagnosis for those who progressed to Immunomodulator was 10.4 compared to 5.5 in those that didn't and 15.5 in those that required biologics. A patient with symptomatic IBDU underwent subtotal colectomy 54 months after diagnosis but died 7 days post-operatively. Another patient died at 39 months from an unrelated cause.
**Conclusion** Incidental diagnosis of IBD presents an important model for the study of early disease. A proportion of initially asymptomatic patients demonstrate disease progression with a rapid requirement for treatment escalation.
**Disclosure of Interest** None Declared

## PTH-068 SAME LAB, SAME FAECES, DIFFERENT METHODS AND SOME DIFFERENT CALPROTECTIN RESULTS

KN Lythgoe, SJ McCann*. *Biochemistry, Stepping Hill Hospital, Stockport, UK*

10.1136/gutjnl-2016-312388.474

**Introduction** Faecal calprotectin (FC) has recently become widely used to differentiate between IBS and IBD following NICE diagnostic guidelines (DG11). There are a number of different assays in use throughout the UK using different extraction methods. We have evaluated a newly introduced Quanta-Lite FC assay (Werfen Ltd, UK) with Eurospital (ES) extraction tubes and compared it to our routine Buhlmann assay with Calex extraction tubes.
**Methods** All samples were received <72 hrs from collection and frozen upon receipt. The samples, a mixture of both primary and secondary care requests, were thawed at 2–8°C overnight then equilibrated to room temperature for 60 minutes before extraction. The same 76 faecal samples were extracted initially using the Bühlmann Calex tubes and then the ES extraction tubes. FC was then measured using the different ELISA methods on the DS2 ELISA platform.
**Results** The Calex and ES extraction tubes use 10 and 60 µg/µl of faecal sample respectively. After sampling homogenisation and centrifugation is only required with the Calex tubes whereas the ES tubes require a further step of 20 minutes on the roller mixer. Calex tubes can be loaded directly on the DS2 analyser, whereas the ES tubes require transfer of the supernatant to a secondary tube. The equation of correlation was Buhlmann =0.27 Werfen + 6.6, $r^2$ = 0.813 hence the Buhlmann assay results are on average 3.0 times higher than the Werfen assay. At present within our laboratory Buhlmann results of >49 ug/g are categorised as abnormal (A) and a referral to Gastroenterology is suggested. The Werfen assay reports results of <50 ug/g as normal (N), 50–120 ug/g as borderline (B) with re-testing in 4–6 weeks suggested and >120 ug/g as A. The Buhlmann method states an elevated level of between 50–200µg/g may represent mild disease. The assays categorised the 76 samples as follows: Buhlmann, N 40.8% and A 59.2% and Werfen N 61.8%, B 19.7%, A 18.4%. With the current interpretation 59% of the samples analysed by the Buhlmann method were abnormal whereas 18% of samples tested with the Werfen kit were deemed abnormal. In order to have better interpretative agreement between the assays a borderline range with the Buhlmann assay should be 159 ug/g to 415 ug/g and positive >415 ug/g.
**Conclusion** In conclusion the Calex tubes are easier to use than the ES tubes: they utilise a smaller sample size; requires less pre-analytical steps; and do not require an additional sample transfer which often resulted in splashing of the extracted faeces. The assays had poor overall diagnostic agreement for the samples tested. Different cut-offs should be used for each assay in order to have a comparable interpretation. Each assay should be assessed in relation to clinical outcome prior to use. We also recommend that the FC method used is reported with the result.
**Disclosure of Interest** None Declared

## PTH-069 ACTIVE TUBERCULOSIS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE AFTER TREATMENT WITH ANTI-TNF THERAPY

[1]L Owen, [1]AA Thi*, [1]S Bouri, [1]P Wolfson, [2]A Abbara, [2]L John, [2]RN Davidson, [1]AL Hart. *[1]Department of Inflammatory Bowel Disease, St Mark's Hospital; [2]Department of Infectious Diseases, Northwick Park Hospital, London, UK*

10.1136/gutjnl-2016-312388.475

**Introduction** Anti-tumour necrosis factor agents (anti–TNF) are major advances in the management of inflammatory bowel disease (IBD) however they are associated with a 5 fold increased risk of Mycobacterium tuberculosis (TB) infection. All patients should be screened for latent TB infection (LTBI)

prior to anti-TNF therapy. Here, we review active TB cases after anti-TNF therapy to identify lessons to be learned.

**Methods** All patients with IBD treated with anti-TNF between March 2007-November 2015 were identified from pharmacy database. Those who developed active TB were identified from the London TB register. Clinical and electronic notes were reviewed. LTBI screening is with history, Chest X-Ray (CXR) and tuberculin skin test (TST) before July 2013 or Quantiferon Gold Assay (QFT-G) after July 2013.

**Results** Of 596 patients treated with anti-TNF, 6 had active TB. 5 had Crohn's and 1 had Ulcerative Colitis. 3 were male, none had HIV. Age range was 24–49 years. 5 were Caucasian, 1 was UK born but of Pakistani origin. 3 were on Adalimumab (ADA) at time of TB diagnosis and 2 on Infliximab (IFX), 3 were on at least 1 other immunosuppressive. 1 was not on anti-TNFs at TB diagnosis but received IFX 3 months earlier. Time from initiation of anti-TNF to TB diagnosis ranged from 3–41 months (median:13, IQR = 32). 3 had culture confirmed TB, 1 was MTB complex PCR positive but culture negative and 2 had presumed TB. All isolated cultures were fully sensitive. 2 had miliary TB, 2 abdominal TB, 1 pleuro-pulmonary TB and 1 both pulmonary and pericardial TB. Treatment duration was 6–12 months, 5 patients completed treatment and 1 remains on treatment. 3 had prior vaccination for TB, 1 did not and the vaccination status of 2 was unknown. 4 patients had negative TSTs pre-anti-TNF (3 while immunosuppressed), 1 had an indeterminate QFT-G test (while immunosuppressed) and 1 had neither. All patients had normal CXR prior to anti-TNF. No patients received LTBI treatment.

**Conclusion** All cases were considered low epidemiological risk for LTBI . None had a positive TST or QFT-G, however the risk of false negatives is high in immunosuppression. As some patients screened may receive prolonged and recurrent courses of anti-TNF, we recommend discussion around when patients should be rescreened. It is unclear if these cases represent de novo infection or reactivation of latent disease but re-screening may have identified them at the latent stage. As it is not possible to prevent all cases of active TB, there must be continued focus on prompt diagnosis and treatment, alongside comprehensive screening by working with local TB services.

**Disclosure of Interest** None Declared

## PTH-070 A MULTINATIONAL STUDY TO DETERMINE INDICATORS OF SUBOPTIMAL THERAPY AMONG ULCERATIVE COLITIS PATIENTS TREATED WITH TUMOUR NECROSIS FACTOR ANTAGONISTS

[1]J Lindsay, [2]J Gisbert, [3]R Mody, [4]L Peyrin-Biroulet, [5]A Armuzzi, [6]B Bokemeyer, [7]G Nguyen, [8]J Siebenaler, [9]Ö Åkerborg, [10]M Smyth, [11]A Rathmell*. *[1]Department of Gastroenterology, Barts Health NHS Trust, London, UK*; *[2]Hospital Universtario de La Princesa, Madrid, Spain*; *[3]Takeda Pharmaceuticals International Inc, Deerfield, United States*; *[4]CHU de Nancy - Hôpital Brabois, Vandœuvre-lès-Nancy, France*; *[5]IBD Unit, Complesso Integrato Columbus, Catholic University, Rome, Italy*; *[6]Gastroenterology Practice, Minden, Germany*; *[7]Mount Sinai Hospital, Toronto, Canada*; *[8]MAPI, Milton, United States*; *[9]MAPI, Stockholm, Sweden*; *[10]Takeda Development Centre Europe Ltd, London, UK*; *[11]Takeda UK Ltd, Medical Affairs, Wooburn Green, UK*

10.1136/gutjnl-2016-312388.476

**Introduction** Ulcerative colitis (UC) patients treated with tumour necrosis factor antagonists (anti-TNFs) may require therapy changes over time, which may be considered as indicators of suboptimal therapy.

**Methods** A multinational, multicentre, retrospective, chart review study was conducted to assess the indicators of suboptimal therapy among adult UC patients receiving their first anti-TNF [infliximab (IFX) or adalimumab (ADA)] between June 2009 and June 2013 (index therapy). The indicators of suboptimal therapy during 2 year follow up included: anti-TNF dose-escalation (assessed >4 months after index to allow for initial dose adjustments), augmentation with non-biologic therapy, UC-related surgery, discontinuation of first anti-TNF and switching to second anti-TNF. Dose escalation was defined as any increase in dose and/or frequency of the index anti-TNF agent(s). Augmentation was defined as starting a new non-biologic drug or increase in dose/frequency of the concurrent non-biological drugs with anti-TNF therapy. Discontinuation of index anti-TNF was based on entry in patients' charts and excluded patients who discontinued anti-TNF despite it being effective during the follow-up period. Switch was defined as a subset of discontinuation patients who initiated another anti-TNF therapy over the follow-up period. The number and percentage of patients with each indicator and $\geq$1 indicator was summarised descriptively by country.

**Results** The study included 538 UC patients with mean age (SD) of 42 (14) years. Forty-seven percent of patients were females and 73% reported moderate to severe UC at index. The percentages of patients on IFX and ADA as first anti-TNF were 92% and 8%, respectively. Overall, within 2 years, 61% of UC patients had $\geq$1 indicator of suboptimal therapy, 26% had anti-TNF dose escalation, 21% needed augmentation with non-biologic therapy, 9% underwent UC-related surgery and 29% discontinued their index anti-TNF. Of those who discontinued index anti-TNF (N = 156), 58% switched to another anti-TNF therapy.

**Conclusion** In this large multinational cohort, more than 60% of UC patients had $\geq$1 indicator of suboptimal anti-TNF therapy. Predominant indicators included dose escalation and discontinuation of anti-TNF therapy.

**Disclosure of Interest** J. Lindsay Grant/research support from: MSD, Abbvie, Hospira, Takeda, Janssen, Ferring, Shire Pharmaceuticals, Vifor Pharma, Atlantic Health care, Actavis (Warner Chilcott), and Tillotts, Consultant for: MSD, Abbvie, Hospira, Takeda, Janssen, Ferring, Shire Pharmaceuticals, Vifor Pharma, Atlantic Health care, Actavis (Warner Chilcott), and Tillotts, Speaker bureau with: MSD, Abbvie, Hospira, Takeda, Janssen, Ferring, Shire Pharmaceuticals, Vifor Pharma, Atlantic Health care, Actavis (Warner Chilcott), and Tillotts, J. Gisbert Grant/research support from: MSD, Abbvie, Hospira, Kern Pharma, Takeda, Janssen, Pfizer, Ferring, Faes Farma, Shire Pharmaceuticals, Dr. Falk Pharma, Chiesi, Casen Fleet, Gebro Pharma, Otsuka Pharmaceutical, Vifor Pharma, Consultant for: MSD, Abbvie, Hospira, Kern Pharma, Takeda, Janssen, Pfizer, Ferring, Faes Farma, Shire Pharmaceuticals, Dr. Falk Pharma, Chiesi, Casen Fleet, Gebro Pharma, Otsuka Pharmaceutical, Vifor Pharma, Speaker bureau with: MSD, Abbvie, Hospira, Kern Pharma, Takeda, Janssen, Pfizer, Ferring, Faes Farma, Shire Pharmaceuticals, Dr. Falk Pharma, Chiesi, Casen Fleet, Gebro Pharma, Otsuka Pharmaceutical, Vifor Pharma, R. Mody Employee of: Takeda Pharmaceuticals International, Inc, L. Peyrin-Biroulet Consultant for: Abbvie, MSD, Jansse, Takeda, Hospira, Celltrion, Biogaran, Speaker bureau with: Abbvie, MSD, Janssen, Takeda, Mitsubishi, A. Armuzzi Grant/research support from: MSD, Consultant for: Abbvie, Hospira, Liily, MSD, Mundipharma, Pfizer, Sofar, Takeda, Speaker bureau with: Abbvie, Astra-Zeneca, Chiesi, Ferring, Hospira, MSD, Otsuka, Takeda, Zambon, B. Bokemeyer Grant/research

support from: Abbvie, Ferring, UCB, Consultant for: Abbvie, MSD, Shire, Ferring, UCB, Hospira, Takeda, Movetis, Speaker bureau with: Abbvie, Ferring, MSD, Merckle, Falk, HLR, UCB, G. Nguyen Consultant for: Janssen and Abbvie, J. Siebenaler Conflict with: Employee of Mapi, a company hired to conduct the study by Takeda Pharmaceuticals International, Inc., Ö. Åkerborg Conflict with: Employee of Mapi, a company hired to conduct the study by Takeda Pharmaceuticals International, Inc., M. Smyth Employee of: Takeda Development Centre Europe Ltd, London, UK

## PTH-071 INDICATORS OF SUBOPTIMAL THERAPY AMONG CROHN'S DISEASE PATIENTS TREATED WITH TUMOUR NECROSIS FACTOR ANTAGONISTS: RESULTS FROM A MULTI-NATIONAL STUDY

[1]A Armuzzi, [2]J Lindsay, [3]R Mody, [4]B Bokemeyer, [5]J Gisbert, [6]L Peyrin-Biroulet, [7]G Nguyen, [8]J Siebenaler, [9]Ö Åkerborg, [10]M Smyth, [11]A Rathmell*. *[1]IBD Unit, Complesso Integrato Columbus, Catholic University, Rome, Italy; [2]Department of Gastroenterology, Barts Health NHS Trust, London, UK; [3]Takeda Pharmaceuticals International Inc, Deerfield, United States; [4]Gastroenterology Practice, Minden, Germany; [5]Hospital Universtario de La Princesa, Madrid, Spain; [6]CHU de Nancy – Hôpital Brabois, Vandœuvre-lès-Nancy, France; [7]Mount Sinai Hospital, Toronto, Canada; [8]MAPI, Milton, United States; [9]MAPI, Stockholm, Sweden; [10]Takeda Development Centre Europe Ltd, London, UK; [11]Takeda UK Ltd, Medical Affairs, Wooburn Green, UK*

10.1136/gutjnl-2016-312388.477

**Introduction** Crohn's disease (CD) patients treated with tumour necrosis factor antagonists (anti-TNFs) may require therapy changes over time, which may be considered as indicators of suboptimal therapy.

**Methods** A multi-national, multicentre, retrospective, chart review study was conducted to assess the indicators of suboptimal therapy among adult CD patients receiving their first anti-TNF [infliximab (IFX) or adalimumab (ADA)] between June 2009 and June 2011 (index therapy). The indicators of suboptimal therapy during 2 year follow up were: anti-TNF dose-escalation (assessed >4 months after index to allow for initial dose adjustments), augmentation with a non-biologic drug, discontinuation of first anti-TNF, switching to another anti-TNF and CD-related surgery. The percentages of patients with each indicator type and ≥1 indicator by country for each anti-TNF drug are summarised descriptively.

**Results** The study included 657 CD patients with mean age (SD) of 39.2 (13.2) years, 51% females, 51% with moderate to severe CD at index, 44% and 56% on ADA and IFX, respectively and 71% on combination therapy with a non-biologic drug. Overall, 56% of CD patients had ≥1 indicator of suboptimal therapy, 20% of patients had dose escalation, 18% needed augmentation with a non-biologic, 29% discontinued first anti-TNF, and 17% underwent a CD-related surgery. Of those who discontinued (N = 183), 70% switched to another anti-TNF.

**Conclusion** In this large multi-national cohort, over half of the CD patients had ≥1 indicator of anti-TNF suboptimal therapy. Predominant indicators included dose escalation, discontinuation and switching to another anti-TNF.

**Disclosure of Interest** A. Armuzzi Grant/research support from: MSD, Consultant for: Abbvie, Hospira, Liily, MSD, Mundipharma, Pfizer, Sofar, Takeda, Speaker bureau with: Abbvie, Astra-Zeneca, Chiesi, Ferring, Hospira, MSD, Otsuka, Takeda, Zambon, J. Lindsay Grant/research support from: MSD, Abbvie, Hospira, Takeda, Janssen, Ferring, Shire Pharmaceuticals, Vifor Pharma, Atlantic Health care, Actavis (Warner Chilcott), and Tillotts, Consultant for: MSD, Abbvie, Hospira, Takeda, Janssen, Ferring, Shire Pharmaceuticals, Vifor Pharma, Atlantic Health care, Actavis (Warner Chilcott), and Tillotts, Speaker bureau with: MSD, Abbvie, Hospira, Takeda, Janssen, Ferring, Shire Pharmaceuticals, Vifor Pharma, Atlantic Health care, Actavis (Warner Chilcott), and Tillotts, R. Mody Employee of: Takeda Pharmaceuticals International, Inc, B. Bokemeyer Grant/research support from: Abbvie, Ferring, UCB, Consultant for: Abbvie, MSD, Shire, Ferring, UCB, Hospira, Takeda, Movetis, Speaker bureau with: Abbvie, Ferring, MSD, Merckle, Falk, HLR, UCB, J. Gisbert Grant/research support from: MSD, Abbvie, Hospira, Kern Pharma, Takeda, Janssen, Pfizer, Ferring, Faes Farma, Shire Pharmaceuticals, Dr. Falk Pharma, Chiesi, Casen Fleet, Gebro Pharma, Otsuka Pharmaceutical, Vifor Pharma, Consultant for: MSD, Abbvie, Hospira, Kern Pharma, Takeda, Janssen, Pfizer, Ferring, Faes Farma, Shire Pharmaceuticals, Dr. Falk Pharma, Chiesi, Casen Fleet, Gebro Pharma, Otsuka Pharmaceutical, Vifor Pharma, Speaker bureau with: MSD, Abbvie, Hospira, Kern Pharma, Takeda, Janssen, Pfizer, Ferring, Faes Farma, Shire Pharmaceuticals, Dr. Falk Pharma, Chiesi, Casen Fleet, Gebro Pharma, Otsuka Pharmaceutical, Vifor Pharma, L. Peyrin-Biroulet Consultant for: Abbvie, MSD, Jansse, Takeda, Hospira, Celltrion, Biogaran, Speaker bureau with: Abbvie, MSD, Janssen, Takeda, Mitsubishi, G. Nguyen Consultant for: Janssen and Abbvie, J. Siebenaler Conflict with: Employee of Mapi, a company hired to conduct the study by Takeda Pharmaceuticals International, Inc., Ö. Åkerborg Conflict with: Employee of Mapi, a company hired to conduct the study by Takeda Pharmaceuticals International, Inc., M. Smyth Employee of: Takeda Development Centre Europe Ltd, London, UK

## PTH-072 CORTICOSTEROID DOSE REDUCTION IN ULCERATIVE COLITIS PATIENTS TREATED WITH VEDOLIZUMAB

[1]E Loftus, [2]C Siegel, [3]R Panaccione, [4]W Sandborn, [5]M Smyth, [5]A James*, [6]J Xu, [5]B Abhyankar. *[1]Mayo Clinic, Rochester; [2]Dartmouth-Hitchcock Medical Centre, Hanover, United States; [3]University of Calgary, Calgary, Canada; [4]University of California San Diego, La Jolla, United States; [5]Takeda Development Centre Europe Ltd, London, UK; [6]Takeda Pharmaceuticals International Co, Cambridge, United States*

10.1136/gutjnl-2016-312388.478

**Introduction** Corticosteroids (CS) are effective for the short-term treatment of patients (pts) with ulcerative colitis (UC), but serious side effects prohibit long-term use. In the GEMINI 1 study, a higher percentage of pts with moderately to severely active UC were in CS-free remission at week (wk) 52 with vedolizumab (VDZ) treatment than with placebo (PBO).[1]

**Methods** In GEMINI 1, pts who responded to VDZ induction therapy at wk 6 were re-randomised to PBO or VDZ for 46 wks. From wk 6 onward, pts with clinical response discontinued CS use. We characterised CS dose reductions achieved with VDZ therapy in exploratory and post hoc analyses of pts with baseline (wk 0) CS use (≤30 mg/day prednisone or equivalent). Median CS dose over time, change from baseline CS dose, and CS-free status at wk 52 were summarised overall and by anti-tumour necrosis factor (anti-TNF) treatment (naïve or failure) history.

**Results** Of pts with baseline CS use, 74% decreased their CS dose with VDZ treatment at week 52 (vs 57% with PBO) (Table). At wk 52, 56% of VDZ-treated pts were on ≤7.5 mg/day of CS (**Table**), and the median CS dose was 2.5 mg/day for VDZ-treated pts and 10.0 mg/day for PBO. Numerically higher percentages of VDZ-treated pts were CS-free for 90 and 180 consecutive days at wk 52 than PBO- treated pts. Similar trends were observed in the anti-TNF-naïve and anti-TNF-failure populations.

**Abstract PTH-072 Table 1** CS Dose changes at Wk 52

| Wk 52 | Anti-TNF-Naïve | | Anti-TNF-Failure | | Overall | |
|---|---|---|---|---|---|---|
| | PBO | VDZ[a] | PBO | VDZ[a] | PBO | VDZ[a] |
| | n = 40[b] | n = 82[b] | n = 21[b] | n = 42[b] | n = 67[b] | n = 140[b] |
| | No. of Pts (%) | | | | | |
| CS dose increased[c] | 8 (20) | 4 (5) | 5 (24) | 2 (5) | 14 (21) | 10 (7) |
| CS dose decreased[c] | 24 (60) | 63 (77) | 12 (57) | 33 (79) | 38 (57) | 104 (74) |
| CS-free | 10 (25) | 37 (45) | 3 (14) | 12 (29) | 13 (19) | 54 (39) |
| Daily CS dose ≤ 7.5 mg[c] | 13 (30) | 52 (63) | 9 (39) | 23 (51) | 23 (32) | 80 (56) |

a VDZ every 4 or 8 wks.
b Pts on CS according to the interactive voice response system (IVRS) at screening and also on CS for UC at baseline (wk 0).
c Pts on CS according to the IVRS at screening; anti-TNF-naïve: PBO n = 43, VDZ n = 83; anti-TNF-failure: PBO n = 23, VDZ n = 45; overall: PBO n = 72, VDZ n = 143.

**Conclusion** Numerically greater reductions in CS use were achieved with VDZ maintenance therapy compared with PBO. At week 52, VDZ therapy was associated with numerically higher percentages of CS-free patients and patients who were CS-free for 90 or 180 consecutive days than PBO. Interpretation of these post hoc analyses, including the degree of dose reduction, is limited by differing initiation weeks for CS tapering per patient and small sample sizes.

## REFERENCE

1 Feagan BG, *et al*. *N Engl J Med*. 2013;**369**:699–710; NCT00783718.

**Disclosure of Interest** E. Loftus Jr Grant/research support from: from AbbVie, Janssen, UCB, Takeda, Pfizer, GlaxoSmithKline, Amgen, Bristol-Myers Squibb, Genentech, Robarts Clinical Trials, Gilead, Receptos, Consultant for: AbbVie, Janssen, UCB, Takeda, Immune Pharmaceuticals, Celgene, MedImmune, Theradiag, Genentech Inc, Seres Health, Sun Pharmaceuticals, Bristol-Myers Squibb, C. Siegel Grant/research support from: AbbVie, Janssen, Salix, Takeda, UCB, Consultant for: AbbVie, Amgen, Janssen, Lilly, Pfizer, Takeda, UCB, Speaker bureau with: AbbVie, Janssen, Takeda, R. Panaccione Grant/research support from: Abbott, and UCB Inc, Consultant for: Abbott, Biogen/IDEC, Axcan Pharma Inc, Bristol-Myers Squibb, Centocor, Inc, Chemocentryx, Ferring Pharmaceuticals Inc, Genentech Inc, Lippincott Williams & Wilkins, Medscape, Osiris Therapeutics, Inc, Novartis Pharmaceuticals, Genentech Inc, Elan Pharmaceuticals, Inc, UCB, Inc, W. Sandborn Grant/research support from: Janssen, AbbVie, Pfizer, Amgen, Genentech, Consultant for: Janssen, AbbVie, Pfizer, Amgen, Genentech, Takeda, Speaker bureau with: AbbVie, Takeda, M. Smyth Employee of: Takeda Development Centre Europe Ltd, London, UK, A. James Employee of: Takeda Development Centre Europe Ltd, London, UK, J. Xu Employee of: Takeda Pharmaceuticals International Co, Cambridge, Massachusetts, USA, B. Abhyankar Employee of: Takeda Development Centre Europe Ltd, London, UK

## PTH-073 ABSTRACT WITHDRAWN

## PTH-074 THE PRESENCE OF TOTAL ANTI-DRUG ANTIBODIES TO BIOLOGIC DRUGS DOES NOT ADVERSELY AFFECT LONG-TERM OUTCOMES IN CROHN'S DISEASE PATIENTS WITH ADEQUATE DRUGS LEVELS AND ABSENT FREE ANTI-DRUG ANTIBODIES

[1]MA Samaan, [2]N Unsworth, [1]M Ward, [1]B Warner*, [1]JD Sanderson, [2]Z Arkir, [1]PM Irving. *[1]Gastroenterology, Guy's & St. Thomas' NHS Trust*; *[2]Reference Chemistry, Viapath, St Thomas' Hospital, London, UK*

10.1136/gutjnl-2016-312388.479

**Introduction** The use of therapeutic drug monitoring (TDM) for anti-TNF drugs has become increasingly widespread over recent years. It is now used in many centres to guide clinical decisions regarding dose optimisation, the use of concomitant immunomodulators as well as switching or withdrawal of treatment.[1] TDM usually includes the measurement of serum trough levels of infliximab (IFX) or adalimumab (ADA) as well as anti-drug antibodies (ADAb). There are two different approaches to measuring ADAb; some techniques measure total ADAb (drug-ADAb complexes as well as free ADAb), whilst other measure only free ADAb. However, the clinical relevance of the differing data generated by these techniques is not yet fully understood.

**Methods** A prospective evaluation of trough drug levels and ADAb was performed using our standard ELISA assay (LISA TRACKER, Theradiag) in 145 IBD patients on anti-TNF agents between January and May 2014. This technique measures only free ADAb. The samples were also anaylsed using an ELISA assay that measures total ADAb (IDKmonitor, Immundiagnostik). Long term outcomes were evaluated for 21 (17 IFX, 4 ADA) patients with Crohn's disease (CD) who were found to have negative free ADAb but positive total ADAb. Outcome assessments were made by review of a prospectively maintained database, with a mean follow-up period of 22 months. Clinical outcome measures included; the need to escalate/switch/withdraw biologic treatment, infusion/injection-site reactions, documented clinical flare (HBI > 5) and need for steroid treatment. Biochemical outcome measures included; CRP > 5 mg/L and faecal calprotectin >150 ug/g. The subsequent development of positive free ADAb and subtherapeutic/undetectable drug levels were also collected as outcome measures.

**Results** *Anti-drug antibody (ADAb) detection:*

Of the 21 CD patients with positive total ADAb and negative free ADAb at the time of initial sampling, 3 (14%) went on to subsequently develop positive free ADAb during the follow-up period. Sixteen patients (75%) were taking concomitant immunomodulators, including all 3 patients who subsequently developed free ADAb. The mean IFX trough level in patients who went on to develop free ADAb was 1.05 ug/ml, compared to 4.04 ug/ml in those who did not.

Outcomes:

All 3 (100%) of the patients who developed positive free ADAb subsequently went on to have subtherapeutic or undetectable drug levels and required a switch in anti-TNF therapy. Two of the 3 (67%) had a flare in disease activity with an elevated faecal calprotectin. Two (67%) also developed significant infusion reactions. Of the remaining 18 patients who did not subsequently developed free ADAb, only one patient (6%) required a switch in anti-TNF, 4 (22%) developed clinical flares and 3 (17%) required steroid treatment. None of the 18 patients who remained free ADAb negative had undetectable drug levels during the follow-up period.

**Conclusion** Long-term outcomes were not shown to be adversely affected by the presence of total ADAb, in the absence of free ADAb and adequate drug levels. However, patients who subsequently developed free ADAb and subtherapeutic or undetectable drug levels had unfavourable long-term outcomes. The presence of total ADAb does not appear to accurately predict the development of free ADAb. This data supports the use of ELISA techniques which measure free ADAb as well as drug levels. Our study and other similar work,[2] suggests that quantification of drug-ADAb complexes (total ADAb) appears to be less relevant to long-term clinical outcomes and therefore, less informative to clinical decision making.

## REFERENCES

1 Ben-Horin S, Chowers Y. Tailoring anti-TNF therapy in IBD: drug levels and disease activity. *Nature Reviews Gastroenterology & Hepatology* 2014;**11**:243–255.

2 van schouwenburg, *et al.* Long-term measurement of anti-adalimumab using pH-shift-anti-idiotype antigen binding tests shows predictive value and transient antibody formation.*Ann Rheum Dis.* 2013;**72**:1680–6.

**Disclosure of Interest** None Declared

## PTH-075 PREDICTORS OF POST-OPERATIVE RECURRENCE OF ILEAL CROHN'S DISEASE

[1]MN Quraishi*, [2]M Widlak, [1]N Bhala, [3]N Sharma, [1]TH Iqbal. *[1]University Hospital Birmingham, Birmingham; [2]University Hospital Coventry Warwickshire, Coventry; [3]Heartlands Hospital, Birmingham, UK*

10.1136/gutjnl-2016-312388.480

**Introduction** Long term follow up of patients resected for ileal Crohn's (IC) disease have reported recurrence rates to range from 10–30% during the first post-operative year. Recent randomised controlled trials have shown that the "treat to target" approach based early colonoscopy to detect and treat early recurrence is crucial in maintaining remission. This study aims to identify clinical factors that predict risk of recurrence to help stratify patients that warrant early colonoscopy.

**Methods** In a retrospective study conducted in a University Hospital with a catchment area of 1 million patients, clinical records of patients with Crohn's disease under regular follow-up from January 2011 to November 2013 were reviewed to identify patients who underwent ileal resection. The outcome after surgery was assessed on the basis of electronic patient records that were prospectively followed up till November 2015.

**Results** 50 patients were included in this study (median age: 34 years, male: 21 (42%)). The median duration of postoperative follow-up was 22 months. 26 (52%) patients had endoscopic or radiological evidence of recurrent disease. Probabilities of recurrence according to the Kaplan-Meier method were 22% and 41% at 1 and 2 years respectively. Univariate analysis (log-rank) showed that pre-operative dual immunosuppression with immunomodulatory and biological agents ($p = 0.01$), lack of response pre-operatively to at least two biological agents ($p = 0.01$) and previous surgery ($p = 0.02$) were associated with increased risk of recurrence of IC disease. Multivariate Cox hazard model demonstrated that fibrostenotic or fistulating/penetrating disease (HR = 3.55; 95% CI 1.24 to 10.19; $p = 0.02$), perianal disease (HR = 2.41; 95% CI 1.02 to 5.66; $p = 0.04$) and smoking (HR = 2.92; 95% CI 1.18 to 7.22; $p = 0.02$) significantly increased risk of recurrence post ileal resection and were independent predictors of relapse. Older age at diagnosis non-significantly reduced the risk of post-operative recurrence of IC disease (HR = 0.53; 95% CI 0.25 to 1.09; $p = 0.086$).

**Conclusion** In addition to known risk factors we have shown that patients on dual immunosuppression and failure of two biologics pre-operatively are significant factors in predicting early recurrence. In the era of "treat to target" approach to achieve mucosal healing and sustained remission, risk stratification based on strong clinical predictors of early post-operative recurrence of Crohn's disease will help guide timing of colonoscopy following surgery.

**Disclosure of Interest** None Declared

## PTH-076 INFLAMMATORY BOWEL DISEASE: THE CONSEQUENCES OF ANTI-TNF THERAPY IN THE ELDERLY

M Ali*, C McClean, Y Zou, J Goh. *Queen Elizabeth Hospital Birmingham, Birmingham, UK*

10.1136/gutjnl-2016-312388.481

**Introduction** Existing literature regarding the efficacy and safety of anti-tumour necrosis factor (TNF) therapy in the elderly with inflammatory bowel disease (IBD) is scare and conflicting. The aim of this study is to assess the consequences of anti-TNF therapy (infliximab and adalimumab) in elderly patients with IBD.

**Methods** A retrospective single-centre analysis of all patients $\geq$50 years-old who were commenced on an anti-TNF agent for IBD between September 2013 - August 2015 was performed. Patients who received less than 2 doses were excluded. The type of anti-TNF used was recorded, and whether immunomodulators were commenced prior to anti-TNF therapy. Data on treatment efficacy, treatment failure and adverse events was collected.

**Results** 19/44 patients were male and 25/44 were female. The majority of patients (81.8%, 36/44) had a diagnosis of Crohn's Disease, compared with 18.2% (8/44) with Ulcerative Colitis (UC). Results were analysed within subgroups based on age. The majority of patients (24/44, 55%) were aged 50–59, with 15/44 (34%) aged 60–69 and 4/44 (9%) aged 70–79. Treatment efficacy was measured by readmission with an IBD-flare and a requirement for surgery after being treated with anti-TNF. The rate of readmission with a flare was low across all age groups; of those aged 50–59, 8.3% (2/24) were readmitted, compared with 20% (3/15) aged 60–69 and 25% (1/4) aged 70–79. The median days for readmission following anti-TNF was >100 days. The number of patients who required surgery also represented a small proportion: 1 patient in age 50–59 band required anal stricture dilatation, and 2

patients in age 60–69 band required a subtotal colectomy and end ileostomy for UC. Adverse events were assessed by significant reactions to treatment, infections requiring hospitalisation, a malignancy presenting after treatment, and mortality. The incidence of these adverse events was low, and did not follow any pattern related to the age of the patient at treatment (*Figure 1 and* 2), and none of the deaths observed were directly related to IBD. 40% (6/15) of patients aged 60–69 required admission to hospital due to infection; however no patients in the age bands of 50–59 or 70+ had this outcome. The infective aetiology was diverse. The median days of presentation after starting anti-TNF was >200 days.

**Conclusion** Treatment efficacy, failure and the incidence of adverse events among older patients on anti-TNF therapy appears to be low and unrelated to increasing age. Our research suggests that anti-TNF therapy is an effective and safe treatment option for IBD patients aged over 50 who have failed previous immunomodulator therapy.

## REFERENCE

1 Lobaton *et al*. Efficacy and safety of anti-TNF therapy in elderly patients with inflammatory bowel disease. *Aliment Pharmacol Ther*. 2015 Aug;**42**(4):441–51. doi:10.1111/apt.13294. Epub 2015 Jun 24.

**Disclosure of Interest** None Declared

## PTH-077 INFLIXIMAB ANTIBODY LEVELS MAY HIGHLIGHT INEFFECTIVE MAINTENANCE TREATMENT FOR IBD PATIENTS IN REMISSION

[1]N Jamieson*, [1]H Younger, [1]M Fraser, [1]D Armour, [2]A Watson, [1]L Potts. *[1]Gastroenterology; [2]Gastrointestinal Surgery, Raigmore Hospital, Inverness, Inverness, UK*

10.1136/gutjnl-2016-312388.482

**Introduction** Maintenance infliximab (IFX) is established as treatment for Crohn's Disease (CD) and ulcerative colitis (UC). Efficacy is improved with regular dosing to reduce antibody (Ab) development, though antibodies may anyway develop. The optimal time to stop IFX in remission is unknown: there is no reliable guidance to indicate who will relapse. Patients may be reluctant to stop treatment which has served them well despite significant risks and costs in continuing ineffective treatment. The measurement of IFX drug and Ab levels may help decision-making. Undetectable trough drug levels and high antibody levels (IFX-Ab) may suggest ineffective treatment and support stopping IFX in those in remission. Our centre has measured IFX drug and Ab since Sept 2015. We present how this has influenced patient management.

**Methods** We studied 80 IBD patients (55 CD/25 UC) receiving regular IFX to maintain remission. IFX trough drug levels and IFX-Ab levels were measured in all patients between Sept and Dec 2015. Samples were analysed at Exeter Clinical Laboratory International. Disease activity was assessed by the Harvey-Bradshaw Index (HBI) at time of last infusion and the most recent faecal calprotectin was recorded for each patient

**Results** IFX was given at a median interval of 2 months (range 1–3 months) for a median of 29 months (range 5–130). 39 out of 80 had immunosuppression with azathioprine/6 MP or methotrexate when levels were measured. Eighteen (13 Crohn's/5 UC) of 80 patients had no detectable IFX in the presence of IFX-Ab (median 328 AU/ml range 12 to >500). This group had a similar duration of treatment (median 25 months range 8–89 months) but were less likely to be on immunosuppressant medication (4/18). Of these 18, 2 were clinically relapsing. The remaining 16 appeared in remission or minimally active (HBI median 1.5, range 0–6 a patient with bile-salt diarrhoea excluded), the median faecal calprotectin levels was 72 µg/g (range <30 to 249) a median of 4 months from measured IFX levels. Results were discussed with patients and the decision made to stop IFX treatment. Immunosuppressant medication was started as appropriate. A further 18 patients had IFX-Ab in the presence of a measurable trough drug level

**Conclusion** In 80 IBD patients on maintenance IFX, 16 (20%) had no detectable IFX trough levels but significant levels of IFX-Ab whilst in remission. Routine measurement of IFX levels and Ab as part of routine clinical practice may identify patients receiving no benefit from maintenance therapy, reducing costs, risks and treatment burden. Ongoing study is necessary to determine outcomes of patients stopping biologics and of patients in whom infliximab levels and infliximab antibodies co-exist

**Disclosure of Interest** None Declared

## PTH-078 INCREASING ADHERENCE TO BSG GUIDELINES FOR CANCER SURVEILLANCE IN IBD - EFFECTIVE STRATEGIES

RN Patel, O Mogwanja*, Y El-Gazzar. *Gastroenterology, Queens Hospital, London, UK*

10.1136/gutjnl-2016-312388.483

**Introduction** Colorectal cancer (CRC) is the fourth commonest cancer worldwide. Inflammatory bowel disease (IBD) is one of the many risk factors. Ulcerative colitis (UC) and Crohn's colitis both increase the risk of developing CRC by greater than 15 fold compared to the population without IBD. The National Institute for Health and Care Excellence (NICE) produced evidence-based recommendations in 2011 on the colonoscopic surveillance for prevention of CRC in people with UC, Crohn's disease or adenomas. These are broadly consistent with those in the BSG 2010 guidelines. One of the key recommendations is that chromoscopy (pan-colonic dye spray) is the technique of choice.

**Methods** We compared results from two audits (2012/13 and 2014/15) performed at Barking, Havering and Redbridge University Hospitals (BHRUH), each assessing adherence to the key features of the BSG guidelines. The interventions made between auditing included; adding a 'surveillance' option to the endoscopy request form, specifying 'dye spray' on the request and clerical staff dedicating 3 points (i.e more time) to perform the procedure.

**Results** 100 patients undergoing surveillance colonoscopy from September 2014 to August 2015 at BHRUH (49% male, 65% UC) were analysed compared with 35 patients in the period September 2012 to August 2013 (66% male, 97% UC). The number of chromoscopies performed for CRC surveillance in IBD patients increased from 1 in the initial audit to 30 in the follow up audit, after implementation of changes ($p = 0.003$). 23% of colonoscopies were performed in patients with less than 10 years duration of disease in the first audit compared with 9% in the second ($p = 0.03$). Polyps and dysplasia were identified in 20% and 8.6% of patients in 2013, respectively. This is compared to 31% ($p = 0.21$) and 8% ($p = 0.91$)in 2015.

**Conclusion** Adaptations to the way in which endoscopies are requested at BHRUH along with increased awareness amongst clerical staff booking the more time consuming surveillance colonoscopy has resulted in a significant increases in chromoscopy rates. However, there has not been a corresponding increase in the number of polyps or adenomas detected. This may be explained by the overall improvement in the quality of white light endoscopy and technical ability of endoscopists. Further work comparing chromoscopy, narrow band imaging and white light endoscopy in the detection of early cancers in IBD is required.

## REFERENCES

1 Colonoscopic surveillance for prevention of colorectal cancer in people with ulcerative colitis, Crohn's disease or adenomas. NICE Guidelines, 2011.
2 Guidelines for colorectal cancer for screening and surveillance in moderate and high risk groups (update from 2002). BSG Guidelines, 2010.

**Disclosure of Interest** None Declared

## PTH-079 6-THIOGUANINE AS AN ALTERNATIVE THERAPY IN INFLAMMATORY BOWEL DISEASE? - EXPERIENCE IN A LONDON DISTRICT GENERAL HOSPITAL

OS Omer*, S Salehi, A Loganayagam. *Gastroenterology, Queen Elizabeth Hospital, London, UK*

10.1136/gutjnl-2016-312388.484

**Introduction** Conventional thiopurines (Azathioprine/6 Mercaptopurine) remain the cornerstone of maintaining remission in steroid-dependent inflammatory bowel disease (IBD). Despite the well-documented efficacy of these drugs, more than 50% of patients discontinue treatment due to adverse events or therapy resistance. Over the past decade, there has been renewed interest in the use of 6 thioguanine (TG), an agent historically used in haematological malignancy. With a shorter metabolic pathway, TG possesses a favourable side effect profile and it's use as an alternative thiopurine in IBD is growing. We report our experience in tolerability, safety and efficacy of TG use in a London District General Hospital.
**Methods** A retrospective review of electronic patient records including clinic letters, blood tests and endoscopic findings were carried out on patients commenced on TG between 2012 and 2015. Data was collected on patient demographics, indication and duration of therapy, response rates and reasons for treatment failure.
**Results** A total of 28 patients received TG 20 mg once daily and median treatment duration was 14 months (range 1–40). Therapy was equally distributed amongst males and females (14:14), and mean age was 44 years (range 19–67). 14 (50%) patients had Ulcerative colitis (UC), 13 (46%) Crohn's disease (CD) and 1 (4%) Indeterminate colitis. 24 patients (86%) received TG due to adverse reactions to conventional thiopurines vs. 3 patients (11%) who were non-responders. Treatment with TG resulted in clinical remission in 86% (19/22) patients at 6 months and 75% (12/16) at 12 months. In total, 6 patients (21%) discontinued TG – 4 failed treatment (2 continued alternative medical therapy and 2 had surgery) and 2 suffered adverse events (headaches and confusion). Tolerability and efficacy rates were similar in both UC and CD groups. All patients underwent blood monitoring and no abnormalities in liver function tests were detected. Of those who underwent MRI liver there was no evidence of nodular regenerative hyperplasia.
**Conclusion** TG was well tolerated with comparable remission rates to conventional thiopurine therapy. We advocate the use of TG therapy in selected cases where conventional thiopurine therapy has failed or resulted in adverse reactions. Larger prospective trials are required to further evaluate the efficacy and safety of TG, with a view to potentially incorporate it's use into clinical guidelines.
**Disclosure of Interest** None Declared

## PTH-080 SERIOUS INFUSION REACTIONS WITH VEDOLIZUMAB ARE RARE: A UK MULTICENTER EXPERIENCE

[1]P Irving*, [2]C Lees, [3]A Hart, [4]K Kemp, [5]T Ahmad, [6]F Cummings. *[1]IBD Centre, Guy's and St Thomas' Hospital NHS Foundation Trust, London; [2]Department of Gastroenterologist, Western General Hospital, Edinburgh; [3]IBD Unit, St mark's Hospital, London; [4]Department of Gastroenterology, Manchester Royal Infirmary, Manchester; [5]Department of Gastroenterology, Royal Devon and Exeter NHS Foundation Trust, Exeter; [6]Department of Gastroenterology, University Hospital Southampton, Southampton, UK*

10.1136/gutjnl-2016-312388.485

**Introduction** Vedolizumab has recently become widely available in the UK for the treatment of moderate to severe ulcerative colitis (UC) and Crohn's disease (CD). This has created pressure on infusion services exacerbated by the improved access to infliximab for UC and the ever increasing number of patients with CD receiving IFX. The UK Summary of Product Characteristics, unlike in the US, mandates post-infusion monitoring of patients for 2 hours after the first 2 infusions and for 1 hour after subsequent infusions. We have, therefore, reviewed the frequency of infusion reactions during and after infusions of vedolizumab in 6 UK IBD centres.
**Methods** Details of the numbers of vials of vedolizumab supplied to each centre were provided by Takeda UK. All centres identified patients on vedolizumab who had had possible infusion-related reactions and reported the details after review of the case record.
**Results** Across the 6 centres, 1132 vials of vedolizumab had been supplied for infusion up until 5th March 2016. 9 possible infusion reactions were identified involving 9 patients. 1 reaction occurred during the infusion, 1 in the 2 hours after the infusion and 7 more than 2 hours after the infusion. One anaphylactoid reaction occurred on the second infusion in a patient with Crohn's disease on concomitant mercaptopurine. The infusion was stopped and no further infusions of vedolizumab were given. Other possible infusion-related reactions included headache (2), rash (3), nausea and blurred vision (1), vasovagal symptoms (1), and palpitations (1). Only one reaction occurred in the 2 hours following the infusion. This was a patient who experienced palpitations who had consumed several cups of coffee whilst waiting to be discharged. Other than the patient with an anaphylactoid reaction, none of the other reactions led to discontinuation of vedolizumab.
**Conclusion** Vedolizumab infusion reactions are rare. Only one anaphylactoid reaction was seen in over 1000 infusions. No definite reactions occurred in the 2 hours after infusions suggesting that monitoring patients for 2 hours after the first 2 infusions and for 1 hour after subsequent infusions is probably

unnecessary. Overall, the frequency of infusion reactions is low as was seen in the Gemini studies.

**Disclosure of Interest** P. Irving Grant/research support from: AbbVie, MSD, Consultant for: AbbVie, MSD, Vifor, Genentech Inc., Takeda, Warner Chilcott, Falk and Pharmacosmos, Speaker bureau with: AbbVie, MSD, Ferring, Warner Chilcott, Shire, Falk and Johnson and Johnson, C. Lees: None Declared, A. Hart: None Declared, K. Kemp: None Declared, T. Ahmad: None Declared, F. Cummings: None Declared

## PTH-081 ALLOPURINOL ABROGATES THIOPURINE INDUCED LIVER INJURY WITHOUT THE NEED FOR METABOLITE MEASURMENTS

[1]P Pavlidis*, [2]R Reynolds, [3]A Ansari. *[1]Gastroentertology, King's College Hospital, London; [2]Gastroentertology, Surrey and Sussex Healthcare Trus; [3]Gastroentertology, Surrey and Sussex Healthcare Trust, Surrey, UK*

10.1136/gutjnl-2016-312388.486

**Introduction** The thiopurines azathioprine and mercaptopurine are widely used as long term immunomodulators in inflammatory bowel diseases (IBD). Reported side effects vary between 10–40% hindering the efficacy and safety of these useful treatments. Hepatotoxicity is one of the commoner side effects (up to 10%) and some investigators have made an association to thiopurine methyltransferase (TMPT) levels as well as hypermethylation.

**Aim** Report on the use of allopurinol in conjuction to azathioprine (Low Dose Azathioprine Allopurinol- LDAA) in patients who developed thiopurine induced liver injury.

**Methods** This is a retrospective cohort study. The patients were drawn from a large database of patients at a single District General Hospital by the authors. The outcomes were assessed by review of patient records.

**Results** We identified 15 (10%) patients who developed thiopurine induced liver injury [median (range) ALT: 74 iu/L (49,630), ALP: 35 iu/L (20, 120), bilirubin: 8μmol/L (5, 45), time of onset from drug commencement: 12 weeks (6, 30)] in the last 5 years from a prospective cohort of 150 patients who required azathioprine for IBD (Crohn's disease: 8, Ulcerative colitis: 7, 1 with concomitant psoriatic arthropathy and 1 with Takayasu's arteritis). There were 7 (47%) patients with wild type TPMT and 8 (53%) heterozygotes. Seven (78%)of the 9 patients receiving LDAA had a normalisation of aminotransferases after an increase in allopurinol dose from 100 mg to 200 mg while two were eventually diagnosed with primary sclerosing cholangitis. Addition of allopurinol (100 mg) for the 6 patients on azathioprine monotherapy lead to normalisation of aminotransferases.

**Conclusion** Observations form this data suggest i) Patients who cannot produce high methylated mercaptopurine metabolites (MMP) can develop hepatotoxicity which responds well to allopurinol. ii) Patients may still develop hepatotoxicity on co-therapy with 100 mg of allopurinol, which responds to a dose increase to 200 mg, suggesting an independent hepatocyte protective effect of allopurinol. We have previously suggested a role for reactive oxygen species. iii) Thiopurine metabolites profiles should not be used to guide allopurinol use, as the protective effect is not predicted by high MMP levels.

**Disclosure of Interest** None Declared

## PTH-082 COMPARISON OF EFFICACY AND SAFETY OF BIOSIMILAR INFLIXIMAB TO ORIGINATOR INFLIXIMAB IN CHILDREN WITH INFLAMMATORY BOWEL DISEASE

R Muhammed*, T Wong, W Haller, S Protheroe, L Whyte, R Bremner. *Department of Gastroenterology, Birmingham Children's Hospital, Birmingham, UK*

10.1136/gutjnl-2016-312388.487

**Introduction** CT-P13 is the biosimilar Infliximab approved for use in Europe and it is marketed in the UK in two brand names, Remsima (NAPP pharmaceuticals) and Inflectra (Hospira pharmaceuticals). We have compared the efficacy and safety of biosimilar Infliximab to the originator Infliximab (Remicade, MSD Immunology) in our clinical practice.

**Methods** Clinical and laboratory data of patients receiving Infliximab from January 2015 to October 2015 was collected from patient records and electronic case records.

**Results** We have used biosimilar Infliximab (Inflectra) for all new starters of Infliximab treatment in our unit since July 2015. 24 patients (18 with Crohn's disease (CD) and 6 with ulcerative colitis (UC)) were started on Inflectra this year. 17 patients (15 patients with Crohn's disease and 2 with ulcerative colitis) were started on Remicade from January to July this year. A total of 72 Inflectra infusions were administered compared to 96 infusions of Remicade. Median number of infusions per patient was 3 and 6 respectively for Inflectra and Remicade. 1 patient receiving Inflectra had a major infusion reaction needing a switch of treatment to Adalimumab. This was comparable to the incidence of major infusion reaction in patients receiving Remicade (1/17). Clinical remission was achieved in 7/11 (64%) patients receiving Inflectra treatment. 8/15 (53%) children with Crohn's disease on treatment with Remicade achieved clinical remission. 3/6 (50%) patients with UC achieved clinical remission using Inflectra. 1/2 (50%) patients with UC on Remicade achieved clinical remission. Cost of Inflectra is less than that of Remicade (100 mg vial of Inflectra costs approximately £210 and 100 mg vial of Remicade costs approximately £350). Results are summarised in Table 1.

**Abstract PTH-082 Table 1** Comparison of patients with IBD on treatment with Remicade and Inflectra

| | Patients on treatment with Remicade (January to July 2015) | Patients on treatment with Inflectra (July to October 2015) |
|---|---|---|
| Number of patients | 17 (CD 15, UC 2) | 24 (CD 18, UC 6) |
| Total number of infusions | 96 | 72 |
| Number of infusions per patient median (range) | 6 (2–8) | 3 (1–6) |
| Major infusion reaction | 1/17 (6%) | 1/24 (4%) |
| Patients with CD on Azathioprine | 12/15 (80%) | 15/18 (83%) |
| Patients with CD needing dose escalation | 3/15 (20%) | 5/18 (28%) |
| Patients with CD in remission at 3 months | 8/15 (53%) | 7/11 (64%) |
| Patients with UC in remission | 1/2 (50%) | 3/6 (50%) |
| Drug cost of 6 month's treatment | £3500 | £2100 |

**Conclusion** In our clinical practice, the efficacy and safety of biosimilar Infliximab (Inflectra) is comparable to the originator Infliximab with significant cost savings offered by the use of biosimilar Infliximab.

**Disclosure of Interest** R. Muhammed Grant/research support from: MSD immunology, Abbvie, Takeda, Speaker bureau with: Abbvie, Dr Falk, Conflict with: MSD Immunology, Takeda, Pfizer, Dr Falk, Nestle, T. Wong: None Declared, W. Haller: None Declared, S. Protheroe Grant/research support from: Tillotts Pharma, L. Whyte: None Declared, R. Bremner: None Declared

## PTH-083 COST-EFFECTIVENESS OF VEDOLIZUMAB COMPARED WITH CONVENTIONAL THERAPY FOR TREATMENT OF MODERATELY-TO-SEVERELY ACTIVE ULCERATIVE COLITIS IN THE UNITED KINGDOM

[1]M Wilson, [2]M Kerrigan, [3]M Smyth, [4]H Chevrou-Severac, [4]A Bergman, [5]R Selby*. *[1]RTI Health Solutions, Manchester; [2]PHMR Ltd; [3]Takeda Development Centre Europe Ltd, London, UK; [4]Takeda Pharmaceuticals GmbH, Zurich, Switzerland; [5]Takeda UK Ltd, Wooburn Green, UK*

10.1136/gutjnl-2016-312388.488

**Introduction** The objective of this analysis was to examine the clinical and economic impact of vedolizumab (VDZ) compared with conventional therapy (CT) in the treatment of moderately to severely active ulcerative colitis (UC) in the UK (UK).

**Methods** A Markov decision analytic model in Microsoft Excel was used to compare VDZ with CT (aminosalicylates, corticosteroids, immunomodulators) for the treatment of UC patients in the UK. We considered three populations: the overall intent-to-treat (ITT) population; anti-tumour necrosis factor (TNF)-naïve patients; and patients who previously failed anti-TNF therapy from the GEMINI 1 trial.

Population characteristics, efficacy data, and UC health-state utility data were obtained from the GEMINI 1 trial. Other inputs (e.g., unit costs, adverse event disutilities, probability of surgery, mortality) were obtained from published literature. Costs are presented in 2014 British pounds. Outcomes included quality-adjusted life-years (QALY), time spent in clinical response, and time spent in clinical remission. Time horizons included 10 year (base-case) and lifetime (scenario) horizons, with costs and outcomes discounted by 3.5% per year. Incremental cost-effectiveness ratios (ICER) were presented for VDZ compared with CT. Univariate and multivariate probabilistic sensitivity analyses were conducted to assess model robustness to parameter uncertainty, and a scenario analysis was explored using efficacy data from a network meta-analysis.

**Results** Over the base-case (10 year) time horizon, the model predicted that patients on VDZ accrued more QALY than patients on CT: 5.551 QALY vs 5.397 QALY in the ITT population (ICER=£33,297/QALY); 5.597 vs 5.403 QALY for anti-TNF-naïve patients (ICER=£24,657/QALY; network meta-analysis results: utilities 5.898 for VDZ vs 5.555 for CT and ICER=£4,862/QALY); and 5.463 vs 5.373 QALY for anti-TNF-failure patients (£64,999/QALY). Patients on VDZ spent more time in clinical response (0.99 years vs 0.27 years for the ITT population) and clinical remission (0.64 years vs 0.13 years) than patients on CT. Scenario analyses with a lifetime horizon showed VDZ to be even more cost-effective (ITT population ICER=£20,599/QALY). Sensitivity analyses suggest that results are most sensitive to treatment response and transition probabilities.

**Conclusion** Our model predicted that treatment with VDZ improves QALY, increases time in remission and response, and is a cost-effective treatment option for both anti-TNF naïve and anti-TNF failure patients with moderately to severely active UC compared with CT over 10 year and lifetime horizons.

**Disclosure of Interest** M. Wilson Conflict with: Employee of RTI Health Solutions, a company hired to conduct the study by Takeda Pharmaceuticals, M. Kerrigan Conflict with: Employee of PHMR Ltd, a company hired to conduct the study by Takeda Pharmaceuticals, M. Smyth Employee of: Takeda Development Centre Europe Ltd, London, UK, H. Chevrou-Severac Employee of: Takeda Pharmaceuticals GmbH, Zurich, Switzerland, A. Bergman Employee of: Takeda Pharmaceuticals GmbH, Zurich, Switzerland, R. Selby Employee of: Takeda UK Ltd., Bucks, UK

## PTH-084 COST-EFFECTIVENESS OF VEDOLIZUMAB COMPARED WITH INFLIXIMAB, ADALIMUMAB, AND GOLIMUMAB FOR TREATMENT OF MODERATELY-TO-SEVERELY ACTIVE ULCERATIVE COLITIS IN THE UNITED KINGDOM

[1]M Wilson, [2]M Kerrigan, [3]M Smyth, [4]H Chevrou-Severac, [4]A Bergman, [5]R Selby*. *[1]RTI Health Solutions, Manchester; [2]PHMR Ltd; [3]Takeda Development Centre Europe Ltd, London, UK; [4]Takeda Pharmaceuticals GmbH, Zurich, Switzerland; [5]Takeda UK Ltd, Wooburn Green, UK*

10.1136/gutjnl-2016-312388.489

**Introduction** The objective of this analysis was to examine the clinical and economic impact of vedolizumab (VDZ) compared with infliximab (IFX), adalimumab (ADA), and golimumab (GOL) in the treatment of moderately to severely active ulcerative colitis (UC) in the UK (UK).

**Methods** A Markov decision analytic model in Microsoft Excel was used to compare VDZ with IFX, ADA, and GOL for the treatment of UC patients in the UK. Due to a lack of data in comparable patient populations, this analysis was conducted in anti-tumour necrosis factor (TNF)-naïve patients only. Efficacy data were obtained from a network meta-analysis of Phase III clinical trials, using placebo as the common comparator. Other inputs (e.g., unit costs, adverse event disutilities, probability of surgery, mortality) were obtained from published literature. Costs are presented in 2014 British pounds. Outcomes included quality-adjusted life-years (QALY), time spent in clinical response, and time spent in clinical remission. Time horizons included 10 year (base case) and lifetime (scenario) horizons, with costs and outcomes discounted by 3.5% per year. Incremental cost-effectiveness ratios (ICER) were presented for VDZ compared with other biologics. Univariate and multivariate probabilistic sensitivity analyses were conducted to assess model robustness to parameter uncertainty.

**Results** Over the base-case (10 year) time horizon, the model predicted that anti-TNF-naïve patients on VDZ accrued more QALY than patients on other biologics: 5.898 QALY vs 5.818, 5.760, and 5.790 QALY for IFX, ADA, and GOL, respectively. The incremental results over a 10 year horizon suggests that VDZ is a cost-effective treatment compared with ADA (ICER of £6,634/QALY), and VDZ is dominant compared with IFX and GOL. Patients on VDZ spent more time in clinical response (2.93 years vs 2.55 years for ADA, IFX and

GOL) and clinical remission (1.38 years vs 1.08, 0.99, and 1.04 years for IFX, ADA and GOL respectively). VDZ was found to be dominant compared with all other biologics over a lifetime horizon. Sensitivity analyses suggest that results are most sensitive to treatment response and transition probabilities. However, VDZ remained cost-effective irrespective of variation in any of the input parameters.

**Conclusion** Our model predicted that treatment with VDZ improves QALY, increases time in remission and response, and is a cost-effective treatment option for anti-TNF-naïve patients with moderately to severely active UC compared with all other biologics tested. VDZ may also be a cost-saving treatment strategy as well.

**Disclosure of Interest** M. Wilson Conflict with: Employee of RTI Health Solutions, a company hired to conduct the study by Takeda Pharmaceuticals, M. Kerrigan Conflict with: Employee of PHMR Ltd, a company hired to conduct the study by Takeda Pharmaceuticals, M. Smyth Employee of: Takeda Development Centre Europe Ltd, London, UK, H. Chevrou-Severac Employee of: Takeda Pharmaceuticals GmbH, Zurich, Switzerland, A. Bergman Employee of: Takeda Pharmaceuticals GmbH, Zurich, Switzerland, R. Selby Employee of: Takeda UK Ltd., Bucks, UK

## PTH-085 DEOXYTHIOGUANOSINE (DTG) IN DNA AS A PHARMACOLOGICAL ENDPOINT OF THIOPURINE TREATMENT IN INFLAMMATORY BOWEL DISEASE PATIENTS

[1]S Coulthard*, [2]P Berry, [3]S McGarrity, [4]T Kobayashi, [4]T Toyonaga, [5]A Ansari, [6]C Redfern. *[1]Institute of Cellular Medicine, Newcastle Upon tyne, Newcastle upon Tyne, UK; [2]Northern Institute for Cancer Research, Newcastle University, Newcastle upon Tyne, American Samoa; [3]Centre for Systems Biology, University of Iceland, Reykjavik, Iceland; [4]Center for Advanced IBD Research and Treatment, Kitasato University, Kitasato, Japan; [5]Gastroenterology Dept, East Surrey Hospital, Rehill; [6]Northern Institute for Cancer Research, Newcastle University, Newcastle upon Tyne, UK*

10.1136/gutjnl-2016-312388.490

**Introduction** We have used a sensitive assay to measure incorporated dTG in the DNA isolated from peripheral blood cells of patients treated with thiopurines with the aim of identifying a more appropriate pharmacological marker of response for patients on therapy with the thiopurines azathioprine (AZA) or mercaptopurine (MP).

**Methods** DNA was isolated from blood samples collected from 38 IBD patients; 23 on AZA and 15 on MP. DNA was denatured, digested using P1 nuclease followed by treatment with alkaline phosphatase and finally diluted in MilliQ water prior to analysis. A total of 0.2 µg of DNA in 50 µL was injected for chromatographical separation followed by analysis on an API4000 triple quadrupole LC-MS/MS. Standard curves and controls were validated and samples analysed to determine number of moles of dTGN/ $10^5$ moles of dA.

**Results** A cohort of patients with Crohn's Disease (CD) on AZA (n = 11) or MP (n = 5) or Ulcerative Colitis (UC); AZA (n = 12), MP (n = 10) established on thiopurine therapy for more than 25 weeks and in clinical remission were analysed. For those on AZA only there was a statistically significant correlation between dTG levels and AZA dose (Kendall Rank correlation, $P < 0.05$; median =0.89, mean = 2.03, SD = 2.92; range 0.0–11.3); however there was no such correlation for the MP treated patients (Kendall Rank correlation, $P > 0.05$; median =1.05, mean = 1.0, SD = 1.0; range 0.0–3.3). When disease was taken into account there was no statistical difference in dTG levels between those taking AZA (Mann-Whitney, $P > 0.9$; for CD patients, median =0.89, mean = 2.13, SD = 3.34; for UC patients, median =1.11, mean = 1.19, SD = 2.61). However, for those taking MP there was a statistically-significant difference (Mann-Whitney, $P < 0.05$; for CD patients, median =1.7, mean = 1.98, SD = 0.99; for UC patients, median =1.45, mean = 0.59, SD = 0.63)

**Conclusion** This pilot study shows that the levels of dTG in treated patients are similar whether the patients are on AZA (average dose 118 mg) or MP (average dose 39 mg equivalent to approximately 81 mg AZA). However, there were clear differences between the two drug-treatment groups with respect to the correlation of dTG and drug dose and in the relationship between dTG incorporation and disease type. These results justify a larger cohort study to investigate the role of drug-DNA interactions in clinical responses to thiopurines

**Disclosure of Interest** None Declared

## PTH-086 EFFECT OF IMMUNOSUPPRESSIVE TREATMENT ON INTERFERON-GAMMA RELEASE ASSAYS PRIOR TO BIOLOGIC TREATED INFLAMMATORY BOWEL DISEASE

[1]S Bouri, [1]AA Thi*, [1]P Wolfson, [1]L Owen, [2]A Abbara, [2]L John, [2]RN Davidson, [1]AL Hart. *[1]Department of Inflammatory Bowel Disease, St Mark's Hospital; [2]Department of Infectious Diseases, Northwick Park Hospital, London, UK*

10.1136/gutjnl-2016-312388.491

**Introduction** Indeterminate interferon-gamma release assay (IGRA) results when screening for latent tuberculosis infection (LTBI)prior to biologic use in inflammatory bowel disease (IBD) may delay biologic treatment initiation. Concomitant steroids affect IGRA result, however the impact of other immunosuppressive medications is less clear. We determine the effect of immunosuppressives on results of IGRAs.

**Methods** All patients treated with biologics from July 2013-November 2015 were identified from a pharmacy database. Electronic and clinical records were reviewed for IGRA result and concomitant immunosuppressive use. X2 was used to compare categorical data and univariate logistic regression using SPSS was used to determine likelihood of indeterminate tests with different immunomodulator medications (IMM).

**Results** 247 patients with IBD had an IGRA. Mean age: 36.9 years (range 8–85) and 54% were male. 78/247 (32%) had an indeterminate result and 35/78 (45%) patients had a repeat test; 17/35 (49%) had a second indeterminate result. 181/247 (73%) received at least one IMM prior to screening and 66 patients (27%) were not on any IMM (IMM-free). In the IMM group: 121/181 (67%) patients had thiopurines, 18/181 (10%) had corticosteroids, 25/181 (14%) had both, 9/181 (5%) had methotrexate and 7/181 (4%) had other IMMs at screening. 72/181 (40%) had a first indeterminate IGRA 59/181 (33%) had a second indeterminate result. In the IMM-free group: 6/66 (9.0%) had an indeterminate IGRA. Patients in IMM group were more likely to have an indeterminate results than patients in IMM-free group (33% v 9.0%, p = 0.00001). Each separate IMM group was more likely to be associated with an indeterminate IGRA result compared with those in IMM-free group: thiopurines (23%) p = 0.020, steroids (42%) p = 0.001, thiopurines and steroids (64%) p = 0.001, other (43%) p = 0.01 and methotrexate (44%) p = 0.008). The combination of steroids and thiopurines

together was the strongest factor associated with an indeterminate result. High dose (Prednisolone >20 mg or intravenous Hydrocortisone) and low dose steroids (Prednisolone <20 mg or Budesonide) were equally likely to cause an indeterminate result (66.6% v 50.0%, p = 0.68).

**Conclusion** A combination of thiopurines and steroids gave the highest likelihood of an indeterminate IGRA result, although significant results occurred with all IMMs. This has implications for LTBI screening in IBD patients. Guidelines to address indeterminate IGRA results, perhaps with more focus on epidemiological risk may be helpful. There is an unmet need to have improved assessment tools for TB in patients on IMMs.

**Disclosure of Interest** None Declared

## PTH-087 SEVERITY OF BILE ACID MALABSORPTION DOES NOT CORRELATE WITH LENGTH OF ILEAL RESECTION OR RESPONSE TO BILE SALT SEQUESTRANT THERAPY IN CROHN'S DISEASE

K Lo, H Riyat*, Y Prasad, S Subramanian. *Gastroenterology, Royal Liverpool University Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.492

**Introduction** Bile acid malabsorption (BAM) is a common cause of diarrhoea in Crohn's disease (CD) patients with ileal resection and can lead to complications such as renal and biliary stone disease. BAM is usually diagnosed by selenium labelled homo-taurocholic acid test ($^{75}$ SeHCAT) but its availability is limited. Thus, large proportions of resected CD patients either remain undiagnosed or subject to empirical therapy. There is a paucity of studies examining the correlation between length of ileal resection and severity of BAM which will be of particular use to clinicians with no recourse to diagnostic testing for BAM.

**Methods** We identified all CD patients with a prior surgical resection who underwent $^{75}$ SeHCAT testing at our institute. Testing was based on the treating clinician's discretion. The length of resected ileum was recorded from histopathology report. Correlation between length of resected ileum and percentage retention on $^{75}$ SeHCAT was assessed using a Spearman's correlation test. Response to treatment with bile salt sequestrant and $^{75}$ SeHCAT retention values (using a cut point of 5%) was analysed using Fisher's exact test.

**Results** A total of 40 patients were identified with a mean age of 45 (SD±13), of which 6 (15%) were men. The median length of resected ileum was 22.8 cms (range 5.8–61.0 cms) with a median of 1 resection (range 1–4). Overall, 38 patients (95%) had $^{75}$ SeHCAT retention values of <10% and 36 (90%) had retention of <5%. There was no correlation between $^{75}$ SeHCAT retention and length of ileal resection (Spearman's rho: -0.19, P = 0.24). Data on response to treatment was available for 30 patients, of who 21 (70%) responded and 9 (30%) failed to respond to bile salt sequestrant therapy. Three of the responders (14%) had $^{75}$ SeHCAT values of >5% and the remaining 18 (86%) had values <5%. All of the non-responders had $^{75}$ SeHCAT retention values <5% (Fisher's exact, two tailed P = 0.53).

**Conclusion** There was no correlation between length of ileal resection and severity of BAM as defined by $^{75}$ SeHCAT retention values. Response to bile salt sequestrant therapy was not dependent on $^{75}$ SeHCAT retention values though overall clinical response was good.

**Disclosure of Interest** K. Lo: None Declared, H. Riyat: None Declared, Y. Prasad: None Declared, S. Subramanian Speaker bureau with: MSD, Abbvie, Shire, Ferring, Actavis, Conflict with: Advisory board Boehringer-Ingelheim, Vifor pharma, MSD, Abbvie, Shire

## PTH-088 WE'RE STILL NOT IMMUNE TO IMMUNISATIONS IN IBD

[1]J Heffernan, [2]S Ravindran*, [2]J Medcalf, [3]L Macken, [2]A Li. *[1]American University of the Caribbean School of Medicine, Florida, United States; [2]WSHT, Worthing; [3]BSUH, Brighton, UK*

10.1136/gutjnl-2016-312388.493

**Introduction** Over the past decade, there has been an increasing uptake of immunomodulator therapy in the treatment of Inflammatory Bowel Disease (IBD). The current British Society of Gastroenterology (BSG) and European Crohn's and Colitis Organisation (ECCO) guidelines highlight the importance of influenza, pneumococcal, human papilloma virus, varicella and hepatitis B vaccination. Our previous audit in 2014 described 75% uptake of any vaccination in these patients. Here we present the re-audit after an intervention, where a letter was sent to general practitioners (GPs) to promote immunisation awareness.

**Methods** 100 consecutive IBD patients attending the general gastroenterology outpatient clinic were asked to complete a questionnaire. All forms of IBD were included. Information regarding medication, infections and immunisation status were recorded. Results were analysed using the statistical package for the social sciences (SPSS).

**Results** Of the 100 questionnaires returned, 3 were excluded due to incomplete completion. Median age was 46 (19–84). Of the IBD subtypes, 48 (49%) patients had Crohn's, 34 (35%) had ulcerative colitis and 15 (16%) had colitis of unknown aetiology (CUTE); male to female ration was 48:52%. 92% of patients with IBD had medication prescribed in the past 6 months. Within this group, 59% had been on mesalazine, 38% on thiopurines, 36% on steroids and 12% on anti tumour necrosis factor (anti-TNF) agents. Overall, 68% of immunosuppressed patients received some form of immunisation in the preceding 6 months and, of these, 28% had some form of infection reported. In total, 44% of patients had immunosuppressant advice given and 29% of patients had vaccination advice. There was no statistical difference in the baseline characteristics of patients and prescribed medication compared to 2014. Despite engagement with primary care, there was no significant difference in the uptake of immunisation in the IBD population. In fact, there were statistically lower rates of Influenza and Pneumovax vaccination in the 2015 cohort (P < 0.05). The only statistical improvement was in HPV vaccination (adjusted) (*see table*).

**Abstract PTH-088 Table 1**

| Vaccination in Immunosuppressed Patients | 2014 Audit | 2015 Audit | Statistical Significance (2 tail) |
|---|---|---|---|
| Influenza | 92% | 62% | <0.002 |
| Pneumovax | 40% | 17% | 0.0058 |
| Hepatitis B | 21% | 19% | 0.8235 |
| HPV (adjusted) | 2% | 9% | <0.002 |

**Conclusion** Current guidelines state that influenza, pneumococcal and HPV vaccination be considered for all IBD patients. Despite the results of our previous audit there does not appear to be an improvement in vaccination rates. A weakness in the current approach is that information is received by GPs at differing intervals to when a patient is seen. It may be that a targeted, patient-specific letter is sent to GPs with an attached acknowledgement receipt to improve vaccination rates.
**Disclosure of Interest** None Declared

## PTH-089 CHILDHOOD ENVIRONMENTAL FACTORS AND TRENDS IN INFLAMMATORY BOWEL DISEASE

[1]S Chetcuti Zammit, [1]A Brincat*, [2]G Laferla, [1]P Ellul. *[1]Gastroenterology; [2]Surgery, Mater Dei Hospital, Msida, Malta*

10.1136/gutjnl-2016-312388.494

**Introduction** Genetic predisposition, does not account solely for disease aetiology. Other environmental and childhood factors might explain the rise of inflammatory bowel disease (IBD) in recent years.
**Methods** All patients diagnosed with IBD between 2012 and 2014 at Mater Dei Hospital in Malta were included in this study. Each patient was then asked to fill in a questionnaire related to childhood factors.
**Results** 152 patients (mean age 42.4 years sd±17.7; mean age at diagnosis 39.8 years sd±17.7) were included in this study. 55.9% were male. 65.8% patients suffered from UC.

Association between Montreal classification and childhood factors: If patients were brought up with siblings, they were more likely to have an older Montreal age at diagnosis ($p < 0.018$). The age at which patients were separated at school from their siblings was statistically related to Montreal behaviour ($p < 0.018$). Patients who swam in a pool had a younger Montreal age at diagnosis ($p < 0.028$).

Association of type of IBD with childhood factors: When factors were assessed individually, more patients with UC than CD shared a bedroom with their siblings ($p < 0.003$). On binary logistic regression analysis, having contracted measles ($p < 0.033$) and mumps ($p < 0.021$) were statistically significant in determining type of IBD our patients had.

Association of childhood factors with age at diagnosis: Factors leading to an older age at diagnosis of IBD: whether patients were brought up with siblings ($p < 0.001$), underwent cholecystectomy ($p < 0.002$), contracted measles ($p < 0.001$) during childhood. Factors leading to a younger age at diagnosis of IBD: whether they were vaccinated ($p < 0.029$), if they owned fish ($p < 0.004$), whether they went swimming ($p < 0.012$), if they swam in a pool ($p < 0.001$), most swimming modalities ($p < 0.001$). Only the factors below retained statistical significance when assessed using univariate regression analysis. Sharing a bedroom with siblings($p < 0.0001$) and having undergone a tonsillectomy ($p < 0.019$) predisposed to an older age at diagnosis. Sharing day nursery with siblings ($p < 0.002$), swimming in the sea ($p < 0.019$) and in a pool ($p < 0.007$) all predisposed to a younger age at diagnosis of IBD.
**Conclusion** Certain factors such as vaccination and swimming at a young age might predispose to a younger age at diagnosis of IBD. Other factors such as being brought up with siblings were protective and lead to an older age at diagnosis. Studying such factors on a bigger scale might further confirm these trends and may influence lifestyle changes.
**Disclosure of Interest** None Declared

## PTH-090 EOSINOPHILIA OF THE GUT. IS IT INFLAMMATORY BOWEL DISEASE?

[1]S Chetcuti Zammit, [2]J Gauci*, [2]M Cachia, [2]K Sapiano, [1]P Ellul. *[1]Gastroenterology; [2]Medicine, Mater Dei Hospital, Msida, Malta*

10.1136/gutjnl-2016-312388.495

**Introduction** Eosinophilic gastroenteropathy (EG) is an uncommon condition. The causes for this can be numerous as well as non-specific. Inflammatory Bowel Disease (IBD) is one of the causes. It can also be a manifestation of atopy. The aims of our study were (1) to determine if patients who present with eosinophilia of the gut are eventually diagnosed with IBD and (2) to determine if patients with EG have a higher rate of atopic conditions namely, asthma, allergic rhinitis and eczema.
**Methods** Adult patients who had gastrointestinal eosinophilia were identified through the histopathology department and recruited. Their clinical case notes were reviewed. Patients were interviewed and asked questions regarding asthma, allergic rhinitis and eczema.
**Results** 66 patients (39 females; mean age 48.4 SD±18.5) were recruited. The mean eosinophilic count was 0.353 SD ±1.08 (normal range 0.10–0.70 x 10 9/L).The commoner clinical presentations were diarrhoea (42.4%), abdominal pain (33.3%) and weight loss (8.2%). The parts of the gastrointestinal tract where eosinophilic infiltration was present were: stomach (6), colon (37), small bowel (SB) (7), SB and colon (12), oesophgeal (1), oesophageal and colon (2), stomach, SB and colon (1).25.8% of patients were later diagnosed with IBD (10 patients - ulcerative colitis, 6 patients – Crohn's disease and 1 patient had indeterminate colitis). No other secondary causes for GE were present in the rest of the patients and their symptoms resolved without any medical intervention.The prevalence of allergic rhinitis (41.3%) ($p < 0.002$) and eczema (26.1%)($p < 0.001$) with GE were higher than that of the general population. Although asthma (17.4%) was more frequently present in patients with GE than the population, this did not reach statistical significance ($p < 0.62$).
**Conclusion** A high proportion of patients (25.8%) with GE was subsequently diagnosed with IBD. Asthma, eczema and allergic rhinitis in patients with underlying EG are higher than in the general population. Most of the patients had transient GI symptoms that later resolved. Thus, GE may represent an atopic condition of the gut or a response to a food allergen.
**Disclosure of Interest** None Declared

## PTH-091 INCIDENTAL DIAGNOSIS OF INFLAMMATORY BOWEL DISEASE THROUGH THE BOWEL CANCER SCREENING PROGRAMME: A 7 YEAR EXPERIENCE

[1]U Nosegbe*, [1]J Scott, [1,2]R Butcher, [1]A Abbasi, [1]R Prudham, [1]R George, [1,2]JK Limdi. *[1]Gastroenterology, Pennine Acute Hospitals NHS Trust; [2]Institute of Inflammation and Repair - Manchester Academic Health Sciences, University of Manchester, Manchester, UK*

10.1136/gutjnl-2016-312388.496

**Introduction** The UK Bowel Cancer Screening Programme (BCSP) launched in 2006, currently screens individuals aged 60–74 years through a Faecal Occult Blood test (FOBt). If

positive patients are invited for colonoscopy. We reported in 2012 the first ever experience of incidental diagnosis of IBD through a screening cohort and now present a 7 year experience.

**Methods** We conducted a retrospective assessment of BCSP outcomes at our centre between April 2008 (launch) and December 2015. Assessment included the number of patients invited for screening, number successfully screened (inclusive of "normal" and "abnormal" FOBt) and the number of index colonoscopies. In those with confirmed IBD diagnosis, clinical outcomes, symptoms at diagnosis, disease distribution and behaviour and treatments undertaken were recorded through patient record and case note reviews.

**Results** Of 358,716 invited individuals 180,075 were adequately screened (uptake 50.2%) with FOBt positivity of 1.83%. Of 3598 index colonoscopies undertaken, an incidental diagnosis of IBD was made in 37 (12 female) patients. Ulcerative Colitis (UC) was diagnosed in in 22 (59.4%) patients and Crohn's (CD) in 10 (27.0%). A further 5 (13.5%) patients were diagnosed with IBD-type unclassified (IBDU) of which 2 were reclassified as UC through follow up. In those diagnosed with UC initially 9 (41.0%) had proctitis, 8 (36.4%) left sided disease and 5 (22.7%) had extensive disease. The majority of CD patients (80%) had an isolated colonic distribution and behaviour was non-stricturing and non-penetrating (70%) or stricturing (30%).

Follow up data was available for 25 (67.6%) patients over a median of 40.5 months (range 3–87) of which 14 patients were asymptomatic at diagnosis. Eleven (78.6%) became symptomatic and 2 (8.3%) demonstrated phenotypic progression during follow up.

Treatment included 5 ASA (23), steroids (14), Immunomodulation (Azathioprine – 7: Methotrexate – 1) and Anti-TNF (Infliximab -2; Adalimumab – 1). Median time to immunomodulation was 29.0 months and to anti-TNF treatment was 28.0 months. Five patients died: 3 from unrelated causes, 1 from an unknown cause and 1 seven days after subtotal colectomy (undertaken 54 months after diagnosis with symptomatic IBDU).

**Conclusion** An incidental diagnosis of IBD at screening is not uncommon, with an incidence of 1.0% in our cohort . A proportion of patients demonstrate significant disease progression requiring immunomodulation, biologic therapy or surgery.

IBD detection from screening provides a unique model to study early disease in 'elderly' (and potentially asymptomatic) patients.

**Disclosure of Interest** None Declared

## PTH-093 PORTAL VEIN THROMBOSIS

A Malik*, A Yeoman, M Allison, M Czajkowski. *Gwent Liver Unit, NHS, Newport, UK*

10.1136/gutjnl-2016-312388.497

**Introduction** Portal vein thrombosis (PVT) is defined as the presence of thrombus in the trunk of PV and/or its right and left intra-hepatic branches. PVT can be classified as acute or chronic, intra or extra-hepatic and occlusive or non-occlusive. Patients may be asymptomatic or present with upper GI bleeding or abdominal pain. PVT in cirrhotic patients can present with acute decompensation such as ascites or variceal bleeding.

**Methods** A retrospective review of all radiological diagnoses of PVT was done with a view to understanding the aetiology, clinical spectrum, treatment and prognosis of patients managed under a large district hospital.

**Results** A total of 115 patients, median age 62 years (range 25 to 90) were diagnosed with PVT between 2010 and 2015, of whom 71 (62%) were male. Usual indications for radiological investigations were abdominal pain, weight loss and decompensation or routine surveillance in cirrhotic patients. PVT was intra-hepatic alone in 29 patients and extra-hepatic with or without intra-hepatic extension in the rest. Cavernous transformation was reported in 11 patients.

PVT was most commonly seen in association with abdominal malignancy (55 cases – 48%) being due to HCC in 21 cases and other local or metastatic abdominal malignancy in 34. PVT was observed to be due to pancreatitis in 21 cases, liver cirrhosis without HCC in 15, acute diverticulitis/cholecystitis in 6, post surgical in 4 with no clear cause identified in just 14 cases (12%).

Thrombophilia screening was performed in 11/14 patients with unclear aetiology and was positive in 3 (1 JAK-2 positive, 1 elevated anti-b2GP1 antibodies, 1 low in both protein C and S, rest negative), 2/15 patients with liver cirrhosis (both negative) and 4/86 (1 positive for lupus anti-coagulant) of remaining patients.

In total 24 patients were anticoagulated whilst 3 patients were already on warfarin for atrial fibrillation. Of these, 10 were patients of unclear aetiology, 4 with cirrhosis without HCC, 3 had diverticulitis, 3 local or metastatic malignancy, 2 pancreatitis, 1 cholecystitis and 1 post surgical.

Eleven of the 15 patients with cirrhosis and PVT died, typically from hepatic decompensation with a median life expectancy of 8 months (range 1–48 months). Patients who were anticoagulated survived for 12 months as opposed to 4 months for those not anticoagulated.

**Conclusion** PVT has a wide aetiological spectrum and management strategies are highly variable reflecting the diversity of causes. Anticoagulation was most likely to be commenced in those with no clear cause even in the absence of thrombophilia. This study confirms that PVT in the context of cirrhosis is an adverse prognostic indicator even in the absence of HCC.

**Disclosure of Interest** None Declared

## PTH-094 AN ANALYSIS OF THE RELATIONSHIP BETWEEN ETHNICITY AND HEPATITIS B (HBV) PHENOTYPES OVER AN 8 YEAR PERIOD

[1]BD Warner*, [1]H Garnett, [2]J Ria, [2]TD Choudhury, [2]M Farwana, [2]M Chicco, [2]K Ghafoor, [2]K Singh, [3]S Douthwaite, [1]G Tritto, [1]T Wong. *[1]Gastroenterology, Guy's and St Thomas' NHS Foundation Trust; [2]Medical School, Kings College London; [3]Virology, Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.498

**Introduction** Ethnicity is associated with certain HBV phenotypes which in turn affect prognosis.

**Methods** We performed a search for patients with HBV DNA measured at GSTT(March 2007 to March 2015). sAg+ve patients were analysed for:Ethnic group,HIV,Hep C and D co-infection,eAg status, ALT and viral load. Phenotypes were assigned to patients at diagnosis and at last f/up.ALT cut offs were >30 U/L for men and >20 U/L for females.The American Association for the Study of Liver Disease guidelines

divide HBV phenotype into 4 groups although a recent study defined an "Indeterminant" group for patients who do not fit into any phenotype

**Results**

**Abstract PTH-094 Table 1**

| Phenotype | All n = 1799 Diagnosis: Last F/up | African/Afro-Caribbean n = 872 (48%) | Caucasian n = 254 (14%) | Chinese n = 186 (10%) |
|---|---|---|---|---|
| Immunotolerant (eAg+ve, normal ALT,viral load > 105) | 39 (2%):25 | 6(<1%):5 | 3(<1%):2 | 18 (10%):8 |
| Chronic Hepatitis B (eAg-ve with a viral load > 104 AND high ALT | 487 (27%):338 | 188 (22%):156 | 84 (33%):42 | 64 (34%):37 |
| Inactive(eAg –ve with a viral load of <104) | 621 (35%):590 | 357 (41%):332 | 70 (28%):71 | 54 (29%):45 |
| Indeterminant | 565 (31%):398 | 290 (33%):202 | 76 (30%):53 | 40 (22%):35 |
| Cirrhosis | 62 (3%):79 | 23 (3%):29 | 15 (6%):18 | 6 (3%):6 |
| Acute Hepatitis B | 25 (1%) | 8(<1%) | 6 (2%) | 4 (2%) |
| On treatment but not cirrhotic | 0:283 | 0:110 | 0:51 | 0:47 |
| On treatment AND cirrhotic | 0:22 | 0:9 | 0:1 | 0:4 |
| Seroconversion | 0:64 | 0:29 | 0:16 | 0:4 |

1799 patients were sAg+ve,mean f/up duration was 39.2 months(SD 41.2).45% of the cohort were lost to f/up.47% were male, mean age at diagnosis was 36(No difference between ethnicities).82% were eAg-ve,1.5% Hepatitis D +ve,10% HIV+ve,2% hepatitis C+ve.

49% of the cohort were African/Afro-Caribbean,14% Caucasian,10% Chinese,1.5% South Asian, 2.6% South East Asian (other than Chinese),0.3% Arab,3.4% Mixed,2.3% unknown,6.6% "other".

The table shows HBV phenotype at diagnosis compared to last f/up in all patients and then according to the 3 main ethnic groups.Rates of seroconversion and treatment are also shown. 90.5% of African/Afro-Caribbeans were eAg-ve compared to 71% of Caucasians and 63.9% of Chinese ($P < 0.01$).There was an association between the risk of cirrhosis and older age at diagnosis,HIV or Hep C co-infection ($P < 0.01$).

Comparing the 3 largest ethnic groups only,in 2007,70% were African/Afro-Caribbean,19% Caucasian,11% Chinese compared to 51%,36% and 13% respectively in 2014.

**Conclusion** Ethnicity is significantly associated with HBV phenotypes with a higher percentage of immunotolerants being Chinese and a higher percentage of African/Afro-Caribbeans being inactive.

Compared to 2007,a higher percentage of HBV patients in 2014 were Caucasian reflecting changes in immigration.This may affect HBV outcomes and demand on Hepatology services.

**Disclosure of Interest** None Declared

## PTH-095 THE NORTHERN IRELAND EXPERIENCE OF SELECTIVE INTERNAL RADIATION THERAPY

[1]BV Layard, [1]A McNeice*, [2]PT Kennedy, [1]WJ Cash, [1]NI McDougall. *[1]Liver Unit; [2]Radiology Dept., Royal Victoria Hospital, Belfast, UK*

10.1136/gutjnl-2016-312388.499

**Introduction** Selective Internal Radiation Therapy (SIRT) is liver-directed therapy for the treatment of non-resectable primary or secondary liver tumours. Radioactive microspheres containing yttrium-90 are delivered into the arterial blood supply of the liver, where they become lodged in vessels within the tumour, allowing targeted radiation therapy to occur. Currently this innovative treatment concept is recommended when established treatment regimens have failed.

**Methods** SIRT is performed at a single regional centre in Northern Ireland. All potential candidates are discussed at a regional hepatobiliary multi-disciplinary meeting and all have appropriate work-up for SIRT performed to exclude shunting. Each patient receives sensitising chemotherapy in the days prior to SIRT unless contraindicated. We reviewed all SIRT treatments, looking at indications, complications and outcomes between September 2010 and September 2015.

**Results** 27 patients underwent SIRT. The mean age was 62 years old (range 41–77). The indications were liver metastases secondary to colorectal cancer (63%), hepatocellular carcinoma (30%), and liver metastases secondary to neuroendocrine tumours (7%). Each patient had a follow up single-photon emission computed tomography (SPECT) scan within 24 hours, none of which demonstrated any significant extra-hepatic activity. 6 patients remain alive at the time of writing with a time range of between 6 and 28.6 months post-SIRT. Of the remaining 21 patients, the median survival was 9.2 months (ranging from 25 days to 59.4 months).

**Abstract PTH-095 Table 1**

| Survival rates | 30 day | 3 month | 6 month | 12 month |
|---|---|---|---|---|
| *Colorectal cancer with liver metastases* | 93.75% | 93.75% | 68.75% | 43.75% |
| *Hepatocellular carcinoma* | 85.7% | 71.4% | 57.1% | 42.9% |
| *Neuroendocrine tumour with liver metastases* | 100% | 100% | 100% | 100% |

Complications

Two patients died within 30 days. One, aged 72, with liver metastases from colorectal cancer died from progression of liver metastases with jaundice and ascites. The other, aged 77, with hepatocellular carcinoma died from multi-organ failure. One patient, treated for hepatocellular carcinoma with underlying Childs-Pugh B cirrhosis died 39 days following SIRT with decompensation of his liver disease.

**Conclusion** Survival in the 3 patient groups treated by SIRT at our centre showed wide variation. In particular, those receiving SIRT for HCC following prior TACE therapy had the poorest survival. The optimal indications for SIRT have yet to be clarified but our initial experience suggests that using SIRT in HCC patients after TACE therapy has been exhausted may not be the best approach.

**Disclosure of Interest** None Declared

## PTH-096 MANAGEMENT OF HEPATOCELLULAR CARCINOMA (HCC) IN A TERTIARY HPB CENTRE- LESSONS FROM THE SOUTH EAST COAST-THE ROYAL SURREY COUNTY HOSPITAL (RSCH)

C Kelly*, M Pericleous, I Bagwan, T Worthington, M Gallagher, C Tibbs, T Dhillon, N Karanjia, A Ala. *Royal Surrey County Hospital, Surrey, UK*

10.1136/gutjnl-2016-312388.500

**Introduction** The UK is facing an epidemic of liver disease, with end stage liver disease and HCC increasingly reported. Biannual surveillance is recommended (BSG, EASL, AASLD) for cirrhotic patients to aid early HCC diagnosis. Resection and transplantation remain the treatment options with curative intent. Our tertiary HPB centre covers a population of 2.1 million in the South of England and has seen an increasing number of referrals to our regional HCC MDT. Here we present our experience on our cohort from 2010 current

**Methods** HCC patients were identified from MDT records as well as histology specimens, oncology and hepatology clinical records. Medical records including primary care were reviewed where necessary. Statistical analysis was performed using SPSS v21

**Results** 113 patients were managed in our centre during the examined period. There was a 7 fold increase in the number of patients receiving treatment in the last 12 months (n = 45). The median age at presentation was 70 years. The ratio of female: male was 1:3.2. HCC was established histologically in 36% (biopsy n = 20 and resection n = 21), the rest on tumour markers and radiology. 57% had cirrhosis. In those with liver disease the commonest diagnoses were viral hepatitis, ALD & NASH. The mean overall survival (OS) was 12 months. Overall and disease free survival with resection was 34 and 30 months respectively which is significantly higher than other groups ($p < 0.001$). The median OS comparing cirrhotics and non cirrhotics (10 months v 13 months) was not statistically significant. No significant survival difference was seen with gender or age (cut off 70 yrs). Analysis of resected patients showed mean survival for patients with 1 tumour was 42.5 months and more than 1 tumour 22.5 months

**Conclusion** Our experience demonstrates a significant number of HCC resections in livers with normal histological sampling and non-cirrhotic livers, agreeing with literature describing HCC rates of up to 40% in specific non-cirrhotic populations. The success of our resections is complemented by the recent availability of loco regional therapy (SIRT, TACE & RFA) in our unit. Patients with compensated cirrhosis and advancing age should still be considered for resection given its curative intent and long-term outcomes. Our data shows consideration should be given to widening HCC surveillance guidelines to capture these high-risk groups with early or no liver disease

### REFERENCE

1 Williams R, Aspinall R, Bellis M, *et al*. Addressing liver disease in the UK: a blueprint for attaining excellence in health care and reducing premature mortality from lifestyle issues of excess consumption of alcohol, obesity, and viral hepatitis. *Lancet* 2014;**384**:1953–97.

**Disclosure of Interest** None Declared

## PTH-097 OUTCOME OF PREGNANCY IN PATIENTS WITH KNOWN BUDD-CHIARI SYNDROME

[1]F Khan*, [1]I Rowe, [1]D Tripathi, [2]H Mehrzad, [2]S Olliff, [3]W Lester, [3]F Chen, [4]B Martin, [4]E Knox, [4]T Johnston, [5]C Elliot. *[1]Liver Unit; [2]Interventional Radiology; [3]Haematology & Thrombophilia Centre, University Hospitals Birmingham; [4]Obstetric & Fetal Medicine, Birmingham Women's Hospital, Birmingham; [5]Centre of Pulmonary Hypertension, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.501

**Introduction** Budd–Chiari syndrome (BCS) is a rare disease that mainly affects young women. Pregnancy is a prothrombotic state which is likely to increase adverse outcome in patients with BCS. The aim is to study the outcome of pregnancy in patients with BCS to allow patients to understand the risks that may be associated.

**Methods** A retrospective study of pregnancy in women with known and treated BCS at a single tertiary care centre from January 2001 to December 2015.

**Results** Out of 53 females, seven women had 16 pregnancies. At least one causal factor for hepatic vein obstruction was identified in 6 women (86%). 6 women had undergone radiological decompressive treatment for BCS. All patients had anticoagulation and it was continued during all pregnancies.

6 foetuses were lost before 20 weeks gestation in 2 women. There were 9 deliveries over 32 weeks gestation and one delivery before 32 weeks (27 weeks of gestation). All infants did well. Seven patients needed emergency caesarean sections for different reasons.

There were no cases of thrombosis. Two patients had noteworthy vaginal (PV) bleeding in three pregnancies. None of the patients had variceal haemorrhage. Two patients were diagnosed with pulmonary hypertension, one during pregnancy and the other in post-partum period. There was no maternal mortality.

**Conclusion** Maternal outcome in patients with controlled BCS is generally good though majority of patients needed caesarean section. Fetal outcome beyond 20 weeks gestation is also good. Pregnancy should not be contraindicated in these patients and they should be managed in centres experienced in treating high-risk pregnancies with multi-disciplinary approach. Screening echocardiography to detect pulmonary hypertension should be considered in such patients.

**Disclosure of Interest** None Declared

## PTH-098 AUDIT OF CURRENT LIVER BIOPSY PRACTICE AT A SINGLE TERTIARY CENTRE

[1]R Harrison*, [2]I Patanwala. *[1]5th Year Medical Student, School of Medicine, University of Liverpool; [2]Gastroenterology, Royal Liverpool University Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.502

**Introduction** In an era of increasing availability and access to well validated non-invasive laboratory diagnostic screens and measures of liver fibrosis, the role of liver biopsy for diagnosis and staging of liver disease has diminished. Liver biopsies are subject to sampling error which is made worse by inadequate sample sizes. There is no data on the adequacy of liver biopsy specimens when obtained percutaneously as opposed to the transjugular route.We aimed to assess the adequacy of liver

biopsy samples as defined by the minimum standards suggested by the Royal College of Pathologists'(RCP),[1] UK (minimum of 6 portal tracts and sample length of 15 mm). Where available we wished to compare the results of biopsy fibrosis staging with transient elastography data.

**Methods** A retrospective study was designed to review all liver biopsy requests made in our tertiary liver unit between 31 st October 2012 and 24 June 2013.

**Results** 114 patients(59.6% male) with a median age of 48.7 (interquartile range 19.8) had a liver biopsy. The commonest indications for biopsy were deranged liver function tests and queries regarding aetiology. Out of 114 reports 82 (71.9%) included the number of portal tracts and length of the biopsy and of these 52 (63.4%) were adequate samples as per RCP standards.[1]The number of transjugular liver biopsy reports were 16 (14.0%) and of these only 5 (31.3%) mentioned the size and number of portal tracts. Of these only 1 (20%) sample was adequate as per RCP standards.[1] Of the 98 (86.0%) percutaneous samples 77 (78.6%) reported the length and number of portal tracts and only 51 (66.2%) were adequate. Of the 114 patients, 54 (47.3%) had transient elastography within 12 months of the liver biopsy with 47 (87.0%) having a score above 7 kPa suggestive of abnormal liver stiffness. The 26 (48.1%) with a score above 12.2 kPa which is indicative of cirrhosis only 9 (34.6%) had a histological diagnosis of cirrhosis. Of the 13 (24.1%) patients who had a normal liver stiffness picture on transient elastography with a score below 7 kPa none had a histological diagnosis of cirrhosis.

**Conclusion** Assessment of sample adequacy was compromised because only two-thirds of the reports contained the recommended information to confirm adequacy. Of those where this information was present 36.6% of samples did not meet minimum standards set by the RCP[1] which may impact on histopathological diagnosis. The audit showed that patients with a low transient elastography were unlikely to have a histological diagnosis of cirrhosis. Patients with a raised transient elastography only a third were identified as being cirrhotic on biopsy suggesting further clinical correlation is required.

## REFERENCE

1 Wyatt J, *et al*. Tissue pathways for liver biopsies for the investigation of medical disease and for focal lesions Royal College of Pathologists' Guidelines. 2014.

**Disclosure of Interest** None Declared

## PTH-099 PROBING THE EGFR (EPIDERMAL GROWTH FACTOR RECEPTOR) SIGNALLING PATHWAY IN COLORECTAL LIVER METASTASES (CRLM)

[1]JE Barrett*, [2,3]PN Siriwardana, [4]S Singh, [5]P Kim, [6]D Hochhauser, [2,3]BR Davidson, [6]T Ng. *[1]UCL Cancer Institute, UCL; [2]Division of Surgery and Interventional Sciences, University College London; [3]Dept. of HPB Surgery, Royal Free Hospital, London, UK; [4]Prometheus Laboratories Inc., Sandiago, United States; [5]Prometheus Laboratories Inc; [6]UCL Cancer Institute, University College London, London, UK*

10.1136/gutjnl-2016-312388.503

**Introduction** Overexpression and activation of the components of the EGFR/ErbB pathway has a prognostic significance in CRLM. HER2 (ErbB2) and HER3 (ErbB3) have previously been found to be overexpressed in CRLM with ErbB3 overexpression being associated with good prognosis. The ErbB signalling pathway consists of multiple molecular components. These components interact in a complex non-linear manner which makes it challenging to understand how the system functions. For example, the dimerization between ErbB receptors plays a crucial role in downstream signalling activation. Mathematical modelling can help to quantify network properties and understand its behaviour under various conditions. Birtwistle (2007) developed a mathematical model of the EGFR signalling pathway which focused on early pathway response to stimulation of the ErbB receptors. Using this model, we aimed to understand how the ErbB pathway functions in CLRM.

**Methods** Lysates of fresh frozen CRLM samples from 18 patients who were chemonaive for CLRM were analysed using a proteomics-based assay Collaborative Enzyme Enhanced Reactive immunoassay (CEER) to quantify the phosphorylated and non-phosphorylated forms of ErbB family receptors and phosphorylated downstream ErbB pathway factors. We used a model of the EGFR signalling pathway previously developed by Birtwistle (2007) and validated using data from a breast cancer cell line to try and reproduce the activation patterns of HER1, HER2, and HER3.

**Results** CRLM with high levels of both HER2 and HER3 were associated with high levels of phosphorylated HER3 (pHER3) and vice versa ($p < 0.001$). A similar relationship was observed between pHER3 and HER1, HER2 ($p < 0.0001$); and HER1, cMET ($p = 0.006$).

Simulations focused on pHER3 for high and low levels of HER1, HER2, and HER3. The simulated relationship between pHER3 and HER1, HER2 was in good agreement with our observed data. High and low levels of both HER1, HER2 and HER1, HER3 also showed good agreement. Some discrepancy between simulation and experiment was found for high values of HER1 and low values of HER2 (and vice versa).

**Conclusion** Simulations were performed to understand the dynamics of the EGFR pathway and showed partial agreement between the Birtwistle model and CEER data.The Birtwistle model which was designed to only capture the early network response to stimulation of ErbB receptors in breast cancer cells may not be directly applicable to resected CRLM. Further refinement of the model is required in the future.

**Disclosure of Interest** None Declared

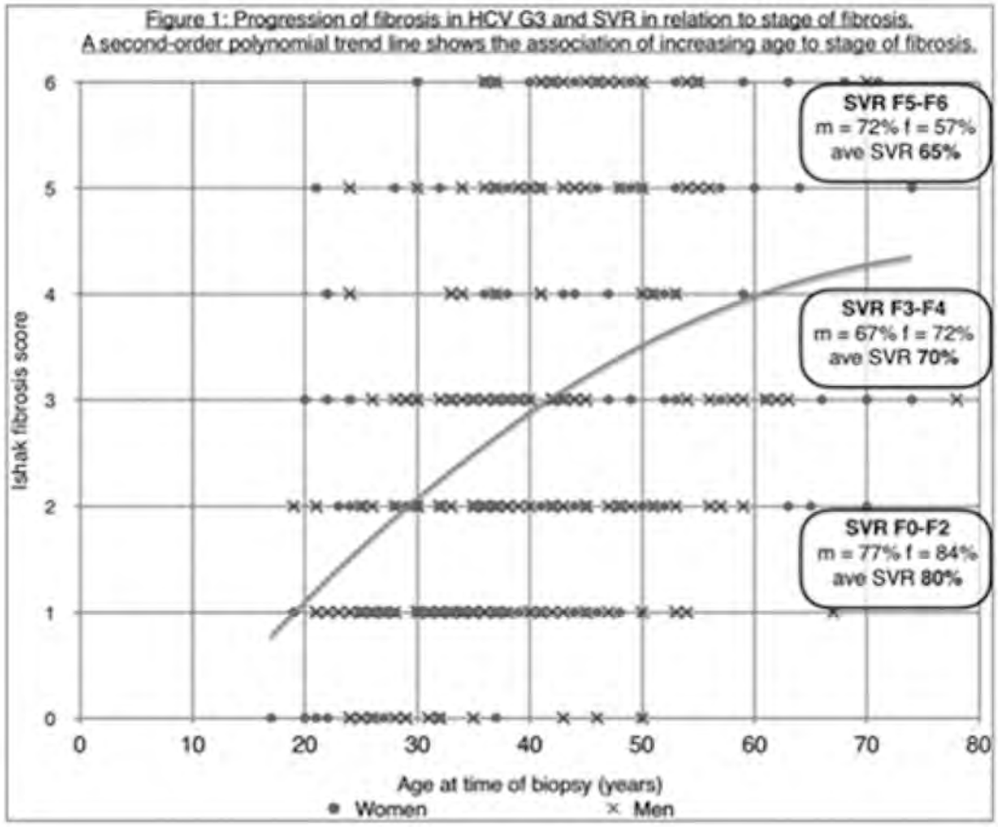
## PTH-100 NICE GUIDANCE ON THE TREATMENT OF HEPATITIS C (HCV) GENOTYPE 3 (G3) – HAVE WE FORGOTTEN THE PAST? SINGLE CENTRE EXPERIENCE OF BIOPSY PROVEN FIBROSIS IN HCV G3 SUGGESTS SLOWER PROGRESSION THAN PREVIOUSLY SUGGESTED

K Fairbrass*, K Forrester, L Fenton, R Simpson, S Moreea. *Digestive Disease Centre, Bradford Teaching Hospitals Foundation Trust, Bradford, UK*

10.1136/gutjnl-2016-312388.504

**Introduction** NICE guidance in 2000 (TA14) only recommended treatment of patients with moderate/severe HCV. NICE now advises that patients with G3 early disease should not be given DAAs but be treated with pegylated interferon/ribavirin, which is a longer treatment with lower SVR and more side effects.

**Methods** Our databases were used to obtain: demographics, age at point of liver biopsy, stage of fibrosis and SVR in relation to all genotypes. We aim to plot the rate of progression of fibrosis in HCV G3 patients to ensure NICE guidance isn't disadvantageous to this group.




**Abstract PTH-100 Figure 1** Progression of fibrosis in HCV G3 and SVR in relation to stage of fibrosis. A second-order polynomial trend line shows the association of increasing age to stage of fibrosis.

**Results** Between 1998–2015 we biopsied 477 patients: G1 112(81 males average 40 years, 31 females average 42 years) SVR 48%; G2 16(10 males; average 39 years, 6 females average 43 years) SVR75%; **G3** 337(194 males average 39 years, 143 females average 40 years) SVR 68%; G4 12(10 males average 38 years, 2 females average 45 years) SVR 42%. The point prevalence of fibrosis in **HCV G3** at the time of liver biopsy is shown on the graph along with the SVR in relation to the stage of fibrosis. This confirms that fibrosis progresses with age but not in an exponential way and also recognises the well described fall in SVR with increasing fibrosis.

**Conclusion** We confirm HCV G3 progresses in both males and females from the mid-40s. Our SVR data strongly suggests that we should provide all of our HCV G3 patients with the new potent DAAs to prevent progression of disease and subsequent consequences. We urge for a change in the current guidance.

**Disclosure of Interest** None Declared

## PTH-101 ACCURACY OF TRANSIENT ELASTOGRAPHY IN PREDICTING HISTOLOGICAL FIBROSIS SEVERITY IN TREATED AUTOIMMUNE HEPATITIS?

[1]L Harrison*, [2]E McFarlane, [3]A Dube, [2]D Gleeson. *[1]Liver Unit, Sheffield Teaching Hospital's NHS Foundation Trust and Division of Infection, Immunity and Cardiovascular Disease, University of Sheffield; [2]Liver Unit; [3]Department of Histopathology, Sheffield Teaching Hospital's NHS Foundation Trust, Sheffield, UK*

10.1136/gutjnl-2016-312388.505

**Introduction** The role of transient elastography (TE) or Fibroscan in assessing severity of liver fibrosis has been validated against liver biopsy in chronic hepatitis B and C and in NAFLD. There are few studies assessing its role in autoimmune hepatitis (AIH). Four preliminary studies have reported data on the role of Fibroscan in AIH. In these, most patients had recently started treatment and thus, still had active disease. Minimal data on transaminases was provided. We aimed to assess the accuracy of Fibroscan in predicting histological fibrosis severity in patients who had achieved biochemical remission (normal transaminases) and were undergoing follow-up liver biopsy to confirm histological remission as per our Unit's clinical policy.

**Methods** Between 1/12/13 and 31/12/15 36 same-day Fibroscan and liver biopsy were performed in 32 patients with AIH (1999 International Group criteria; 25 female, age 56 (17–78) years who had achieved biochemical remission (normal serum ALT and globulins) after 2.7 (2.1–24.9) years treatments. No patient had ascites, extrahepatic cholestasis or congestive cardiac failure based on clinical and laboratory evaluation.

Fibroscan was performed in fasted patients using the Echosens machine (M or XL probe used as needed) by trained operators. We assessed how accurately the liver stiffness evaluation (LSE) score on Fibroscan could predict Ishak fibrosis stage on biopsy (assessed independently by AKD).

**Results** The ALT was 21 (9–99), normal value <33. 89% patients had normal serum ALT on the day. Ishak necroinflammatry score ≤3 (histological remission) was present in 12 biopsies (33%). Of the 36 Fibroscan's carried out, 27 were

valid. A valid scan defined by: ≥10 liver stiffness measurements, interquartile range (IQR)/median of <0.30 and a success rate ≥ 60%.

**Abstract PTH-101 Table 1** Accuracy of fibroscan in prediction of liver fibrosis

| Patients | Ishak Fibrosis Stage (n) | AUROC | Fibroscan cut-off score | Sens. (%) | Spec. (%) | PPV | NPV |
|---|---|---|---|---|---|---|---|
| All (n = 36) | 5 or 6 (n = 5) | 0.78 | 11.0 | 0.60 | 0.80 | 0.33 | 0.92 |
| | 4-6 (n = 11) | 0.78 | 11.0 | 0.55 | 0.88 | 0.67 | 0.81 |
| | 3-6 (n = 21) | 0.62 | 7.0 | 0.52 | 0.66 | 0.69 | 0.50 |
| Valid scans (n = 27) | 5 or 6 (n = 3) | 0.97 | 11.0 | 1.00 | 0.83 | 0.43 | 1.00 |
| | 4-6 (n = 6) | 0.90 | 11.0 | 0.83 | 0.90 | 0.71 | 0.95 |
| | 3-6 (n = 15) | 0.72 | 7.0 | 0.46 | 0.83 | 0.78 | 0.55 |

**Conclusion** In this study, Fibroscan showed good accuracy in excluding, but lower accuracy in predicting Ishak fibrosis stage of 4 or more. Accuracy was improved if a valid scan was obtained. Fibroscan was less accurate in predicting lower fibrosis stages. A combination of methods of assessing liver fibrosis may be necessary in some patients.

**Disclosure of Interest** None Declared

## PTH-102 ACUTE VARICEAL HAEMORRHAGE IN THE NORTHWEST OF ENGLAND: PATIENT CHARACTERISTICS, MANAGEMENT AND OUTCOMES

[1]M Bhalme*, [2]CS Kwok. [1]*Bolton NHS Foundation Trust, Bolton*; [2]*Royal Stoke University Hospital, Stoke-on-Trent, UK*

10.1136/gutjnl-2016-312388.506

**Introduction** Acute variceal haemorrhage (AVH) is associated with significant mortality risk. We conducted a prospective audit of patients admitted with AVH in the Northwest (NW) of England to examine our clinical practice and patient outcomes.

**Methods** We undertook a prospective multi-centre audit of AVH related admissions to 12 NW hospitals between November 2011 to April 2012. Data on patient characteristics, management and outcomes were collated by reviewing hospital records. Adherence with Baveno V consensus guidelines was examined. The findings were compared with 2007 UK Comparative Audit of Upper Gastrointestinal Bleeding (AUGIB).[1] Data analysis was performed by considering the frequency distribution of variables and their association with in-hospital mortality and length of stay.

**Results** 102 patients (median age 53 years, 67% male) details were available. More than half the patients were admitted out-of-hours (57%) and 28% were admitted on weekends. The median time to gastroscopy was 1 (IQR 0–1.5) day. Majority of patients were managed by a gastroenterologist (88%) and received Terlipressin (75%) and antibiotics (64%). The median length of stay was 8 (IQR 5–14) days and 13% of patients died during their hospitalisation. The rate of failure to control bleeding within 120 hours was 17% and 19% of the patients had a re-bleed. In total, 5% had Sengstaken tube insertion and 7% had emergency TIPSS insertion. Age over 65 years (p = 0.008) and admission out-of-hours (p = 0.03) was associated with a higher mortality. Failure to control bleeding within 120 hours (p < 0.001) and re-bleeding (p = 0.007) were also associated with increased mortality. Significantly less mortality was observed in patients that were managed by a gastroenterologist (42% versus 9%, p = 0.002). Encephalopathy was associated with a significantly prolonged length of stay (18.2 versus 10 days, p = 0.0002) as was admission to HDU/ICU (19.6 versus 9.2 days, p = 0.0001). There was no difference in length of stay based on admission out-of-hours, inpatient management by gastroenterologist, use of terlipressin, use of antibiotics and re-bleeding.

**Conclusion** The mortality rate, length of hospital stay, use of terlipressin, prophylactic antibiotics, and therapeutic interventions at endoscopy to control AVH appeared to be better than 2007 UK AUGIB report. However, timeliness of endoscopic intervention and adherence to standard guidelines remained deficient in parts across the region. The development of a NW England regional AVH care bundle consisting of an agreed protocol and pathway for emergency TIPSS may help improve patient outcomes.

### REFERENCE

1 Hearnshaw SA, *et al*. Acute upper gastrointestinal bleeding in the UK: patient characteristics, diagnoses and outcomes in the 2007 UK audit. *Gut.* 2011;60 (10):1327–35.

**Disclosure of Interest** None Declared

## PTH-103 CLINICIAN CONFIDENCE IN STRATIFYING RISK IN PRIMARY BILIARY CIRRHOSIS - A UK-PBC SURVEY

[1]M Corrigan*, [2]L Vale, [2]D Coughlan, [3]D Jones, [1]G Hirschfield. [1]*NIHR Birmingham Liver Biomedical Research Unit, University of Birmingham, Birmingham*; [2]*Institute of Health and Society*; [3]*Institute of Cellular Medicine, Newcastle University, Newcastle, UK*

10.1136/gutjnl-2016-312388.507

**Introduction** Primary biliary cirrhosis or Primary biliary cholangitis (PBC) has only one licensed therapy, ursodeoxycholic acid (UDCA). Assessment of biochemical response to UDCA allows identification of patients who are at high risk of disease progression and would be suitable for trials and emerging therapies. The aim of this survey was to determine current understanding of UDCA response criteria amongst clinicians practicing in the UK.

**Methods** An online survey of clinical practice was created by UK-PBC and distributed to clinicians via the British Society of Gastroenterology (BSG) and British Association for the Study of the Liver (BASL) mailing list and newsletters. The survey was carried out between April and June 2015. Questions covered diagnosis and management of the condition with four questions specifically covering UDCA response assessment. Statistical analysis was performed using GraphPad software. Chi squared testing as used to compare groups.

**Results** A total of 206 responses were received. Respondents came from a variety of clinical backgrounds – consultant in a tertiary hospital – 14 (7%), consultant hepatologists in non tertiary centres – 32 (15.5%), consultant gastroenterologists – 75 (36.4%), trainees – 78 (37.9%), others including specialist nurses – 7 (3.4%). Whilst 90% of respondents reported routine use of UDCA in clinical practice, only 20% reported that they always assessed UDCA response once the patient had been on treatment for 12 months. 50% never formally

assessed treatment response. Looking at rates of assessment of UDCA response between specialist groups: 64% of gastroenterologists and 47% of trainees never assessed response compared to 25% of non-tertiary hepatologists and 14% of tertiary hepatologists. The number of patients seen appeared to affect rates of UDCA response assessment: 64% of those who saw fewer than 10 patients per year never assessed response compared to 10% of those who saw more than 50 patients per year. 40% of respondents reported themselves to be "*not at all confident*" in assessing response with 58% stating they were unaware of response criteria and 27% were unsure of the best criteria to use.

**Conclusion** The majority of patients with PBC are managed by non-specialists outside of tertiary centres many of whom see low volumes of patients with this condition. The application of emerging therapies for patients with PBC requires appropriate use of risk stratification tools in routine clinical practice. Our results demonstrate gaps in knowledge and confidence amongst non-specialists. Implementing a stratified approach to management requires these gaps to be addressed.

**Disclosure of Interest** None Declared

## PTH-104 HOSPITAL ADMISSIONS AND ASSOCIATED COSTS OF ALCOHOLIC LIVER DISEASE IN SCOTLAND BETWEEN 1991 AND 2011

[1]J Lewsey, [2]J Blutell, [1]C Geue, [1]G Antony, [1]A Briggs, [3]G McCartney, [4]S Hutchinson, [5]L Graham, [6]M Heydtmann*. *[1]Health Economics and Health Technology Assessment, University of Glasgow, Glasgow, UK; [2]Health Economics and Health Technology Assessment, University of Glasgow, Glasgow; [3]NHS Health Scotland; [4]School of Life Sciences, Glasgow Caledonian University, Glasgow; [5]Public Health and Intelligence, NHS National Services Scotland, Edinburgh; [6]Consultant Hepatologist & Gastroenterologist, GG&C, Paisley, UK*

10.1136/gutjnl-2016-312388.508

**Introduction** Alcoholic liver disease and its associated hospitalisations due to acute and chronic liver disease is a significant worldwide problem with Scotland having worse statistics than most European and Western countries with regards to health burden including mortality and healthcare costs. This **SC**ottish **A**lcoholic **L**iver disease **E**valuation (SCALE) study was set up to identify a cohort of people hospitalised for the first time with Alcoholic Liver Disease (ALD) in Scotland from 1991 to 2011 and identify trends in these incident admissions, in-hospital mortality, readmissions and mortality after discharge as well as life time costs compared to controls.

**Methods** Hospital records from 1981 to 2011 were used to identify cases of ALD presenting 1991–2011 with no prior hospitalisation due to ALD. These incident cases were classified by sex, age group, socio-economic deprivation and study year as well as decompensated or not decompensated ALD. In-hospital mortality, time to all cause death, readmissions and related hospital costs were calculated by length of stay and hospital-specific per diem cost and compared to matched controls. Parametric survival analysis was used to estimate remaining life expectancy and remaining lifetime hospitalisation related costs were calculated.

**Results** We identified 35,208 incident ALD admissions over the period 1991 to 2011. Incident ALD hospitalisation rates decreased between 2002 and 2011(Men: 63 to 54; Women: 27 to 24 per 100,000). Inpatient mortality was 17.4% during the index admission. 5 (10) year mortality post-discharge was 59% (74%) for patients with decompensated ALD and 49% (65%) without. The mean (median) number of readmissions per year was 3.1 (1.3). The estimated annual cost of hospitalisation for the remaining life of a man, aged 50, living in the most deprived SIMD fifth with an incident ALD admission in 2011 was £ 118,000 higher compared to matched controls.

**Conclusion** After a peak in 2007 / 2008 incident rates of ALD fell in Scotland but remain high in comparison to the epidemiological literature. Prognosis for incident cases of ALD is poor and costs associated with incident ALD cases are very high compared to matched controls.

**References: Acknowledgements** Chief Scientist Office, Scotland for the project 'SCottish Alcoholic Liver disease Evaluation of epidemiology and costs of first and subsequent hospital admissions (SCALE).

**Disclosure of Interest** None Declared

## PTH-105 INTRODUCTION OF TRANSJUGULAR INTRAHEPATIC PORTOSYSTEMIC SHUNT (TIPSS) SERVICE FOR REFRACTORY ASCITES IN A NON-TRANSPLANT LIVER UNIT

MU saleem*, A lawson, C salmon, N taylor, A austin. *Gastroenterology, Derby Teaching Hospitals NHS Foundation Trust, Derby, UK*

10.1136/gutjnl-2016-312388.509

**Introduction** TIPSS has been shown to be an effective treatment for patients with refractory ascites (RA).The majority of TIPSS procedures in the UK are performed in a transplant centre. In 2009, Derby Teaching Hospitals introduced TIPSS service. The aim of our study was to evaluate our experience and assess its impact on the care of this patient group.

**Methods** 56 successful TIPSS procedures were performed between May 2009 and August 2015, 32 for RA were included in this analysis.Data on patient demographics, aetiology of liver disease, inpatient bed days (6 months before and after the procedure), Model for End-Stage Liver Disease (MELD) scores, Child-Pugh score, procedure details, clinical outcomes, mortality and complications were collected retrospectively from our centres clinical results database.Complete response was defined as no further need for paracentesis and partial if frequency reduced to >50%.

**Results** 25/32 (78%) patients were male with a median age of 58 years (range, 39–77 years). 30 patients were Child-Pugh class B, 2 Child-Pugh C, with a median MELD and MELD Na of 11 (range, 6-16) and 14 (range, 6–22) respectively. Alcoholic Liver Disease was most common aetiology of cirrhosis (86.5%) followed by non-alcoholic fatty liver disease (6.45%). Pre-TIPSS and post-TIPSS hepatic venous pressure gradients (HVPG) were 20 mmHg (range, 10–30) and 8 mmHg (range, 1–21) respectively. Cumulative mortality at 1, 3, and 12 months was 3%, 9%,and 18% (n = 28) respectively. One early death (within 30 days) was secondary to pneumonia. Ascites resolved completely after the first procedure in 66% and partially in 6% of patients.Cummulative response rate was 24, 62 and 90 percent at 30,60 and 90 days respectively. Five patients (16%) showed no improvement in RA, of whom 2 underwent liver transplantation. 9 patients (28%) developed hepatic encephalopathy (HE), 5 of whom (16%) developed refractory HE, with 3 patients requiring TIPSS reduction. The number of inpatient days reduced from 23 (range, 4-52) days in the 6 months pre-TIPSS to 8 (range

0–48) in the 6 months post TIPSS. The main reason for hospital admission was elective admission for ascites drainage.
**Conclusion** A safe and effective TIPSS service for patients with refractory ascites can be successfully introduced into a comprehensive secondary care liver service by careful patient selection and technical proficiency. Excellent outcomes with acceptable complication rates can be achieved for patients with a significant reduction in resource utilisation (inpatient bed days and paracentesis). An established elective service is an important precursor for the provision of early and rescue TIPSS for variceal bleeding.
**Disclosure of Interest** None Declared

## PTH-106 OUTCOMES OF SCREENING FOR HEPATITIS B VIRUS DURING PREGNANCY

MN Rahim*, G Bird. *Gastroenterology & Hepatology, Maidstone Hospital, Maidstone, UK*

10.1136/gutjnl-2016-312388.510

**Introduction** Chronic hepatitis B (HBV) is a major cause of liver disease worldwide. It is estimated 0.4% of pregnant women in England have hepatitis B. The UK pregnancy screening programme includes hepatitis B and has an uptake of 97%. Infants born to hepatitis B infected mothers are at risk of perinatal transmission and it is important to identify those requiring antiviral treatment in the third trimester in order to reduce this risk. National policy recommends immunisation of infants, with vaccine +/- immunoglobulin. NICE guidance suggests that all hepatitis B positive pregnant women should be assessed by a specialist within 6 weeks. Approximately 5000 babies are born at Maidstone and Tunbridge Wells annually and mothers found to have HBV at pregnancy screening are referred to GB. The objectives of this study were to identify the demographics of patients in the antenatal screening clincis and associated outcomes in terms of further management and maternal case management.
**Methods** Between 2005 and 2015, 33 mothers were identified as having hepatitis surface antigen (HBsAg) positivity. The mothers were identified through two separate databases held by GB and the antenatal screening midwife. Data was obtained retrospectively from patient, laboratory and imaging records. These included age, ethnicity, date of HBsAg positivity, new or known diagnosis, interval to Hepatology clinic review and "did not attend" rate. The HBV serological profile, history of antiviral treatment and subsequent follow up were determined.
**Results** The predominant ethnicities in this cohort of hepatitis B positive mothers were Eastern European (27%) and African (24%). Of the 33 mothers, 45% did not volunteer a known diagnosis of hepatitis B until identification at screening, 27% received a new diagnosis through screening and it remained unclear whether the remaining 27% knew about their diagnosis or not. 42% of patients were seen in Hepatology clinic within 6 weeks of referral. 15% of mothers did not attend their first clinic appointment and as a result 80% of these did not have HBV DNA checked during or after pregnancy. The only eligible patient for treatment did not attend her appointment to initiate therapy. Vaccination of new born babies was 100%, and two also received immunoglobulins. After delivery, 39% did not attend their follow up appointments.
**Conclusion** The majority of HBV positive mothers were born outside the UK, with the largest group from Eastern Europe. There was considerable clinic non-attendance both at initial appointment and more strikingly post-delivery. The disappointing rates of patient engagement in the Hepatology clinic are perhaps due to the language barrier or cultural considerations. Areas to improve the service might include better use of interpreters, counselling and educational materials.
**Disclosure of Interest** None Declared

## PTH-107 CHRONIC HEPATITIS B MANAGEMENT THE UK: A NATIONAL SURVEY OF CURRENT PRACTICE FOLLOWING NICE GUIDANCE

[1]N Hansi*, [2]P Troke, [1]US Gill, [3]K Agarwal, [4]M Aldersley, [5]S Al-Shamma, [6]A Brown, [7]J Cobbold, [8]P Collins, [9]A Fowell, [10]W Gelson, [11]A Holt, [12]S McPherson, [13]M Phillips, [14]M Prince, [8]P Richardson, [15]S Ryder, [16]S Singhal, [17]B Stone, [18]A Ustianowski, [18]J Vilar, [12]L Walker, [19]T Wong, [1]P Kennedy. *[1]Hepatology Unit, Centre of Immunobiology, Blizard Institute, Barts and The London SMD, QMUL; [2]Gilead Sciences Limited; [3]Institute of Liver Studies, King's College Hospital, London; [4]Hepatology, St James Hospital, Leeds; [5]Hepatology, Royal Bournemouth Hospital, Bournemouth; [6]Hepatology, Imperial College, St Mary's Hospital, London; [7]Hepatology, John Radcliffe Hospital, Oxford; [8]Hepatology, Bristol Royal Infirmary, Bristol; [9]Hepatology, Queen Alexandra Hospital, Portsmouth; [10]Hepatology, Cambridge University Hospitals NHS Foundation Trust, Cambridge; [11]Hepatology, Queen Elizabeth Hospital, Birmingham; [12]Hepatology, Freeman Hospital, Newcastle; [13]Hepatology, Norfolk and Norwich University Hospital, Norwich; [14]Hepatology, Manchester Royal Infirmary, Manchester; [15]Hepatology, Nottingham University Hospital, Nottingham; [16]Hepatology, Sandwell and West Birmingham Hospitals NHS Trust, Birmingham; [17]Hepatology, Royal Hallamshire Hospital, Sheffield; [18]Infectious Diseases, North Manchester General Hospital, Manchester; [19]Hepatology, Guy's and St Thomas' NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.511

**Introduction** National Institute for Health and Care Excellence (NICE) published guidance on the management of chronic hepatitis B (CHB) in June 2013 (NICE 165). Where antiviral therapy was indicated, NICE recommended 48 weeks Peg-interferon alfa-2a (PegIFNα) as first-line treatment in compensated disease and early discontinuation of PegIFNα based on stopping rules. Nucleos(t)ide analogues were recommended as second-line therapies. This survey was undertaken to capture current CHB practice management across the UK following NICE 165 and report PegIFNα use, and review the availability/utility of quantitative HBsAg.
**Methods** This was a UK-wide national multicentre study, where 25 CHB treatment centres were invited to complete a qualitative questionnaire of CHB practice. Clinical practice in the 12 months preceding NICE 165 was compared with CHB management in the immediate 12 months post publication.
**Results** All centres participating undertook a multi-disciplinary approach to the treatment of CHB patients, with 75% of centres adopting joint consultant-nurse led clinics. Interim analysis of the data revealed that 73% of centres consider PegIFNα as first line therapy in eAg+ disease, compared with 40% in eAg- disease. Importantly, there was no difference in the use of PegIFNα, irrespective of eAg status, prior to and following the publication of NICE 165 ($p = 0.82$). Of those patients treated with PegIFNα as first line-therapy, 63% of them, to date, required second line therapy with NUCs due to treatment failure.
**Conclusion** This UK survey demonstrates that current practice has not significantly changed following NICE 165. While most centres adopt a multi-disciplinary approach, the UK guidance on CHB has not been widely adopted. Barriers to this may include the limited availablilty of qHBsAg in UK centres,

but more likely this relates to Physician preference for the continued use of NUCs as first-line therapy of choice.

**Disclosure of Interest** N. Hansi: None Declared, P. Trok, None Declared, U. Gill: None Declared, K. Agarwal: None Declared, M. Aldersley: None Declared, S. Al-Shamma: None Declared, A. Brown: None Declared, J. Cobbold: None Declared, P. Collins: None Declared, A. Fowell: None Declared, W. Gelson: None Declared, A. Holt: None Declared, S. McPherson: None Declared, M. Phillips: None Declared, M. Prince: None Declared, P. Richardson: None Declared, S. Ryder: None Declared, S. Singhal: None Declared, B. Stone: None Declared, A. Ustianowski: None Declared, J. Vilar: None Declared, L. Walker: None Declared, T. Wong: None Declared, P. Kennedy Grant/research support from: Gilead Sciences

## PTH-109 REAL LIFE DATA ON SOFOSBUVIR/LEDIPASVIR + RIBAVIRIN FOR 12 WEEKS IN GENOTYPE 3 PATIENTS IN THE NORTH EAST OF SCOTLAND

P Dundas*, A Fraser, S English, L McLeman. *Digestive Disorders, Aberdeen Royal Infirmary, Aberdeen, UK*

10.1136/gutjnl-2016-312388.512

**Introduction** There are robust data from clinical trials supporting the use of the combination of Sofosbuvir and Ledipasvir (sof/ledip) in patients with Genotype 1 HCV infection with expected SVR rates of >90%. Data on the success rates of this combination for the treatment of patient with Genotype 3 infection are less robust. Our aim was to examine the SVR rates when using this combination in a "real life' setting in patients with Genotype 3 infection.

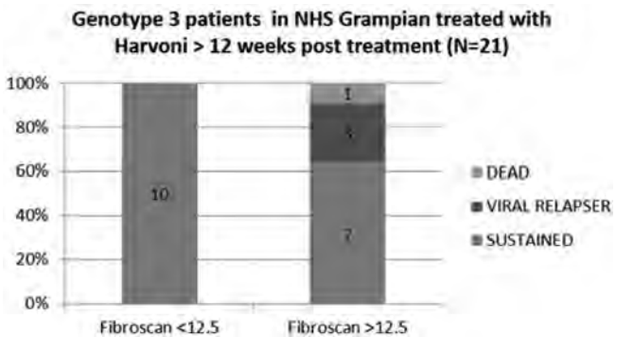
**Methods** Local guidelines from December 2014 to November 2015 advised the use of the combination of sof/ledip along with ribavirin for 12 weeks for patients with Genotype 3 HCV infection who were interferon intolerant or ineligible. During this period, data was collected prospectively on all patients commenced this regimen. Fibrosis F3 was defined as fibroscan >9 kPa, cirrhosis was defined as a fibroscan >12.5 kPa or confirmed on liver biopsy.

**Results** In total 26 patients with genotype 3 infection received treatment with sof/ledip plus ribavirin for 12 weeks. Of the 26 patients, 21 (81%) were male. The average age was 53 (range 38–68). Mean fibroscan score was 18.7 kPa (range 4.8–63.9). Table 1 describes the fibroscan score distribution.

**Abstract PTH-109 Table 1**

| | <7 kPa | 7.1–8.9 kPa | 9–12.4 kPa | >12.5 kPa |
|---|---|---|---|---|
| Number of patients | 3 | 1 | 8 | 14 |

The majority (17/26) (65%) of patients were treatment naive. Opiate substitution therapy was prescribed in 5/26 (19%). SVR 4 data is available in 25 patients (22/25, 88%) and SVR 12 available in 21 patients (17/21, 81%). Figure 1 shows SVR data for those with and without cirrhosis, SVR was 100% in those without cirrhosis. One patient died of end stage liver disease at week 3 on treatment but all others have completed the prescribed course of treatment. One patient is HCV RNA negative at the end of treatment but not yet 4 weeks post treatment. The 3 patients who did not achieve SVR 12 were all cirrhotic with a history of hepatic decompensation, 2 treatment naive and 1 treatment experienced. Intention to treat analysis of SVR 12 for all patients will be available by the time of presentation.




**Abstract PTH-109 Figure 1**

**Conclusion** There are limited options for all oral therapy to treat patients with Genotype 3 HCV infection. Our data demonstrates that the combination of sof/ledip with ribavirin is well tolerated with few side effects. All patients without cirrhosis completed the planned treatment regimen and obtained viral clearance. As a result of emerging data and our experience of a lower SVR rate in patients with cirrhosis, our guideline has been adapted to using alternative therapies as first line in patients with Genotype 3 infection and cirrhosis. We keep our guidelines for the treatment of patients without cirrhosis under review while awaiting analysis of the full dataset and further drug developments

**Disclosure of Interest** None Declared

## PTH-110 TEN YEAR FOLLOW UP CASE CONTROL STUDY OF THE EFFECT OF PORTAL VEIN EMBOLISATION (PVE) ON THE SURVIVAL OF PATIENTS WITH COLORECTAL LIVER METASTASES (CRLM) AND THE INFLUENCE OF HYPOXIA FACTORS ON TUMOUR GROWTH

[1,2]PN Siriwardana*, [3]T Luong, [3]J Watkins, [4]D Hochhauser, [5]A Harris, [1,2]BR Davidson, [6]W Ong. *[1]Division of Surgery and Interventional Sciences, University College London; [2]Department of HPB Surgery; [3]Department of Pathology, Royal Free Hospital; [4]UCL Cancer Institute, University College London, London; [5]Department of Oncology, University of Oxford, Oxford; [6]University of Cambridge, Cambridge, UK*

10.1136/gutjnl-2016-312388.513

**Introduction** PVE facilitates hepatectomy in patients with a small anticipated future liver remnant, but stimulates tumour growth. Hypoxia may mediate this increased tumour growth as Hypoxia-Inducible-Factor-1α (HIF-1α) increases angiogenesis and invasion. A tendency to reduced survival following liver resection after PVE was noted in a previous study when compared with a case matched non PVE-group. We have performed a longer term follow up of patients who had a PVE prior to resection of CRLM and compared the outcome with a matched controlled group with measurement of tumour hypoxia.

**Methods** Twenty-six patients who had PVE were compared with 25 case matched controls. Immunostaining was performed on serial formalin-fixed-paraffin-embedded CRLM sections for hypoxia regulated factors, HIF-1α and CA-9, vascular endothelial growth factor (VEGF) and a blood vessel marker, CD31. Disease progression, liver specific recurrence and actuarial survival were recorded.

**Results** The clinicopathological characteristics of the cancers were comparable between the groups. The median follow-up was 115 months (range 106–124). Overall, 5 year, local hepatic recurrence-free survival and progression-free periods were reduced in those patients undergoing PVE ($p = 0.026$, $p = 0.060$, $p = 0.001$ and $p = 0.008$ respectively). The expression of hypoxia markers between the groups was similar.

**Conclusion** This is the first long-term (>5 year) case matched series on outcome of patients with CRLM resected following PVE. Whilst, PVE facilitates potentially curative resection of CRLM, prognosis is less than those patients not requiring PVE. The mechanism behind this survival difference has not been established.

**Disclosure of Interest** None Declared

## PTH-111 THE IMPACT OF RIFAXIMIN-ALPHA ON NHS HOSPITAL RESOURCE USE IN UK PATIENTS WITH HEPATIC ENCEPHALOPATHY: A RETROSPECTIVE OBSERVATIONAL STUDY (IMPRESS)

[1]R Aspinall*, [2]A Radwan, [2]G Shaya, [2]H Sodatonou, [3]R Cipelli, [4]M Hudson. *[1]Queen Alexandra Hospital, Portsmouth; [2]Norgine, Harefield; [3]pH Associates, Marlow; [4]Freeman Hospital, Newcastle upon Tyne, UK*

10.1136/gutjnl-2016-312388.514

**Introduction** In clinical trials rifaximin-α (RFX) has been shown to reduce the risk of an overt episode of hepatic encephalopathy (HE) and the number of HE-related hospitalisations, but there are limited data describing its impact on healthcare resource use in real world UK practice. This study compared hospital resource use pre- and post-RFX initiation in UK patients.

**Methods** A retrospective observational study in 11 specialist National Health Service (NHS) centres of 145 patients prescribed RFX for HE between July 2008 and May 2014. Local clinical staff reviewed patients' medical records for demographics, RFX prescribing and adverse drug reactions (ADRs) to RFX. Details of inpatient hospitalisations and hospital visits in the 12 months pre- and post-RFX initiation were extracted from NHS Trust electronic databases. Ethics reference 14/WS/1017.

**Results** Of the 145 patients evaluated, 89 (61%) were male. At RFX initiation, mean age was 61 years (standard deviation [SD] =11), 119 patients (82%) were on lactulose. Child-Pugh score was recorded for 67 (46%) patients (10% Class A, 54% B, 36% C). Resource use in the 6/12 months pre- and post-RFX initiation is shown in Table 1; to avoid non-survivor confounding this analysis includes the 114 patients (78%) who were alive at 6 months and 102 (70%) alive at 12 months post-RFX initiation. 3 patients (2%) had ADRs and 4 (3%) developed *C.difficile* infection (none of whom discontinued treatment).

**Abstract PTH-111 Table 1** All-cause resource use pre- and post-RFX initiation

| Mean (SD) | 6 months (n = 114) | | | | 12 months (n = 102) | | | |
|---|---|---|---|---|---|---|---|---|
| | n* | Pre-RFX | Post-RFX | P | n* | Pre-RFX | Post-RFX | P |
| Hospitalisations with overnight stay per patient | 101 | 2.2 (1.9) | 1.0 (1.3) | <0.001 | 99 | 2.7 (2.8) | 1.7 (2.0) | 0.002 |
| Total bed days | 101 | 2890 | 1206 | - | 99 | 3138 | 1621 | - |
| Total bed days per inpatient | 101 | 28.6 (31.4) | 11.9 (23.2) | <0.001 | 99 | 31.7 (35.9) | 16.4 (29.1) | <0.001 |
| Critical care bed days per inpatient | 19 | 7.9 (10.1) | 2.0 (5.1) | 0.046 | 18 | 11.3 (11.8) | 2.4 (6.0) | 0.017 |
| Emergency room visits per patient | 63 | 1.9 (2.3) | 1.0 (1.0) | <0.001 | 65 | 2.4 (3.4) | 1.8 (2.6) | 0.099 |

* Paired analysis (patients with ≥1 of each attendance type in either [or both] periods)

**Conclusion** In UK clinical practice, treatment with RFX for HE is well-tolerated and associated with significant reductions in hospitalisation frequency, bed occupancy (including critical care) and emergency room visits; reductions are observed within 6 months of treatment initiation and sustained at 12 months. This is the first study to demonstrate a reduction in critical care bed occupancy with RFX.

**Disclosure of Interest** R. Aspinall Consultant for: Norgine. Consultant/UK advisory board member, A. Radwan Employee of: Norgine, G. Shaya Employee of: Norgine, H. Sodatonou Employee of: Norgine, R. Cipelli Consultant for: Norgine. Employee of pH Associates which was commissioned by Norgine Pharmaceuticals to provide support with study design and management, data analysis and scientific editorial services, M. Hudson Consultant for: Norgine. Attended advisory board and has given sponsored lectures (national or international) on behalf of Norgine.

## PTH-112 ASSOCIATION BETWEEN HELICOBACTER PYLORI INFECTION AND NONALCOHOLIC FATTY LIVER DISEASE IN THE UNITED STATES

[1]SJ Kang*, [2]D Kim. *[1]Sheikh Khalifa Specialty Hospital, RAK, United Arab Emirates; [2]Division of gastroenterology and hepatology, Stanford University School of Medicine, Stanford, United States*

10.1136/gutjnl-2016-312388.515

**Introduction** *Helicobacter pylori* infection has been implicated in the pathogenesis of various gastrointestinal, hematologic, and systemic diseases. Association between *Helicobacter pylori* infection and nonalcoholic fatty liver disease (NAFLD) is poorly characterised. The aim of this study was to investigate the association between *H. pylori* positivity with *cagA* status and NAFLD in the large general population.

**Methods** The Third National Health and Nutrition Examination Survey (NHANES) from 1988 to 1994 was utilised in this study. NAFLD was defined by ultrasonographic detection of hepatic steatosis without other known liver diseases. Antibodies to *H. pylori* and *cagA* of participants 20 years and older were measured in using ELISA.

**Results** Among total of 5,404 participants who had results of both ultrasonography and *H. pylori* serology, the prevalence of NAFLD was 31.9%. The prevalence of NAFLD was higher

in *H. pylori* positive subjects (33.5±1.79%) than in negative subjects (26.1±1.65%, $p < 0.001$). Compared with *cagA* positive group, participants with negative *cagA* had higher prevalence of NAFLD (31.1±2.30% vs. 36.4±2.37%, $p < 0.001$). Overall participants with NAFLD had higher prevalence of *H. pylori* positivity in multivariable analysis (Odds ratio [OR]: 1.17; 95% confidence interval [CI]: 0.95–1.43) with marginal significance. With regard to presence of *cagA* protein, *H. pylori* and *cagA* positivity was not associated with NAFLD (OR: 1.05; 95% CI: 0.81–1.37) but, *cagA* negative *H. pylori* positivity was significantly associated with NAFLD in multivariable analysis (OR: 1.30; 95% CI: 1.01–1.67).

**Conclusion** The prevalence of NAFLD was higher in *H. pylori* positive subjects than in negative subjects. Especially, *cagA* negative *H. pylori* positivity was significantly associated with NAFLD, independent of other known factors in the general population.


## REFERENCES

1 Ong JP, Younossi ZM. Epidemiology and natural history of NAFLD and NASH. *Clin Liver Dis* 2007;**11**:1–16, vii.
2 Kim D, Kim WR, Kim HJ, Therneau TM. Association between noninvasive fibrosis markers and mortality among adults with nonalcoholic fatty liver disease in the United States. *Hepatology* 2013;**57**:1357–65.
3 Chung GE, Kim D, Kim W, *et al*. Non-alcoholic fatty liver disease across the spectrum of hypothyroidism. *J Hepatol* 2012;**57**:150–6.


**Disclosure of Interest** None Declared

## PTH-113 HEALTH-RELATED QUALITY OF LIFE, PSYCHOLOGICAL WELL-BEING AND SOCIOECONOMIC IMPACT IN PATIENTS WITH CIRRHOSIS AND THEIR CAREGIVERS

[1]S Vadera*, [2]L Greenslade, [1]MY Morgan. *[1]UCL Institute for Liver & Digestive Health, Division of Medicine, Royal Free Campus,University College London, Hampstead; [2]The Sheila Sherlock Liver Centre, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.516

**Introduction** The psychological, social and economic consequences of a diagnosis of cirrhosis, for both patients and their families/friends, are not routinely assessed in the UK. The aim of this study was to assess Health-related Quality of Life (HRQoL), psychological well-being and socioeconomic burden in a random sample of patients with cirrhosis and their caregivers.

**Methods** The patient population comprised 51 patients with cirrhosis (38 men: 13 women; mean age 55 [21–87] yr) with no evidence of fluid retention utilising hospital inpatient/outpatient facilities and 15 patients (nine men: six women; mean age 60 [36–82] yr) attending the day-ward for large volume paracentesis (LVP). HRQoL was assessed using the generic *EQ-5D* questionnaire. The frequency of anxiety and depression was assessed using the *Beck Anxiety* (*BAI*) and *Depression* (*BDI*) inventories. The impact on employment and disease–related costs were assessed using an adapted financial questionnaire.[1] Caregivers' burden was assessed in 20 relatives/friends using the *Perceived Caregivers Burden Scale* and the *Zarit Burden Interview*. All patients/caregivers were interviewed to obtain additional information on psychosocial and general well-being. A control population of 52 individuals (28 men: 24 women; mean age 49 [26–68] yr) was also included.

**Results** HRQoL was significantly impacted in both the general patients with cirrhosis and in those undergoing LVP, compared to controls (*EQ-5D:* 0.51±0.32 and 0.52±0.18 *vs.* 0.92 ±0.11; $p < 0.001$). The frequency of anxiety and depression was also significantly increased in the general patients with cirrhosis (*BAI* 18.9±15.9: *BDI* 17.6±12.7; $p < 0.001$) and those undergoing LVP (*BAI* 17.1±11.0: *BDI* 15.6±7.4; $p < 0.001$), compared with controls (*BAI* 4.3±4.7: *BDI* 4.5 ±4.5; $p < 0.001$). Two-thirds of the general patients with cirrhosis and 100% of those undergoing LVP were unemployed; 50% considered their diagnosis had impacted on their employment status. The majority of patients were financially impacted, with direct out-of-pocket expenses, e.g. for hospital transport costs, of £350-£1500 since diagnosis. Approximately 15% of caregivers reported moderate anxiety while 5% reported moderate depression. The majority of caregivers were assessed as having a moderate degree of burden.

**Conclusion** Patients with cirrhosis have poor HRQoL and are often depressed and anxious; in addition they frequently have undisclosed socioeconomic difficulties. Caregivers are also detrimentally affected. Attention needs to be paid to the holistic needs of patients and careers, particularly in relation to their psychosocial and financial well-being.


## REFERENCE

1 Bajaj JS, *et al*. *Am J Gastroenterol* 2011;**106**:1646–53.


**Disclosure of Interest** None Declared

## PTH-114 INFECTION IN SEVERE ALCOHOLIC HEPATITIS: RESULTS FROM THE STOPAH TRIAL

S Atkinson*, N Vergis, M Thursz , on behalf of STOPAH Investigators. *Hepatology, Imperial College London, London, UK*

10.1136/gutjnl-2016-312388.517

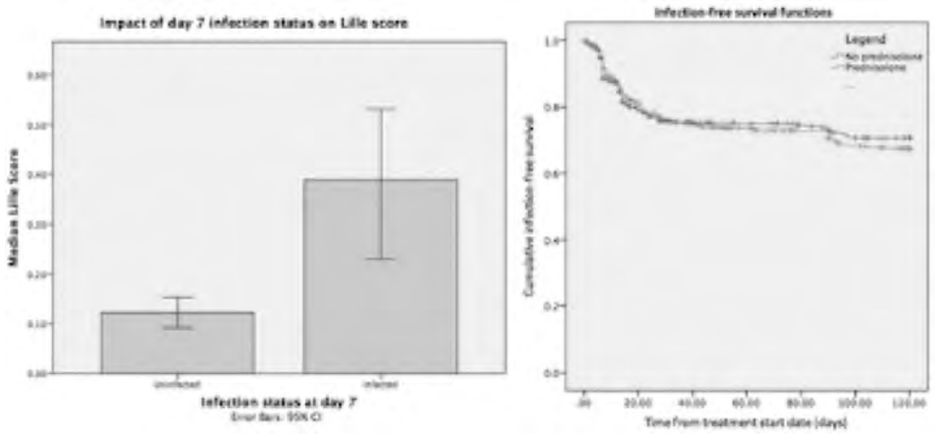
**Introduction** Severe alcoholic hepatitis (SAH; mDF $\geq$ 32) is often complicated by infection. In the recent trial STOPAH, prednisolone was associated with a doubling of the numbers of infections classified as serious adverse events (SAEs). We sought to identify the determinants of infection and the impact of infection on mortality.

**Methods** Data regarding infection were collected weekly during admission and at all trial visits; SAE reports were included. Incident infection was defined as new infection occurring after treatment start. The follow-up period considered was 120 days.

**Results** Data from 1093 cases were available. 127 patients were infected at baseline; this was not associated incident infection ($p = 0.51$) or 90 day mortality ($p = 0.19$). 308 patients developed an incident infection; 100 were reported as SAEs. As in other studies in SAH median time to infection was 13 days.

Age ($p = 0.015$), WHO performance status (PS; $p = 0.007$), WBC ($p = 0.002$), INR ($p = 0.023$) and creatinine ($p = 0.02$) at baseline were associated with incident infection. On multivariate analysis PS ($p = 0.02$) and WBC ($p = 0.00016$) remained associated. DF ($p = 0.011$) and GAHS ($p = 0.003$) but not MELD ($p = 0.41$) associated with incident infection.

Lille score was associated with incident infection after day 7 ($p = 0.013$). However, infection within 7 days was itself associated with Lille non-response ($p = 0.008$, OR 1.78 [95% CI 1.32–2.40]), independent of prednisolone treatment.




**Abstract PTH-114 Figure 1**

Although infections classified as SAEs were more common in the prednisolone treated group (p = 0.001, OR 2.51 (95% CI 1.46–4.30). There was no association between prednisolone and all incident infections occurring during treatment (p = 0.88), but prednisolone was associated with infection in the post-treatment period (p = 0.023, OR 1.92 [95% CI, 1.10–3.35]).

Incident infection was associated with 28 (p < 0.001) and 120 day mortality (p = 0.001). This was independent of prednisolone therapy and Lille response. Prednisolone-treated Lille non-responders had a higher rate of incident infection at day 120 (49% vs 27%; p < 0.0001).

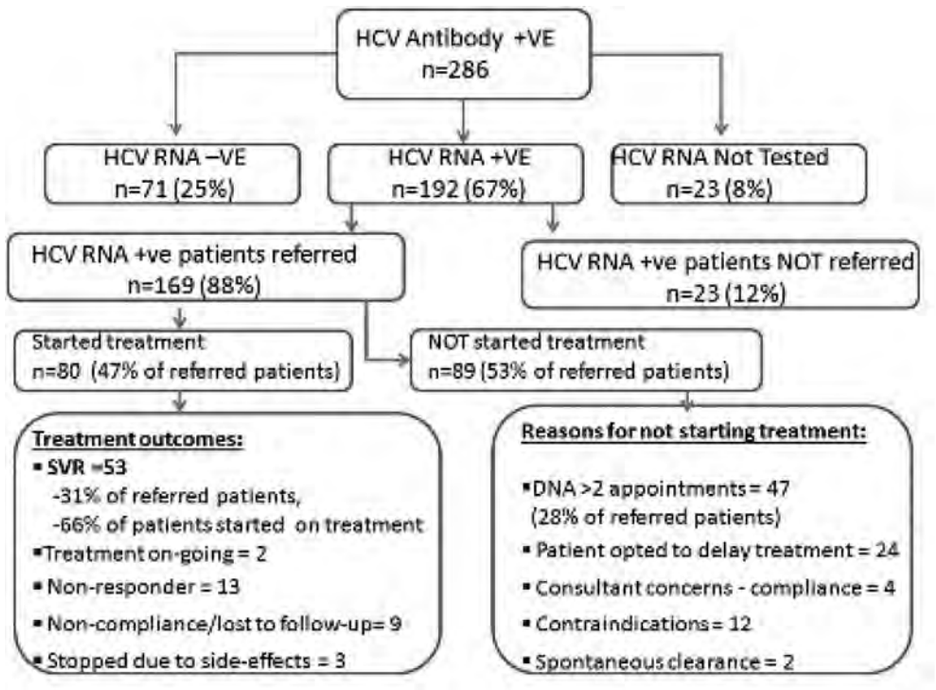
**Conclusion** In SAH incident infection is associated with mortality independently of early improvement in liver function measured by Lille. Very early onset of infection is associated with classification as a Lille non-responder. Thus in some instances Lille non-response may represent untreated infection not steroid treatment-failure. An association between prednisolone and post-treatment infection may explain the catch-up mortality after 28 days and fleeting benefit of prednisolone seen in STOPAH.

**Disclosure of Interest** None Declared

## PTH-115 INCREASING ACCESS TO HEPATITIS C TREATMENT IN THE NORTH EAST OF ENGLAND

[1]S Welsh, [2]M Valappil, [2]C Miller, [2]E Robinson, [2]A Price, [2]M Schmid, [2]S Masson, [2]S McPherson*. *[1]Newcastle University, Newcastle upon Tyne; [2]Joint Viral Hepatitis Service, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, UK*

10.1136/gutjnl-2016-312388.518




**Abstract PTH-115 Figure 1**

**Introduction** Chronic infection with hepatitis C (HCV) is a major cause of cirrhosis and hepatocellular carcinoma. Many patients are now eligible for oral direct acting antivirals (DAAs), with cure rates >90% possible. The main challenge for viral hepatitis teams now is to engage known HCV infected individuals in treatment, and to find undiagnosed cases. There are an estimated 2000 HCV infected individuals in North of Tyne (NOT) Region (Newcastle, North Tyneside and Northumberland). However, it is unknown what proportion of HCV infected individuals diagnosed in this region ultimately receive treatment.

**Aim** 1) To determine the proportion of HCV infected individuals in our region who were referred for treatment, received treatment and achieved a sustained virological response (SVR). 2) To determine whether contact can be made with patients who never had HCV RNA confirmatory testing, were never referred, or persistently missed clinic appointments.

**Methods** We conducted a retrospective review of all patients with a NEW positive HCV antibody test between Jan 2011 and Dec 2012 in the NOT region. Patients were identified from the North East Public Health Laboratory. Medical records and treatment databases were accessed to establish outcomes for all patients. For patients never referred or lost to follow up a letter was sent to their GP advising them to contact the patient and discuss re-referral.

**Results** Overall 92% of HCV antibody positive patients have HCV RNA testing performed (Figure 1). 88% of HCV RNA positive patients are referred for consideration for treatment. Of these, 47% commenced antiviral therapy, with an overall SVR of 66%. Persistent non-attendance was the main reason for not starting treatment. Letters were sent to GPs of 77 patients who were never referred or were lost to follow up. The GP response rate was 31% (24/77) after 8 weeks. Six (8%) patients were re-referred to the service.

**Conclusion** There is a high rate of referral for HCV RNA positive patients (88%) in the North of Tyne region, with 47% commencing PEG-IFN based treatment. Some reasons for not starting treatment should resolve in the DAA era, increasing treatment rates.Contacting GPs to re-refer known HCV RNA positive patients is an inexpensive approach, but resulted in relatively few referrals. Improving HCV testing across the region is essential to increase access to treatment.

**Disclosure of Interest** None Declared

## PTH-116 TIME TO ACHIEVE COMPETENCY IN LOWER GASTROINTESTINAL POLYPECTOMY IN THE UNITED KINGDOM, A RETROSPECTIVE ANALYSIS

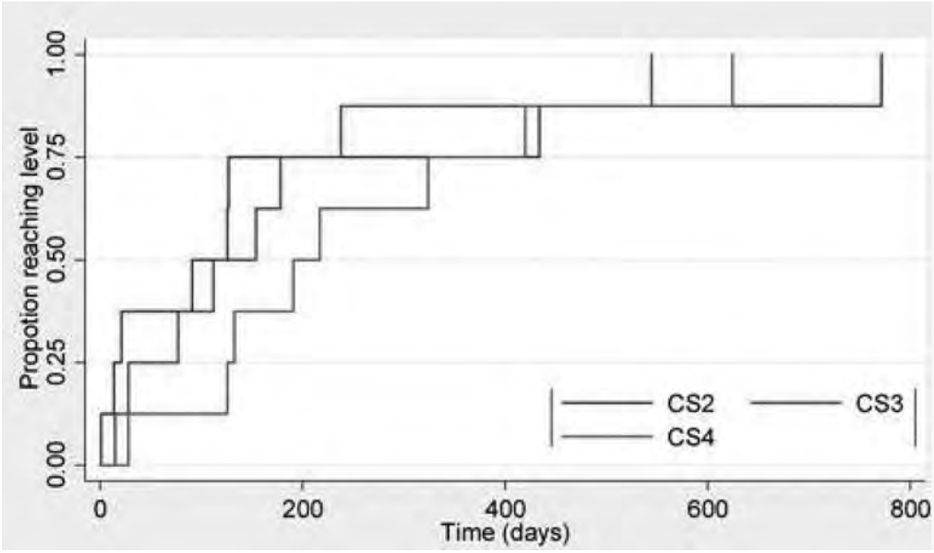
[1,2]A Rajendran*, [3,4]S Thomas-Gibson, [5]P Bassett, [6]P Dunckley, [2]N Sevdalis, [1,4]A Haycock. *[1]Gastroenterology, St Mark's Hospital, Harrow; [2]King's College, London; [3]Gastroenterology, St Mark's Hospital, Harrow, London; [4]Imperial College, London; [5]St Mark's Hospital, Harrow; [6]Gastroenterology, Gloucester Royal Hospital, Gloucester, UK*

10.1136/gutjnl-2016-312388.519

**Introduction** Directly Observed Polypectomy Skills (DOPyS) is a validated tool used to assess polypectomy skills in the UK. The overall competency for polypectomy is graded on a scale of 1 to 4 and is used to certify trainees for level 1 polypectomy (size < 1 cm) & level 2 polypectomy (size 1–2 cm). Trainees are certified as competent if they achieve grades 3 or 4 for more than 90% of their last 4 consecutive DOPyS. We aimed to analyse time required for a trainee to progress from DOPyS score 1 to 4

**Methods** Retrospective data from the e-portfolio of 707 (4965 DOPyS) trainees from Jan 2009 to Sept 2015 was examined. A dataset of 24 trainees who had documented DOPyS overall score of 1 (CS1), 2 (CS2), 3 (CS3) and 4 (CS4) was recovered. For the purpose of the analysis only those trainees (n = 8) who started out at CS1 were included. 16 were excluded from analysis as they started at a higher level. Primary outcome was number of days taken by each trainee to reach the competency levels (i.e. CS2, CS3 and CS4). The proportion of trainees reaching each level was examined using Kaplan-Meier analysis to show the proportion reaching this level over time. Time taken for 25%, 50% and 75% of trainees to reach the desired level was calculated.

**Results** Table shows time taken for 25%, 50% and 75% of trainees to reach each of the levels. The results show 50% reach CS2 after 91 days and CS3 after 112 days. It took 191 days for half of trainees to reach level CS4.




**Abstract PTH-116 Figure 1**

**Abstract PTH-116 Table 1**

| Level | Days for 25% to reach level | Days for 50% to reach level | Days for 75% to reach level |
|---|---|---|---|
| CS2 | 14 | 91 | 127 |
| CS3 | 28 | 112 | 178 |
| CS4 | 126 | 191 | 324 |

**Conclusion** 75% of trainees analysed reach an overall competency of 4 in 324 days.

In the UK DOPyS score 3 or 4 are required to start applying for provisional/full certification and in our cohort 75% of trainees analysed achieved it in a time frame of 6 months to a year. Further prospective studies analysing time taken, procedure numbers & associated factors are needed to assess the learning curve for polypectomy & implement changes to improve efficiency in training

**Limitation** The retrospective data and the small numbers are the limitations of the study

**Disclosure of Interest** None Declared

## PTH-117 APPRAISING AND IMPROVING JUNIOR DOCTORS MANAGEMENT OF ACUTE VARICEAL BLEEDS: A QUALITY IMPROVEMENT PROJECT

[1]A Elzubeir*, [2]N Shah. *[1]University Hospital Leicester, Leicester, UK; [2]Acute Medicine, University Hospital Leicester, Leicester, UK*

10.1136/gutjnl-2016-312388.520

**Introduction** Acute gastrointestinal bleeding is a medical emergency. Some 44% of bleeds are caused by peptic ulcer disease but the most severe haemorrhage and highest mortality is seen amongst those with bleeding oesophageal or gastric varices.[1] Competent triage and assessment are cornerstones of its initial management, with emphasis on identifying sick patients with life threatening haemodynamic compromise, and then initiating appropriate and timely resuscitation being of paramount importance in the patient's outcome. In a national audit, variceal bleeding accounted for just over 10% of all UK admissions, with just fewer than 50% presenting outside normal working hours.[2] The average mortality for a variceal bleed is reported to be up to 20%, with studies confirming a 2–3 fold increase in mortality amongst inpatients.[2] Therefore it is paramount that all junior are able to recognise and manage suspected variceal bleeds appropriately.

**Methods** An initial questionnaire was distributed and completed by 67 junior doctors (FY1-FY2) at the University Hospitals of Leicester in November 2015, all with jobs involving the acute medical take and providing ward cover. Junior doctors perceived confidence and knowledge was sampled in a range of key areas i.e. management pre and post endoscopy, senior support and escalation, blood transfusion targets and use of risk stratification tools such as the Blatchford score. Following evaluation of the initial questionnaire a dedicated teaching programme was delivered to 65 junior doctors, whom were subsequently re-surveyed.

**Results** Following introduction of the teaching session all junior doctors expressed improved confidence in managing variceal UGIB's- improved from 8% to 41% of junior doctors feeling confident. Additionally there were significant improvements identified in all areas. Notably; correct pre-endoscopic management improved to 94% (from 36%), appropriate transfusion targets improved from 45% to 76%, knowledge and use of risk stratification scores improved to 88% (from 3%). With inappropriate pre-endoscopic use of proton pump inhibitors falling from 25% to 0%.

**Conclusion** Adopting a focused teaching programme for junior doctors on the management of acute variceal bleeds designed around pre-identified areas of weakness has proven to increase both knowledge and confidence in its specific management. Junior doctor teaching on core medical emergencies such as UGIB's should perhaps be incorporated into trust induction programmes to ensure junior doctors are as prepared as possible on their first day in clinical practice.

### REFERENCES

1 Management of acute upper and lower gastrointestinal bleeding. A national clinical guideline. SIGN. September 2009.
2 UK comparartive audit of upper gastrointestinal bleeding and the use of blood. British.

**Disclosure of Interest** None Declared

## PTH-118 CHALLENGES AND SOLUTIONS FOR NURSE TRAINING UPON THE INTRODUCTION OF MULTIPLE NOVEL THERAPEUTIC ENDOSCOPIC PROCEDURES IN A TERTIARY ENDOSCOPY UNIT

C Mc Peake*, J Prendergast, H McLoughlin, S Donald, K Kennedy, L Walsh, S Sarkar, C Shaw, P O'Toole, H Smart, R Jayapal. *Gastro Unit, Royal Liverpool University Hospital, Liverpool, UK*

10.1136/gutjnl-2016-312388.521

**Introduction** In 2015 we introduced 5 new therapeutic procedures endoscopic procedures in the Royal Liverpool University Hospital. Namely; Per- Oral –Endoscopic- Myotomy (POEM), STRETTA (radiofrequency coagulation of the lower esophageal sphincter and gastroesophageal junction, Ampullectomy, Necrosectomy and Lower GI Endoscopic Submucosal Dissection. The introduction of one new procedure to our large endoscopy workforce could have been deemed as challenging with the comprehensive teaching and training involved; so the initiation of 5 may be regarded as chaotic. To counteract this, the planning and management of the staff training and informed participation in the four procedures needed to be timely, efficient and focused with the establishment of a structured plan. The objective was to initiate all five new endoscopy techniques by establishing a safe and competent nursing workforce through an effective training programme.

**Methods** In 2015 the Sisters on the endoscopy Unit were made aware of the 5 procedures to be implemented that year. Early recognition that appropriate training inputs were needed was key. It was decided that we dedicate a lead nurse (Band 6) alongside a core group of 2 staff nurses to be trained firstly in each of the five areas. This would allow for development of a small but highly knowledgeable practitioners, confident to assist with the endoscopy before dissemination to all staff. The lead nurse created DOPs forms alongside the Consultant lead for the particular procedure. This was used as competency framework and uploaded onto our local GIN programme. We organised equipment demonstrations and training from the Reps of the particular equipment to be used per procedure. In-house endoscopy education breakfast meetings was used as an ideal forum to get staff engagement and

broaden their knowledge base. Good communication between endoscopy staff led to clear plans and unified organisation of processes. Core staff were given weekly dedicated planning time to talk through the process of the day of planned procedure; order of events, gaining familiarity with equipment, discussions of pre and post procedure protocols and precautions and the opportunity to address any queries, worries and concerns. Communication with entire endoscopy workforce regarding to what the core staff would be doing on the day of procedure and how it would be organised was continuous to maintain confidence and clarity.

**Results** Patient information sheets for each procedure were developed with nurse lead and the consultants and agreed by the Trust patient group forum. All 5 procedures were completed successfully in 2015:- 1 POEM procedure, 1 Stretta procedure, 4 Ampullectomy, 3 lower GI ESD and 15 Necrosectomy procedures. Feedback from staff regarding their preparation for admitting, intra-procedure and post procedure deemed that their training needs were met. Comments included:-*"I feel privileged to be trained in the new procedures like POEM. I don't think many other hospitals in the UK do this procedure so having the training on my CV makes me stand out""Having the rep's from the STRETTA equipment talk through what was involved helped me feel reassured. I realised that the training I have received so far on this department has enabled me to now become adaptable to new procedures in a short space of time""I asked Dr. all my queries and anxieties about necrosectomy in advance of assisting in the procedure. In that way, I felt confident in what I was doing. I had a clear plan pre, intra and post procedure for my patients and it made the experience enjoyable and now I am training others using the DOPs forms we have created*".

**Conclusion** The consensus is that the identification and training of a core group before dissemination lead to expertise being developed by a small number of staff. This competence and knowledge helped other staff to have expert "go-to" endoscopy nurses that they would be trained by and have DOP assessment. The creation and standardisation via the DOPs forms means they can be used for years ahead. What may seem as daunting new procedures for some endoscopy nurses is now broken down to step by step guidance and the forms can be used to continually assess until competence is gained.

**Disclosure of Interest** None Declared

## PTH-119 A COMPARISON OF COLONOSCOPISTS PERFORMANCE IN RECORDING AND LABELLING IMAGES TAKEN DURING ENDOSCOPY USING THE RECORDED IMAGE QUALITY INDEX (RIQI) TOOL

D Samuel, JB Berrill, J Hurley, B Lee, E Hawkes, S Yosief, N Hawkes*. *Gastroenterology, Cwm Taf University Health Board, Mid Glamorgan, UK*

10.1136/gutjnl-2016-312388.522

**Introduction** Recording images on the endoscopic reporting tool and report writing are key skills for a colonoscopist. Together they represent the data set on which other clinicians have to base decisions. The performance level of colonoscopists in this area of endoscopy is not commonly measured. We therefore aimed to examine the variation in image recording amongst a cohort of colonoscopists performing regular colonoscopy using the validated Recorded Image Quality Index (RIQI) tool.

**Methods** We searched the HICCS Endoscopic Reporting System for all colonoscopists performing regular colonoscopy (n = 11). All procedures performed between July and December 2015 were identified (screening cases were excluded). All images and the endoscopy report for the first 10 cases with pathological findings for each colonoscopist were obtained, ordered into folders and data anonymised. The 110 image sets were scored by 3 independent assessors using the validated RIQI score. This measures 4 domains representation, labelling, caecal landmarks and image quality high scores indicate high utility of the images as a base for decision-making. Kruskal-Wallis non-parametric test was used to compared differences in rank sums between groups.

**Results** 110 data sets were reviewed by 3 assessors generating 330 RIQI scores. These observations were pooled for each colonoscopist yielding a median RIQI score from 30 observations. Inter-observer rating scores for the 3 assessors were in the moderate to good range. Median values for colonoscopists ranged from 2 (scores less than 4 indicate a < 2% utility value as a base for decision-making) to 10 (scores 9–10 have a 96.5% utility rate). Upper quartile performers on RIQI score were significantly better than the lower quartile of colonoscopists (Kruskal-Wallis, $H = 1132$ (1, $n = 180$, $p < 0.00001$). 4/11 (37%) colonoscopists met acceptable standards (median 9–10), 5/11 (45%) were rated as needing improvement (median 6–8) and 2/11 (18%) demonstrated poor performance (median ≤5).

**Conclusion** The RIQI tool demonstrates widely varying performance in capture of quality images during endoscopy. High quality image capture and reporting is an important aspect of endoscopic practice. RIQI provides a performance indicator that can be used as an audit and training tool to improve performance in this area of practice.

**Disclosure of Interest** None Declared

## PTH-120 HOW CAN WE IMPROVE RECRUITMENT AND SUPPORT GASTROENTEROLOGY TRAINEES IN THE UK? RESULTS FROM THE SUPPORTING WOMEN IN GASTROENTEROLOGY (SWIG) SURVEY

[1]E Arthurs*, [2]A Brooks, [3]E Taylor, [4]J Solomon, [5]P Neild, [6]S Thomas-Gibson, [7]M Lockett, [8]C Edwards, [9]J Eaden. *[1]Gastroenterology, Bristol Royal Infirmary, Bristol; [2]Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield; [3]St James University Hospital, Leeds; [4]British Society of Gastroenterology; [5]St. George's University Hospitals NHS Foundation Trust; [6]St. Mark's Hospital, Harrow, UK and Imperial College London, London; [7]North Bristol NHS Trust, Bristol, UK; [8]University of Cape Town, Cape Town, South Africa; [9]University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.523

**Introduction** In gastroenterology, whilst numbers are increasing, women remain under-represented at both trainee and consultant grade compared with other medical specialties at 52% and 34% respectively.[1] The aim of this survey was to identify the key issues around recruitment and support of trainees and consultants.

**Methods** A comprehensive survey was designed and circulated to consultants and trainees in gastroenterology, all of whom were members of the BSG. Data regarding demographics,

working patterns, professional experiences and opinions was collected and analysed.

**Results** The survey was sent to 1900 people, 600 people opened the email and 186 responded, a response rate of 9.79%. 107 of respondents were female (62.9%), 16 respondents did not declare gender. Data was available for 183 responses.

Important reasons for choosing a career in gastroenterology were practical procedures (23.3% of responses; n = 117, 59.8% female versus 39.3% male (gender not declared n = 1), a positive prior gastroenterology job (19.9%; n = 100, 66% female versus 34% male) and an inspirational local gastroenterologist (14.7%; n = 74; 63.5% female versus 35.1% male (gender not declared n = 1)).155 (94.5%) respondents would recommend a career in gastroenterology to a junior doctor (60% female versus 38.7% male (gender not declared n = 1)).

Important factors in encouraging junior doctors to become gastroenterologists were reducing GIM activity (17.7% of responses; n = 91, 60.4% female versus 38.4% male (gender not declared n = 1)), role models (14.2%; n = 73, 68.5% female versus 31.5% male) and mentorship schemes (11.9%; n = 61, 60.7% female versus 37.7% male (gender not declared n = 1)).

Factors thought to be helpful in supporting existing trainees were mentorship schemes (17.1% of responses; n = 78, 60.3% female versus 39.7% male), additional training and networking (14.5%; n = 66, 51.5% female versus 48.5% male) and reducing out of hours activity (13.1%; n = 60, 68.3% female versus 31.7% male).

**Conclusion** Recruitment to gastroenterology could be improved by reducing GIM activity and developing mentorship schemes. Mentorship schemes, access to additional training and networking and reducing out of hours commitments were thought to be the most useful factors that would support existing trainees. It would be beneficial to focus on developing solutions for these key issues.

## REFERENCE

1 Census of consultant physicians and higher speciality trainees in the UK, 2014-2015. Royal College of Physicians, 2016.

**Disclosure of Interest** None Declared

## PTH-121 DEVELOPMENT AND VALIDATION OF A TRAINING MODULE ON THE USE OF ACETIC ACID CHROMOENDOSCOPY (AAC) TO DETECT BARRETT'S NEOPLASIA

F Chedgy*, K Kandiah, G Longcroft-Wheaton, P Bhandari, on behalf of the ABBA study group. *Gastroenterology, Queen Alexandra Hospital, Portsmouth, UK*

10.1136/gutjnl-2016-312388.524

**Introduction** Acetic acid chromoendoscopy (AAC) is increasingly used by both expert and non-expert endoscopists for detection of Barrett's neoplasia. However, there is no validated training strategy to achieve competence. The aim of this study was to identify the need for training, develop a validated training tool in the use of AAC and evaluate its impact on neoplasia detection, degree of confidence of the endoscopists & attitude towards switching to AAC from conventional Barrett's surveillance strategy.

**Methods** A validated assessment tool of 40 images and 20 videos was developed. 13 endoscopists experienced in Barrett's endoscopy and no formal training in AAC (7 consultants, 6 nurse endoscopists) underwent training. Participants underwent: 1. baseline assessment→online-training→2.assessment→ interactive seminar with live cases→3.assessment.

**Results** Experienced endoscopists lack lesion recognition skills with AAC, Consultants perform no better than nurse-endoscopists. There were significant increases in accuracy, sensitivity, specificity, negative predictive value (NPV) and positive predictive value (PPV) following the online training module (Table 1) to a level that meets ASGE PIVI requirements. There was additional gain from the interactive workshop with live & inter-observer agreement improved.

**Abstract PTH-121 Table 1** Performance of educational intervention at each stage of training tool

| | Accuracy | Sensitivity | Specificity | PPV | NPV | Kappa Score |
|---|---|---|---|---|---|---|
| | | | **Images** | | | |
| **1.Baseline** | 79% 0.75-0.83 | 83% 0.79-0.86 | 76% 0.73-0.79 | 76% 0.72-0.79 | 83% 0.79-0.86 | 0.48 |
| **2.Online training** | 86%* 0.83-0.88 | **95%*** 0.92-0.97 | 79% 0.76-0.81 | 80% 0.78-0.82 | **94%*** 0.91-0.98 | 0.67 |
| **3.Interactive seminar** | 82%* 0.80-0.84 | **98%** 0.95-0.99 | 68% 0.66-0.69 | 74% 0.72-0.75 | **97%*** 0.94-0.99 | 0.75 |
| | | | **Videos** | | | |
| **1.Baseline** | 78% 0.72-0.83 | 73% 0.67-0.78 | 83% 0.77-0.88 | 81% 0.75-0.87 | 76% 0.70-0.80 | 0.41 |
| **2.Online training** | 82% 0.77-0.86 | **91%*** 0.86-0.95 | 74% 0.69-0.78 | 78% 0.73-0.81 | 89%* 0.83-0.94 | 0.51 |
| **3.Interactive seminar** | 79% 0.75-0.81 | **99%*** 0.95-1.0 | 60% 0.56-0.61 | 71% 0.68-0.72 | **98%*** 0.91-1.0 | 0.63 |

*$p < 0.05$

The training intervention led to an improvement in the endoscopist's confidence in AAC, with the mean pre-training confidence level rising from 2.5 (5 point scale) to 3.9 post-training ($p < 0.001$). The training module improved the willingness of the endoscopists in changing practice from Seattle protocol to AAC-targeted biopsy with mean pre-training confidence score of 2.6 (5 point scale) rising to 3.8 post-training($p < 0.001$).

**Conclusion**

- Our data demonstrates the need for training as baseline performance, even by experts, was poor
- We were successful in developing a validated online training and testing tool for AAC
- Our training tool improved performance of all endoscopists to a clinically significant (PIVI standard) level & improved their confidence & willingness in the use of AAC.

**Disclosure of Interest** None Declared

## PTH-122 ASSESSING THE IMPACT OF A NUTRITIONAL COURSE TO A THIRD WORLD COUNTRY - LESSONS FROM A BSG-FUNDED DELEGATION TO IRAQ

[1,2]HN Haboubi*, [3]N Al-Mossawi, [4]M Boyle, [5]A Evans, [6]A Alhamdani, [7]M Jawad, [8]M Esmail, [2]A Hassan, [8]NA Haboubi, [9]W Haboubi, [10]H Twaij, [5]NY Haboubi. [1]*Swansea University*; [2]*ABMU Health Board, Swansea*; [3]*Great Ormond Street Hospital, London*; [4]*City Hospitals, Sunderland*; [5]*Nevill Hall Hospital, Abergavenny*; [6]*Whittington Hospital NHS Trust, London*; [7]*SASH NHS Trust, Surrey*; [8]*Hywel Dda Health Board, Carmarthen*; [9]*St. James' Dental Practice, Swansea*; [10]*St Mary's Hospital, London, UK*

10.1136/gutjnl-2016-312388.525

**Introduction** Good nutrition is pivotal for ensuring an individuals health and wellbeing. The Iraqi Healthcare system has suffered years of underinvestment, war and turmoil. In particular, services dealing with nutrition and dietetics are often overlooked or entirely non-existent in Iraqi hospitals leading to a significant adverse effect on overall health outcomes. We investigate the usefulness of an intensive nutritional course in improving knowledge and confidence amongst healthcare professionals in Iraq.

**Methods** A BSG-funded delegation visited the University of Kufa, Iraq in January 2016 to deliver an intensive four-day course on clinical nutrition based on the BSG, BDS, and BAPEN guidelines. Each day was dedicated to specific learning outcomes in general dietetic assessment, special situations (including GI nutrition & trauma), paediatric nutrition and obesity nutrition. This free for all course received 20 external CPD credits from the Royal College of Physicians. A detailed pre-course questionnaire was distributed to evaluate understanding of common nutritional problems and confidence in managing these. A subsequent questionnaire one-month following the course evaluated changes to confidence (using a standardised 5 point confidence Likert scale).

**Results** 147 delegates attended the course from 8 of the 19 Iraqi governates. Completed post-course questionnaires were available for 69 individuals (47% response rate). Whilst 88% of attendees did not feel confident diagnosing malnutrition before the course, this improved to 97% of respondents with >3/5 confidence in the post-course questionnaire (67% scoring >4/5). Other observed improvements included mean confidence scores for biochemical workup of patients with suspected malnutrition (2.9 pre-course compared to 4.3 post-course, $p < 0.01$). In fact, for the 40 sessions organised during the 4 day course, all showed a significant improvement in post-course confidence.

**Conclusion** Clinical nutrition is an often under taught component of medical education. It's importance; particularly to war-torn developing countries that have no dietetic infrastructure should not be understated. A BSG-funded delegation was able to deliver an intensive 4 day conference to health leaders in Iraq and demonstrated improved knowledge and confidence at dealing with nutritional dilemmas. We welcome BSG-funding for such endeavours and thank them for their support.

**Disclosure of Interest** None Declared

## PTH-123 THE CURRENT SHAPE OF UK ERCP TRAINING

[1,2]KA Mcwhirter*, [1]J McLaughlin, [2]A Makin. [1]*University of Manchester*; [2]*Gastroenterology, Central Manchester NHS Foundation Trust, Manchester, UK*

10.1136/gutjnl-2016-312388.526

**Introduction** ERCP training and service provision has been an area of intense interest internationally. Recent papers have highlighted discrepancies in practice and performance between individuals, units and countries.

At present, there is no consensus as to how to best select and train individuals, or how to assess competency at the completion of training.

This survey aimed to identify the selection processes for entry to ERCP training in use in the UK, alongside the entry characteristics of current trainees and their training and career aspirations.

**Methods** A nationwide electronic survey of UK gastroenterology trainees.

**Results** Responses were received from 15 of 20 deaneries, with 104 individual replies, of which 67 are currently training in ERCP. 3 deaneries have competitive selection in place comprising a combination of interview, portfolio review and endoscopic skills assessment. One deanery demands attainment of competency in both gastroscopy and colonoscopy prior to ERCP training. 91.4% are competent in OGD prior to ERCP training, whilst most intend to train in colonoscopy alongside ERCP 46.3% would like to simultaneously train in hepatology while 53.6% intend to combine with training in EUS 52.9% would expect to perform 200–500 ERCPs prior to certification of competence, but 76.5% have encountered difficulty in obtaining training-time commitments, others training or list suitability. 57.9% expect to attend less than 4 lists each month. Only 17.7% expect to be adequately trained at CCT and 79.4% intend to undertake fellowship.

**Conclusion** Most deaneries have no formal selection process prior to beginning ERCP training. Those with competitive selection use differing criteria. There is dissatisfaction with the availability of training and acceptance that competency is unlikely to be achieved prior to CCT. The majority expect to undertake a post-CCT fellowship. Despite this, there is still interest in undertaking more subspecialty training, particularly EUS but also hepatology. The BSG working party has made suggestions regarding the structure of high quality training. This includes limiting training numbers by formalised selection to allow maximisation of training opportunity. It also makes recommendation of minimum list frequency and annual procedure numbers. These levels are not currently being achieved. Service commitment, other training needs and trainee competition are commonly cited as reasons for this. Most trainees lack confidence that ERCP competency will be attained during speciality training, in keeping with BSG working party expectation that post CCT fellowships will become standard. Current ERCP training cannot confidently produce independent endoscopists. This needs to be reflected in pre- and post-CCT training organisation and in new consultant job planning.

### REFERENCE

1 With thanks to the BSG trainee committee for their assistance.

**Disclosure of Interest** None Declared

## PTH-124 REGIONAL ERCP STRUCTURE – ARE WE ABLE TO TRAIN WITHIN A HIGH QUALITY SERVICE?

[1,2]KA Mcwhirter*, [1]J McLaughlin, [2]A Makin. [1]*University of Manchester*; [2]*Gastroenterology, Central Manchester NHS Foundation Trust, Manchester, UK*

10.1136/gutjnl-2016-312388.527

**Introduction** ERCP services have traditionally developed dependent on local facilities and expertise. Recognising concerns regarding ERCP training and service provision, there have been efforts to describe the features of a high quality ERCP service and training program. Greater procedural volume leads to improved outcomes but there is no consensus on the effect this has on current ERCP service and training structure. We have reviewed how current regional practice fits into a suggested optimal service model and how training fits within this.
**Methods** All ERCP endoscopists and trainees within the NorthWestern deanery were invited to complete an electronic survey of their routine practice.
**Results** All 29 ERCP endoscopists, and 35 (79.5%) trainees, from 12 hospitals responded.

All units fulfilled criteria for a high quality service with access to multidisciplinary meetings and interventional radiology facilities and audit protocol. However, there was no standard approach to assessment or management of common diagnoses. Half were confident that CBD stones <10 mm would be removed in greater than 95% of occasions. Increased confidence was seen in higher volume operators. Pancreatitis prophylaxis (rectal NSAID or prophylactic pancreatic stenting) was not universally used, but more likely to be utilised by high volume operators.

7 of 9 units offering ERCP training provided training in the previous 12 months but there was no standardised approach, and no structure to allow exposure to higher case volume and complexity as training progressed. 54.2% of trainees declared an interest in ERCP training, with 37.1% currently training. All trainees had encountered difficulty obtaining training. 87.5% did not expect to be competent at CCT.
**Conclusion** The current structure of this regional ERCP service fulfils suggested criteria for high quality service. This demonstrates that the current endoscopists are working with sufficient volume of cases to maintain expertise, and also have access to services to ensure appropriate and safe patient selection.

However, there is no organisation of training. A high proportion of trainees are receiving limited training, and there is universal concern regarding availability.

To optimise training within the region, we suggest that trainee numbers should be limited and a standardised training program developed. This would allow effective monitoring of training progression with the aim of producing a cohort of endoscopists who are near to or at a level of competence at the time of their CCT to start independent practice as a consultant or continue supervised practice as a post CCT fellow.
**Disclosure of Interest** None Declared

## PTH-125 BSG VS UEG – WHICH ANNUAL MEETING HAS THE HIGHEST CONVERSION RATE OF ABSTRACTS TO FULL PUBLICATION?

M Kurien*, AD Hopper, R Akram, R Glover, A Issa, E Peever, J Purves, E Scanu, DS Sanders. *Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.528

**Introduction** Abstract presentations at scientific meetings allow rapid dissemination of novel research and enables peer review before submission for publication. The percentage of abstracts that achieve full publication, however is variable ranging between 11–78% from other medical specialty meetings. This study evaluates the conversion rate of abstracts presented at the BSG annual meeting, and comperes the outcome from this national meeting with another internationally recognised gastrointestinal meeting (UEGW).
**Methods** All abstracts presented at the BSG between 1994 and 2008 were reviewed in Nov 2012. UEGW meeting abstracts between 2009 and 2011 were reviewed in October 2014. Review dates for both the BSG and UEGW abstracts were at least 3 years post the last meeting evaluated, which is a previously reported upper limit timescale for subsequent full publication. PUBMED and EMBASE databases were reviewed using cross-referencing of first author, senior author and at least one key word from the abstract title. Abstracts and possible full publications were then examined in tandem to ensure they represented the same study. Abstracts that were withdrawn were excluded from the study. In addition to publication rates, data was collected on lag time to publication and journal impact factors. Statistical analyses were performed using contingency tables and chi squared statistics for categorical data using SPSS version 20.0.
**Results** Over a 15 year period (1994–2008) the conversion rate of BSG abstracts to full publication was 33.4% (2273/6798, mean impact factor of published journal = 3.8). The mean lag time until publication was 23 months, with service development abstracts having the lowest conversion rate of 6.9% (8/116). Of the 6560 abstracts presented at UEGW meetings between 2009–2011, 31.0% (2033/6560) went on to full publication in indexed journals (mean impact factor = 3.93). The mean lag time between UEG abstract presentation and full publication was 16 months. The conversion rate of BSG abstracts is broadly comparable to UEGW, however it did achieve a statistically significant difference (33.4% vs.31.0% p = 0.003).
**Conclusion** This study demonstrates that the BSG compares favourably to another internationally recognised gastroenterology meeting with regards to the outcomes of its abstracts. Findings from this work provides reassurances to researchers that submission to the BSG annual meeting is worthwhile, and that the peer-review process provided increases the likelihood of success in achieving subsequent full publication.
**Disclosure of Interest** None Declared

## PTH-126 VIRTUAL REALITY AND BEYOND: INTEGRATING SIMULATION INTO THE GASTROENTEROLOGY TRAINING CURRICULUM

[1]R Gadhok*, [2]S Murray, [2]E Wood. *[1]Medical Education; [2]Gastroenterology, Homerton Hospital, London, UK*

10.1136/gutjnl-2016-312388.529

**Introduction** Simulation has been increasingly utilised in medical education since the publication of Safer Medical Practice.[1] Some specialities have led the way in integrating simulation training into curricula to cover technical and higher-level non-technical skills training.

To date simulation in gastroenterology has largely restricted itself to the use of virtual reality endoscopy training. Even then, there is insufficient evidence to demonstrate how best to integrate this into the curriculum, so this remains untackled.[2]

In 2015 UCLPartners funded a Gastroenterology Simulation Fellow, based at The Homerton Hospital, to consider how best to use simulation to deliver multi-professional training across UCLP Trusts. Among the aims has been optimising trainee preparation for learning endoscopy; improving inter-professional training; addressing a need for higher-level skills training; creating sustainability in delivering training; and engaging trainees in reflective practice that is little utilised as a tool elsewhere in training.

**Methods** Over the course of a year we are delivering 15 one-day courses from 4 UCLParters trusts. They include courses in Screen-based Endoscopy Technical Skills, Human-Factors in Virtual Endoscopy and Situational Training in Gastroenterology. The courses are open to both gastroenterology and endoscopy nurses and gastroenterology and surgical registrars, matching different courses to different training grades. We are evaluating the courses by means of written feedback using both Likert Scales and freetext. We will analyse both quantitative and qualitative data to evaluate how well received the courses were; how well they addressed specific demands of the curriculum and revalidation requirements; and whether they successfully addressed elements of the curriculum not met elsewhere. We are also undertaking faculty feedback to ascertain explore the perception of increasing simulation training in gastroenterology and identify any barriers to the ongoing delivery of training.

**Results** Early results from the first courses seem to indicate that they were well received with high levels of enjoyment and engagement, and that there may be significant gaps in the training programme which may best be met by simulation. By early June we will have undertaken collation of all data from course feedback, and analysis as above.

**Conclusion** The results will inform the integration of simulation into the training program and local curriculum over the coming years and how to create sustainability to achieve this.

## REFERENCES

1 Donaldson, L. 2008 Annual Report of the Chief Medical Officer On the State of Public Health. London: Department of Health. 2009.
2 Harpham-Lockyer L, *et al*. Role of virtual reality simulation in endoscopy training. *World J Gastrointest Endosc*. 2015 Dec 10; **7**(18):1287–1294.

**Disclosure of Interest** None Declared

## PTH-127 ENDOSCOPIC VARICEAL BAND LIGATION (EVBL) AT THE 37 MILITARY HOSPITAL, ACCRA-GHANA: OUR EXPERIENCE WITH THE EURO-LIGATOR-UNIVERSAL (EURO MULTIBAND LIGATOR)

[1]R Robinson*, [1]M Thomas, [1]M Norwood, [1]A Ntiri, [2]K-U Lat, [2]J Kpodo, [2]E Asumanu, [2]W Yevudza, [2]N Nuamah. *[1]Digestive Diseases Centre, University Hospitals of Leicester, Leicester, UK; [2]Department of Surgery, 37 Military Hospital, Accra, Ghana*

10.1136/gutjnl-2016-312388.530

**Introduction** Bleeding gastro-eosophageal varices are the 3 rd commonest cause of UGI bleeding in Ghana and have a high mortality. EVBL is an effective, safe treatment for oesophageal varices but single use, preloaded ligators are unaffordable in developing countries. We report our early experience of the re-usable Euro-Ligator for variceal banding.

**Methods** The Euro-Ligator is the first re-usable multiple band ligator. It operates on a different principle to other ligators. A rotating driver is locked into the instrument channel and pre-loaded bands are deployed as an inner cylinder is withdrawn. Training in the use of the Euro-Ligator was provided by a visiting team from the University Hospitals of Leicester, funded by the British Society of Gastroenterology. During a one day course (October '15) the endoscopy team at 37 Military received instruction in loading the bands, intubation, band deployment and disinfection. An instruction video of each step was produced. During the course 5 patients were successfully banded under the supervision of the visiting team. Dedicated lists for variceal banding were established.

**Results** To date, 15 EVBL sessions have been performed on 7 patients (6 males, age range 16 to 62). In all, 60 bands have been deployed with a successful band deployment rate of 55/60 (91.6%). The mean number of bands used per session was 3.7. All procedures were elective day cases after an index bleed & performed under conscious sedation. No mortality was recorded during the procedures & all patients were discharged home the same day. We have not seen deep ulceration, perforation or aspiration pneumonia. One patient was lost to follow up after the index procedure and 1 patient died 2 weeks after the initial session from Hepatic Failure (Child Pugh C). In the remaining 5 patients under follow-up, haemostatic control has been achieved with no further bleeding episodes reported. Complete eradication has now been achieved in 1 patient.

**Conclusion** This preliminary case report gives us some insight and working experience into the use of the multiband Euro-Ligator. We found the equipment easy to use and technically effective in the endoscopic treatment of oesophageal varices. We need to adhere to stringent disinfection and cleaning protocols to ensure long term safety in our patients and evaluate the clinical and cost effectiveness over a longer period. However, the Euroligator is a major advance in the management of bleeding oesophageal varices in the developing world

**Disclosure of Interest** None Declared

## PTH-128 GASTROENTEROLOGY REGISTRAR OF THE WEEK: A SOLUTION FOR AUGIB ENDOSCOPY TRAINING?

S Budihal*, P Wurm. *Digestive Diseases Centre, University Hospitals Leicester, Leicester, UK*

10.1136/gutjnl-2016-312388.531

**Introduction** Much concern surrounds Gastroenterology Specialist Registrar(StR) endoscopy training, especially in regards to endoscopic management of Acute Upper Gastrointestinal Bleeding (AUGIB). Recent evidence suggests there has been a decline in exposure and experience in AUGIB endoscopy.[1] In July 2013 our Hospital introduced a Consultant led and Registrar supported Monday to Friday, 9 to 5 pm in-reach service. It comprises of a morning visit to the acute medical units and a daily inpatient emergency list. This study looked at registrar AUGIB endoscopy training after its implementation.

**Methods** Endoscopy reports of patients presenting with haematemesis, melena or both who had undergone gastroscopy during the period of 1st of March 2015 to 31st August 2015 were retrieved using the endoscopy reporting tool Unisoft and were then analysed. Reports where StRs were the primary operator were considered. Number of procedures, haemostatic intervention and nature of haemostasis was analysed. This was then compared to data from the year before implementation (01/03/2012 to 31/08/2012).

**Results** A total of 7 StRs (5 Full Time and 2 Less than Full Time) performed gastroscopies on AUGIB patients as first operators under Consultant supervision. Over the 6 month period a total of 166 gastroscopies were undertaken(Mean 24). On 26 occasions, endoscopic intervention(EI) was performed(Mean 4). On average, 16% of the AUGIB patients required EI. In cases of Non Variceal Bleeding, Dual therapy was applied in 87.5% of the cases. In the remaining cases Haemospray was used. On average each StR was able to perform one case of oesophageal variceal banding and one case where Haemospray was utilised. Data from the 2012 cohort in comparison showed a total of 66 gastroscopies over 6 months with 13 EI by 5 StRs. On average 13 procedures and 2.6 EIs were performed by each StR.Dual therapy was applied in only 28.5% of the cases.

**Conclusion** The introduction of the Registrar of the Week Service provides a valuable opportunity for StRs to be trained in endoscopic haemostasis and acquire exposure to AUGIB patients. As per this study each StR on an average performed endoscopy on 24 AUGIB patients. If this is extrapolated, each StR will be able to perform 48 procedures in 1 year and 240 procedures over 5 years. In the case of EI, on average a StR can perform around 4 interventions over 6 months, which comes to 8 per year and 40 in a 5 year programme which is significantly better than in the previous cohort and other centres.[1] Hospitals should consider developing similar services not only to meet demands for 24/7 Consultant led AUGIB endoscopy service but provide adequate endoscopic training provision for current specialist registrars in order to ensure future competent and confident Consultants.

## REFERENCE

1 Penny HA, Kurien M, Wong E, *et al*. *Frontline Gastroenterology* 2016;**7**:67–72.

**Disclosure of Interest** None Declared

## PTH-129 MACHINE LEARNING CREATES A SIMPLE ENDOSCOPIC CLASSIFICATION SYSTEM THAT IMPROVES DYSPLASIA DETECTION IN BARRETT'S OESOPHAGUS IN NON-EXPERT ENDOSCOPISTS

[1]V Sehgal*, [2]A Rosenfeld, [1]D Graham, [1]G Lipman, [3]R Bisschops, [4]K Ragunath, [1]M Banks, [1]R Haidry, [1]L Lovat. *[1]UCL, London, UK*; *[2]Jerusalem College of Technology, Jerusalem, Israel*; *[3]University Hospitals Leuven, Leuven, Belgium*; *[4]Queen's Medical Centre, Nottingham, UK*

10.1136/gutjnl-2016-312388.532

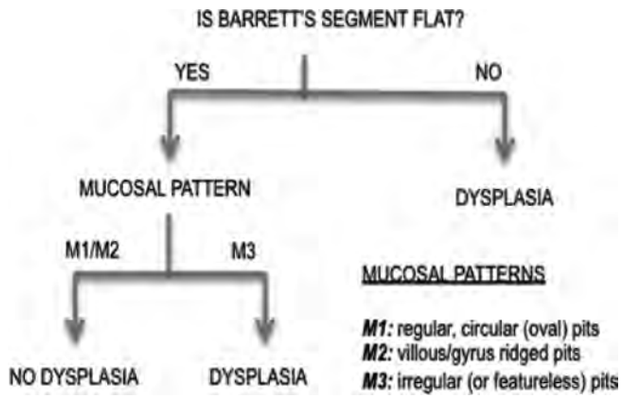
**Introduction** Barrett's Oesophagus (BE) is the pre-cursor to oesophageal adenocarcinoma. Endoscopic surveillance is performed to detect dysplasia in BE as it is likely to be treatable. Machine Learning (ML) is a technology that generates simple rules, known as a Decision Tree (DT). Using a DT generated from Expert Endoscopists (EE), we hypothesised that this could be used to improve dysplasia detection in Non-Expert Endoscopists (NEE).

**Methods** Endoscopic videos of Non-Dysplastic (ND-BE) and Dysplastic (D-BE) BE were recorded. Areas of interest were biopsied. Videos were shown to 3 EE (blinded) who interpreted mucosal & vascular patterns, presence of nodularity/ulceration & suspected diagnosis. Acetic Acid (ACA) was sometimes used. EE answers were inputted into the WEKA package to identify the most important attributes and generate a DT to predict dysplasia. NEE (GI registrars and medical students) scored these videos online before & after online training using the DT (Fig 1). Outcomes were calculated before & after training. Student's t-test was used ($p < 0.05$).

**Results** Videos from 40 patients (11 pre/post ACA) were collected (23 ND-BE, 17 D-BE). EE mean accuracy of dysplasia prediction was 96% using the DT. Mean sensitivity/specificty were 93%/99%. Neither vascular pattern nor ACA improved dysplasia detection. Students had a high sensitivity but poor specificity as they 'overcalled' normal areas. GI registrars did the opposite. Training significantly improved sensitivity of dysplasia detection amongst registrars without loss of specificity. (Table 1). Specificity rose in students without loss of sensitivity and significant improvement in overall detection.

**Abstract PTH-129 Table 1** Accuracy, sensitivity and specificity amongst both groups of non-experts before and after training

| | Registrars, n = 13 | Students, n = 9 | Both, n = 22 |
|---|---|---|---|
| **Accuracy,** Before/After training (%), p-value | 65/68, 0.07 | 53/63, 0.0005 | 60/66, 0.0005 |
| **Sensitivity,** Before/After training (%), p-value | 71/83, 0.00002 | 83/84, 0.044 | 76/83, 0.00079 |
| **Specificity,** Before/After training (%), p-value | 60/57, 0.2 | 31/49, 0.00008 | 48/54, 0.02 |




**Abstract PTH-129 Figure 1**

**Conclusion** ML can generate a simple algorithm from EE to accurately predict dysplasia. Once taught to NEE, it yields a significantly higher rate of dysplasia detection. This opens the door to standardised training and assessment of competence in those performing endoscopy in BE.

**Disclosure of Interest** None Declared

## PTH-130 ATTITUDES OF MEDICAL STUDENTS TOWARDS GASTROENTEROLOGY TEACHING IN THE UK: A BSG SURVEY

[1]VTF Cheung*, [2]GJ Johnson. *[1]Gastroenterology, John Radcliffe Hospital, Oxford*; *[2]Gastroenterology, University College Hospital, London, UK*

10.1136/gutjnl-2016-312388.533

**Introduction** Little is known about how undergraduate gastroenterology teaching is delivered in the UK. Our project aims

to inform how the BSG could assist in this and to build links with students with an interest in gastroenterology.

**Methods** A survey containing 27 questions related to undergraduate gastroenterology training was compiled on surveymonkey.com. We emailed the UK medical school deans and local gastroenterology champions asking them to send out the survey to their medical students. In 10 weeks, 110 students from 12 medical schools responded.

**Results** 83% felt that there was adequate exposure to gastroenterology.

75% felt that their training made them confident in managing gastroenterology patients.

9% had a student gastroenterology society (41% don't have one, 50% not sure). They usually interact via email or Facebook.

59% would consider a career in gastroenterology (53% interested in subject, 24% inspirational consultants, 24% clinic experience, 10% endoscopy experience).

41% would not consider a career in gastroenterology (49% mind set on another specialty, 14% too much endoscopy, 14% out of hours requirement, 7% don't want to be medical registrar, 6% don't want to do CMT training, 3% complexity of patients, 3% low financial reward compared to other specialties).

Year group sizes ranged from 40–400. 71% had an integrated curriculum whilst 29% had traditional.

20-100% would have a gastroenterology block in their training. Gastroenterology blocks lasted from 1–12 weeks usually in 3$^{rd}$ year.

Teaching consisted of lectures (99%), small group work (65%), PBL (63%), bedside teaching (65%) and others (13%> GP, home visit, prosection).

65% had gastroenterology and surgical training integrated.

72% said there was a copy of the Gastroenterology syllabus/set of learning objectives within the MBBS curriculum and 60% had read them.

Medical final exams involved SBA (83%), short answers (36%), MCQs (65%) and OSCEs (26%).

Suggestions for improving gastroenterology training:

- More consultant training
- Expert patients as a learning tool
- Online teaching tools
- Simulation days
- Mandatory gastroenterology block
- More hepatology

**Conclusion** There appears to be adequate exposure to gastroenterology training in UK medical schools. Training seems to enable medical students to feel comfortable managing gastroenterology patients in their foundation years. However, there remains scope for enhancing gastroenterology training with students wanting longer dedicated attachments to gastroenterology firms and BSG to do taster days/revision courses/simulation days.

Student gastroenterology societies are rare and BSG can help in promoting these.

60% students would consider a career in gastroenterology with interest in the subject being the overriding reason. BSG should capitalise on this and establish links with medical students early in their training.

**Disclosure of Interest** None Declared

## PTH-131 CURRENT GASTROENTEROLOGY TEACHING IN UK MEDICAL SCHOOLS: A BSG SURVEY

[1]VTF Cheung*, [2]GJ Johnson. [1]*Gastroenterology, John Radcliffe Hospital, Oxford*; [2]*Gastroenterology, University College Hospital, London, UK*

10.1136/gutjnl-2016-312388.534

**Introduction** Little is known about undergraduate gastroenterology teaching in the UK. This project aims to inform how the BSG could assist with undergraduate teaching, and ultimately inspire future doctors to choose a career in gastroenterology.

**Methods** A survey of 27 questions related to undergraduate gastroenterology training was compiled on surveymonkey.com. It was disseminated via the BSG newsletter and through emails to gastroenterology champions involved in undergraduate teaching. In 10 weeks, 91 representatives from 26 medical schools filled out the survey.

**Results** Students per year group ranged from 30–400. 49% had an integrated curriculum, 44% had traditional (preclinical then clinical) and 7% unsure.

43% medical students undertook at least one block on a gastroenterology/hepatology firm, 43% didn't and 14% unsure. Gastroenterology blocks lasted between 1 to 10 weeks, were usually undertaken from year 3 onwards and some medical schools had them in several years. Only 13% mandated a minimum number of observed procedures- on average OGD 2, colonoscopy 1, liver biopsy 4 and US/CT 4.

Gastroenterology training took place in:

- Primary care 26%
- Secondary care (wards) 95%
- Secondary care (clinics) 95%
- Secondary care (endoscopy) 72%
- Others
- (clinical skills lab/seminars) 30%

There were extra-curricular opportunities for gastroenterology training- Electives 76%, SSMs 81, BSc 35% and others (Research project, MSc) 16%.

Was gastroenterology training integrated with surgical training?

- Yes 37%
- No 58%
- Unsure 5%

88% responded that there was a copy of the Gastroenterology syllabus/set of learning objectives within the MBBS curriculum and of those, 91% had read them. Knowledge of gastroenterology was usually assessed with combination of OSCEs, knowledge based exams (SBA/MCQs) and medical finals. Asked in what year, gastroenterology is assessed:

- 1 3%
- 2 3%
- 3 15%
- 4 6%
- 5 or 6 (final) 18%
- All
- years 29%
- Mixture
- of years 26%

Did the medical school have a student gastroenterology society?

- Yes 11%
- No 63%
- Unsure 26%

Only 60% were willing to send out a questionnaire to their medical students.

**Conclusion** Some students did not have a dedicated gastroenterology block and some blocks were only for 1 week. It is unclear whether this is sufficient time to build up an interest in gastroenterology so this is an area where the BSG can assist in developing gastroenterology training.

There were questions skipped by doctors completing the survey, reflecting the fact that they may not be aware of the specifics of curriculum development. This emphasises the importance of involving these trainers in curriculum development at a university level if change is to happen.

Some respondents expressed an interest in how to start a student gastroenterology society and this may be an avenue for BSG to develop links and attract students towards a career in gastroenterology.

**Disclosure of Interest** None Declared

## PTH-132 MEDICAL STUDENTS' PERCEPTION OF NUTRITION EDUCATION AT AN UNDERGRADUATE LEVEL AND THE ROLE OF THE CLINICIANS THEY SHADOW

P Neild, W Long*. *St. George's University of London, London, UK*

10.1136/gutjnl-2016-312388.535

**Introduction** Medical schools have neglected nutrition training in undergraduate courses, resulting in medical students being unsure of its importance[1] and doctors not confident in managing nutrition-related problems.[2]

The aim of this study was to explore medical students' views and experiences of nutrition training at different stages of their training and to evaluate the impact of the views of the clinicians they shadowed.

**Methods** A cross-sectional email survey of all medical students in the first (T) and final (F) clinical years at St. George's University of London was conducted. Clinicians at St. George's hospital were surveyed with a 10 item questionnaire. Data were analysed using SPSS version 21.0 and the significance determined using a 2 tailed Fischer's exact test.

**Results** The overall student response rate was 106/549 (19.3%) with no significant difference between the 2 year groups. 86/~500 clinicians responded.

75% of students agreed that 'having a strong understanding of nutrition is an

important aspect of a doctor's job'. Of those that disagreed, 57% cited as a reason that 'other members of the healthcare team deal with nutrition problems'.

71% of students agreed that 'nutrition should be included in the undergraduate medical curriculum'. The only students to disagree were from F year (12% vs 0%, p = 0.016) and 36% of them cited as a reason that their 'medical school timetable is too full'.

Only 11% of students had had the importance of nutrition highlighted to them by a senior clinician 'regularly'. This group were more likely to 'strongly agree' with the statements above than those who had not (24% vs 3%, P = 0.02 and 21% vs 6%, P = 0.039). However, only 17% of clinicians frequently emphasised the importance of nutrition problems and only 7% frequently emphasised the importance of nutrition screening tools to students. The most commonly cited reason for clinicians not emphasising these was 'it does not occur to me' Only 50% of clinicians said they were confident managing nutrition related problems and for the majority (63.4%) of confident clinicians, it took greater than one year as a doctor to achieve this confidence.

**Conclusion** It appears that whilst senior clinicians do have an impact on how students perceive the importance of nutrition, they do not emphasise it enough and; this may be due to themselves viewing it as a low priority or a lack of confidence.

The greater likelihood of F year students disagreeing with nutrition's inclusion in the curriculum may result from increased time spent on clinical placements compared with T year students, allowing their perception of nutrition to be negatively influenced by the clinicians they shadowed.

### REFERENCES

1 Tripisciano F, Neild P. *Proceedings of the Nutrition Society*. 2010;**69**(OCE2).
2 Nightingale JM, *et al*. *Clin Nutr*. 1999;**18**(1):23–27.

**Disclosure of Interest** None Declared

## PTH-133 NUTRITION TRAINING IN UK MEDICAL UNDERGRADUATE PROGRAMMES – HAS THE SITUATION IMPROVED?

W Long*, P Neild. *St. George's University of London, London, UK*

10.1136/gutjnl-2016-312388.536

**Introduction** Nutrition education in medical schools has historically been neglected and found to be inadequate.[1] Programmes designed to improve nutrition training have shown increased student knowledge.[2,3] The aim of this study was to survey current nutrition training provided by UK medical schools.

**Methods** A 14 item questionnaire was sent to academics representing all UK medical schools on a national undergraduate nutrition education implementation group. . Data was analysed using SPSS version 21.0 and significance determined using a 2 tailed Fischer's exact test.

**Results** The response rate was 34%(11of 32). Students' knowledge was assessed in 8 of 11 (73%) medical schools. The mean total time devoted to nutrition was 18.4 hrs (range 4 to 40+). 7/10 included all 4 core nutrition topics in their curriculum. 3/9 had a nutrition thread throughout their curriculum and 5/10 had a named nutrition lead. Only 3/9 perceived that their training was adequate. Of those 3, all cited ''increased formal teaching time devoted to nutrition' and 'better organisation of the nutrition teaching' as improvements that facilitated adequate training. Of those who reported inadequate training, 83% cited 'lack of prioritisation' and 67% cited 'unable to devote more teaching time to nutrition' and 'difficulty organising topics and teaching sessions' as hindrances towards improving training. The presence of a nutrition lead was associated with a trend to greater mean total time allocated to structured teaching (25.4 vs 16.2 hours) and greater likelihood of teaching all four core areas (5/5 vs 2/5, p = 0.08).

**Conclusion** Indicators of good training appear to be more common in courses placing a higher priority on nutrition, including the presence of a named nutrition lead. Despite a decrease in the % of respondents reporting adequate training compared to a previous study in 20091[1] (33% vs 50%), indicators of good training appear to have increased. This may reflect increased awareness of the standards required as a

result of the development of a standardised national nutrition curriculum, signposted in the 2009 edition of 'Tomorrow's Doctors'.[4]


**REFERENCES**

1 Johnston R, Neild P, Jeanes Y, Bowling T. Nutrition training in UK medical undergraduate programmes. Proceedings of the *Nutrition Society* 2009;**68**:(OCE1).
2 Maher B, Sweeney C, O'Tuathaigh C, O'Flynn S, Brown, J. Evaluation of a novel nutrition education intervention for medical students. Proceedings of the *Nutrition Society* 2013;**72**:(OCE3).
3 Taren D. Effect of an integrated nutrition curriculum on medical education, student clinical performance, and student perception of medical-nutrition training. *American Journal of Clinical Nutrition* 2001;**73:**1107–1112
4 GMC. Tomorrow's Doctors. London 2009; http;//www aormc-uk .ore/static/documents/content/TomorrowsDoctors 2009 pdf.


**Disclosure of Interest** None Declared

## PTH-134 SETTING UP AN ENDOSCOPY UNIT IN NORTHERN MALAWI


[1]R Nyahoda, [1]S Uledi, [1]W Kibrete, [2]R Nyirenda, [3]P O'Toole, [3]MA Gordon, [4]AJ Stanley*. *[1]Endoscopy Unit; [2]Management Offices, Mzuzu Central Hospital, Mzuzu, Malawi; [3]GI Unit, Malawi Liverpool Welcome Trust, Liverpool; [4]GI Unit, Glasgow Royal Infirmary, Glasgow, UK*


10.1136/gutjnl-2016-312388.537

**Introduction** There is a major need for endoscopic services in Malawi due to the very high incidence of both variceal bleeding related to schistosomiasis and gastro-oesophageal cancer. The availability of facilities and trained staff to perform variceal band ligation (VBL) and endoscopic stent insertion would benefit local patients. The aim of this project was to set-up an endoscopy unit at Mzuzu Central hospital (MCH), the regional hospital in Northern Malawi, which serves a population of approximately 2 million.
**Methods** After an initial assessment visit, four on-site training visits (two accompanied by endoscopy nurse trainers) were undertaken by a UK endoscopy trainer between 2012–2015. Endoscopy equipment was donated and shipped out from Glasgow. The local endoscopists and endoscopy nurses also attended formal endoscopy training courses at the recognised regional training centre in Blantyre. Malawi-adapted DOPS and unit GRS were undertaken and numbers of procedures audited.
**Results** During this period, six donated endoscopes and many accessories were delivered to MCH. Local clinicians and nurses had four weeks of on-site intensive training and attended five formal training courses. Skills in diagnostic endoscopy and VBL were taught and there was an introduction to stent insertion. A total of 20 DOPS were undertaken showing a gradual improvement in endoscopic skills. The unit GRS assessment improved with regard to patient consent, clinical monitoring, reporting and audit. A nine-month audit of consecutive endoscopic procedures at MCH revealed either varices or upper GI cancer in 28% cases. Over the total study period, the annual number of endoscopies undertaken at MCH increased from 108 to 376, with VBL cases increasing from 17 to 51.
**Conclusion** A functioning endoscopy unit has been set up at MCH with introductory skills provided to local endoscopists and nurses, by both on-site training and attendance at formal training courses. Advanced training of more endoscopists in therapeutic endoscopy and ongoing equipment support is required to ensure the unit becomes sustainable.
**Disclosure of Interest** None Declared

## PTH-135 A DEDICATED PEG SERVICE CAN IMPROVE MORTALITY AND CLINICAL OUTCOME


A Shirazi-Nejad*, A Chappell, N Rezwan, GSZ Tun, K Kapur, A Soliman, R Atkinson, V Sathyanarayana, D Bullas, E Said. *Gastroenterology, Barnsley Hospital NHSFT, Barnsley, UK*


10.1136/gutjnl-2016-312388.538

**Introduction** The BSG guidelines[1] recommend that every endoscopy unit in an acute hospital setting should provide a basic percutaneous endoscopic gastrostomy (PEG) service, which is a part of the nutritional support team. The service should provide a framework for patient selection, pre-assessment and post-procedural care as well as working closely with the community-based services. Our trust recently appointed an accredited therapeutic endoscopist and gastroenterology nurse practitioner to run this service.
**Methods** Retrospective analysis of all PEG insertions performed from Jan 2014 to Nov 2015 over a 23 month period. We looked at early-term (four weeks) and late term (eight weeks) mortality after PEG insertion.
**Results** All patients were referred via a revised pathway proforma and examined by the team before the procedure to assess suitability. Further help and advice is offered to the community team upon discharge. 71 patients were referred for PEG insertion during the period of study. 29 (41%) were male, with a mean age 68 (range 29–87 years), 42 (59%) were female, with a mean age 69 (range 18–93 years). Indications for referrals included: 37 (52%) stroke related dysphagia, 15 (21%) head and neck cancers, 6 (8.5%) Huntington's disease, 4 (5.6%) traumatic head injury, 3 (4.2%) learning disability, 2 (2.8%) cerebral palsy, 2 (2.8%) multiple sclerosis, 1 (1.4%) supranuclear palsy, 1 (1.4%) mitochondrial myopathy, 1 (1.4%) syringomyelia, 1 (1.4%) parkinsonism, 1 (1.4%) Korsakoff's psychosis, and 1 (1.4%) myoclonic epilepsy with ragged-red fibres (MERRF) syrdrome. Patients with a formal diagnosis of dementia were not selected to undergo PEG insertion during this period. No short-term complications were reported post-insertion.

Early-term mortality was 12.7% and late-term rose to 22.5%. Previous departmental audit in 2014 revealed early-term mortality of 20% and late-term mortality of 28%.
**Conclusion** Meta-analysis has reported a 19% 30 day mortality following PEG insertion.[3]

We have shown that in our centre, both early and late-term mortality has improved due to careful patient selection and a dedicated PEG service. Adherence to the BSG guidelines on PEG service has had a direct impact on improving mortality and clinical outcome.


**REFERENCES**

1 Westaby D, Young A, O'Toole P, Smith G, Sanders DS. The provision of a percutaneously placed enteral tube feeding service. *Gut*. 2010;**59**:1592–1605. doi:10.1136/gut.2009.204982
2 Johnston S, Tham T, Mason M. Death after PEG: results of the national confidential enquiry into patient outcome and death. *Gastrointestinal Endoscopy* 2008;**68**:223–7.
3 Mitchell SL, Tetroe JM. Survival after percutaneous endoscopic gastrostomy placement in older persons. *J Gerontol A Biol Sci Med Sci* 2000;**55**:M735–9.


**Disclosure of Interest** None Declared

## PTH-136 GENDER DIFFERENCES IN LEADERSHIP, WORKFORCE, AND SCHOLARLY PRESENTATION WITHIN A NATIONAL SOCIETY; A GASTROENTEROLOGY PERSPECTIVE

[1]AJ Brooks*, [2]EA Arthurs, [3]C Edwards, [4]R Gardner, [5]MJ Lockett, [6]P Neild, [4]J Solomon, [7]EJ Taylor, [8]S Thomas-Gibson, [9]J Eaden on behalf of Supporting Women in Gastroenterology (SWiG). *[1]Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield; [2]Bristol Royal Infirmary, Bristol, UK; [3]University of Cape Town, Cape Town, South Africa; [4]British Society of Gastroenterology, London; [5]North Bristol NHS Trust, Bristol; [6]St. George's University Hospitals NHS Foundation Trust, London; [7]St James University Hospital, Leeds; [8]St. Mark's Hospital, Harrow, UK and Imperial College London, London; [9]University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK*

10.1136/gutjnl-2016-312388.539

**Introduction** In the UK, gastroenterology historically has been a male predominant medical speciality, but specific data regarding the outcomes of gender within workforce, academia and leadership at a national level are lacking.

**Methods** Data regarding scholarly presentation at the British Society of Gastroenterology (BSG) 2013, 2014, 2015 annual conferences were collected and analysed. In 2015 this included member societies for Digestive Diseases Federation (DDF). Data from the 2013–2015 BSG annual workforce report were examined.

**Results** In 2015 female higher speciality trainees made up 39% (328/850) of the trainee workforce, compared to 37% and 35% in 2014 and 2013 respectively. From 2013–2015 the proportion of female academic trainees has been 22%, 23% and 24% respectively. In the years from 2013–2015, less than a fifth (18%) of all consultant gastroenterologists were female. Female consultant (18%), trainee (39%), associate (86%) and student attendance (47%) at DDF 2015 did not change significantly from 2013–2014. The number of female speakers 43/331 (13%) was significantly lower at DDF 2015 compared with BSG 2014 56/212 (26.4%) ($P = 0.0001$) and BSG 2013 63/231 (37%) ($P = 0.0001$). The number of female chairs did not differ between the annual conferences; 23/173 (13%) in 2015, 20/94 (21%) in 2014, 29/118 (25%) in 2013, nor did delivery of the named lectures; 2/15 (13%) in 2015, and 1/6 (17%) in both 2014 and 2013. Prizes (oral, poster, 'Dragon's Den) awarded to females was 44%, 30% and 20% respectively, and did not differ significantly in 2013/2014. Female leadership at the BSG via representation at Council and Executive was 4/30 (13%) in 2015, and did not differ in 2013/2014, with no *elected* council members since 2008 and 1 female president in 1973.

**Conclusion** The proportion of female gastroenterology trainees and consultants is increasing, but remains lower than across all medical specialties at 52% and 34% respectively.[1] Female attendance and scholarly presentation at conferences reflects the workforce. Lower numbers of female speakers at DDF 2015 may reflect differences in surgical and allied specialties. Action within the BSG is underway to address female underrepresentation in leadership roles. Strategies to encourage female recruitment and retention to gastroenterology are being tested and evaluated.

### REFERENCE

1 Census of consultant physicians and higher speciality trainees in the UK, 2014–2015. RCP, 2016.

**Disclosure of Interest** None Declared

## PTH-137 AN IMPACT ANALYSIS: EXPANSION OF THE GASTROENTEROLOGY REACH IN SERVICE TO ACUTE MEDICINE

A Vaziri*, R Chaudhary. *Gastroenterology, West Hertordshire NHS Foundation Trust, London, UK*

10.1136/gutjnl-2016-312388.540

**Introduction** The gastroenterology team at Watford General Hospital provides a daily reach in service to the acute medical department every weekday morning. The role of these reviews is to expedite specialist input to patients acutely admitted to the hospital with the aim of improving clinical outcomes and time to discharge.

A proposal has been suggested to provide an evening service in addition with a gastroenterology reach in at 5 pm on weekdays to provide a second round of reviews to patients who may have been identified as needing specialist input since the morning round. In order to provide such a service resources (Consultant or Specialist Registrar time) will need to be diverted from other pressured clinical work such as clinics or endoscopy. The aim of this report is assess the potential utility of providing such a service so as to better inform future decisions on the topic.

**Methods** On behalf of the gastroenterology department the author has collected data on patients flagged as requiring gastroenterological input on 7 consecutive weekdays from the 07/12/2015 to 15/12/2015. The notes were briefly reviewed and an assessment was made on the basis of this as to the likelihood of the patient being immediately discharged following specialist input.

**Results** There were no referrals for gastroenterology review on 3 of the 7 evenings assessed. The range of case numbers referred on other days was between 1 and 3. It was not felt that any of the patients would have had a same day discharge if gastroenterological review was provided due to a variety of factors such as frailty, pending radiological or serological testing or ongoing poorly controlled symptoms. The breakdown of patient demographics and presentations are summarised in the table below.

**Abstract PTH-137 Table 1**

| Date | Age and Gender | Presentation or Diagnosis | Likelihood of same day discharge |
|---|---|---|---|
| 08/12/2015 | 56 Female | Suprapubic pain and UTI | No |
| 08/12/2015 | 20 Male | Cyclical vomiting syndrome | No |
| 11/12/2015 | 80 Female | Anorexia and weight loss | No |
| 14/12/2015 | 57 Female | Diarrhoea and vomiting | No |
| 15/12/2015 | 50 Female | Abdominal pain | No |
| 15/12/2015 | 61 Male | Decompensated Cirrhosis | No |
| 15/12/2015 | 87 Female | Sepsis and deranged LFTs | No |

**Conclusion** Overall in the authors opinion following analysis of the collected data an evening review is unlikely to result in

a significant increase same day discharges. The likely time and resource commitment is probably unlikely to result in significant improvement in clinical outcomes given the already intense input the gastroenterology department has every weekday morning with the reach in services to the acute medical unit as well as the liaison the gastroenterology registrars provide for urgent cases in the afternoon and the provision of specialist opinion at local tertiary hospitals via telephone out of hours.

**Disclosure of Interest** None Declared

## PTH-138 SCREENING DIABETIC PATIENTS FOR LIVER FIBROSIS IN A PRIMARY CARE DIABETES CLINIC

[1]B Deans*, [2]F Crimmons, [1]D Al Dulaimi, [2]P Clamp. [1]*Gastroenterology, Alexandra Hospital, Worcestershire Acute Hospitals NHS Trust, Redditch*; [2]*St Johns Surgery, BHI Parkside, Bromsgrove, UK*

10.1136/gutjnl-2016-312388.541

**Introduction** Patients attending for routine review at a primary care diabetes clinic were screened for advanced fibrosis using a NAFLD fibrosis score calculator.

**Methods** The NAFLD Fibrosis Score online calculator (http://nafldscore.com/) has been developed to identify patients that are at significant risk of having advanced fibrosis using body mass index, serum ALT, AST, platelet count, diagnosis of diabetes and age as parameters.[1] We prospectively screened consecutive patients attending for routine review at a primary care diabetes clinic between June and December 2015. Advanced fibrosis was predicted using high cut-off score (>0.676; with previously validated Positive Predictive Value 90%) or excluded for low cut-off score (<−1.455; Negative Predictive Value 93%). Patients with Type 1 and Type 2 diabetes were included. Statistical analysis was performed with Pearson's and Chi Squared test.

**Results** 208 patients were screened, 126 males and 82 females, with a median age of 66 years (range 22–93 years). 21% of patients (29 male and 17 female) with a median age of 76, had a NAFLD Fibrosis score predicting a significant risk of advanced fibrosis and identifying them as appropriate for referral to secondary care. A NAFLD score predicting a significant risk of advanced fibrosis increased with age: 5.6% (1/18) of patients aged less than 50, 9.5% (4/42) of patients aged 50–59 years, 12.5% (7/56) of patients aged 60–69, 35.1% (20/57) aged 70–79 and 56% (14/25) of patients aged 80 years and older. Advanced fibrosis was predicted for 23% male (29/126) and 21% females (17/82) patients. Advanced fibrosis was excluded in 13.5% patients (28/208). As expected, there was a moderate positive correlation between NAFLD score and age (r = 0.56). There was no significant difference in the proportion of male or female patients with advanced fibrosis (p = 0.7).

**Conclusion** It is practical to routinely screen patients for liver fibrosis secondary to NAFLD within a primary care diabetes clinic using the NAFLD fibrosis score calculator and identify a significant proportion of patients at significant risk of advanced fibrosis.

### REFERENCE

1 Angulo P, Hui JM, Marchesini G, *et al*. The NAFLD fibrosis score: a noninvasive system that identifies liver fibrosis in patients with NAFLD. *Hepatology* 2007;**45**(4):846-854

**Disclosure of Interest** None Declared

## PTH-139 IS THERE NATIONWIDE VARIATION IN THE PROPORTION OF PALLIATIVE OESOPHAGO-GASTRIC CANCER PATIENTS DYING IN HOSPITAL?

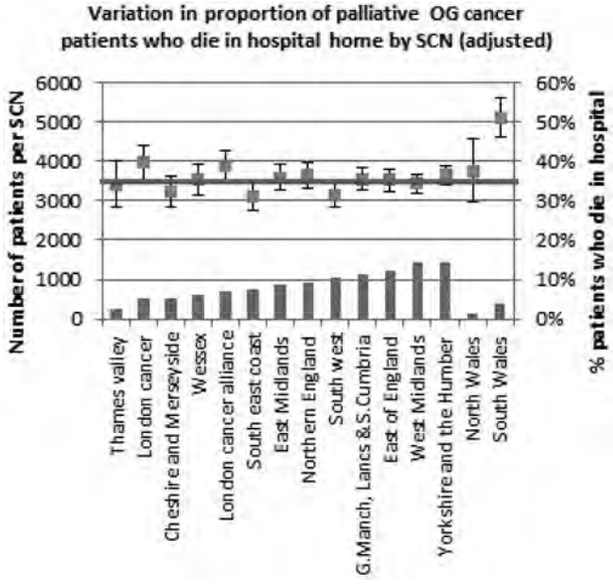
G Chadwick*, D Cromwell , on behalf of NOGCA Audit Team. *Clinical Effectiveness Unit, Royal College of Surgeons, London, UK*

10.1136/gutjnl-2016-312388.542

**Introduction** The DH 'End of Life Care Strategy' recommends that patients are treated in familiar surroundings and previous studies have suggested that 56–74% of people would prefer to die at home.[1] This study investigated whether there was nationwide variation in the proportion of palliative oesophago-gastric (OG) cancer patients dying in hospital.

**Methods** We used data from the National Oesophago-Gastric Cancer Audit to identify patients diagnosed with OG cancer in England and Wales between 1/4/2011 and 31/3/2013. The study was limited to patients managed with palliative intent who died during follow up. Place of death was identified by linking the data to the ONS death register. The proportions of patients dying in hospital were derived for each strategic clinical networks (SCNs), and were adjusted for regional differences in age, sex, planned modality, and social deprivation.

**Results** 22,285 patients were diagnosed with OG cancer, 13,187 were managed with palliative intent and 12,012 of these died during follow up. Overall, 34.6% of patients died in hospital, 34.3% died at home, 18.5% died in a hospice, 10.9% died in a care home and 1.7% died elsewhere. After adjustment, the proportion of patients dying in hospital across SCNs typically fell between 30% and 40% (see Figure 1). The value of 50.9% (95% CI 46.1–56.0%)) for South Wales was large, in comparison.




**Abstract PTH-139 Figure 1**

**Conclusion** About one third of OG cancer patients treated palliatively die in hospital, and there was some variation between regions in England and Wales. This needs to be monitored at a local level, and investigated where rates are higher than expected. Differences between regions may reflect local access to hospice services and other social support.

**REFERENCE**
1 National Audit Office (2008). End of life care. http://www.nao.org.uk/report/end-of-life-care/

**Disclosure of Interest** None Declared

## PTH-140 TAKING NICE GUIDELINES FURTHER: STRAIGHT – TO – TEST FOR DYSPHAGIA

[1]GSZ Tun*, [2]M Shiwani, [2]S Anwar, [2]A Masri, [1]A Shirazi-Nejad, [1]N Rezwan, [1]D Bullas, [1]R Atkinson, [1]K Kapur, [1]A Soliman, [1]V Sathyanarayana, [1]E Said. *[1]Gastroenterology; [2]Upper Gastrointestinal Surgery, Barnsley District General Hospital, Barnsley, UK*

10.1136/gutjnl-2016-312388.543

**Introduction** Straight-to-test (STT) endoscopy as a 2 week-wait (2 WW) referral pathway for patients with dysphagia has been operable since 1996 in Barnsley Hospital NHS Foundation Trust. It offers a "one stop assessment" as patients has an "on table" consultation and examination and additional investigations can be requested. It allows direct general practitioner referrals with an aim to reduce delays in cancer management. However, it may reduce endoscopy capacity as patients require a longer time slot (1.5 vs 1.0 slot). We reviewed the clinical outcome of this service.

**Methods** Patients were identified through an electronic database "Endosoft" with retrospective analysis of all STT upper gastrointestinal (UGI) endoscopies performed from November 2014-October 2015. Primary end-point was total diagnostic yield with secondary end-point of clinical outcome.

**Results** 1192 patients were referred as 2 WW. 398 (33%) of these were STT referrals for dysphagia. 385 proceeded to UGI endoscopy. Ratio of male (M) to female (F) was equal. Mean age in M and F was 63 years (range 26–95 in M and 25–95 in F). Total diagnostic yield is shown in Table 1. Multiple diagnoses co-existed in the same patient.

**Abstract PTH-140 Table 1** Total diagnostic yield of STT service

| Diagnosis | Percentage of total cohort |
|---|---|
| Oesophageal cancer | 6 |
| Hiatus hernia | 20 |
| Oesophagitis/Oesophageal ulcer | 24 |
| Oesophageal stricture/Schatski ring | 3 |
| Gastritis/Duodenitis | 26 |
| Normal | 19 |
| Others | 6 |

Oesophageal cancer was detected in 6% (18 M, 5 F). Histopathology confirmed adenocarcinoma in 70%, squamous cell carcinoma in 17%, carcinoma in situ in 9% and small cell carcinoma in 4%.

All were referred for Multi-Disciplinary Team discussion and had staging Computed Tomography (CT). 4 patients were referred for surgery. 1 patient received radical radiotherapy. 4 received palliative chemo/radiotherapy. The rest were managed with best supportive care.

Of the non-cancer patients, 12% (42/362) were discharged from endoscopy. From endoscopy, 9 patients had investigations arranged (2 barium swallows, 4 abdominal ultrasound scans, 3 CT abdomens) and 3 patients were referred to Ears, Nose and Throat.

**Conclusion** The STT pathway for dysphagia in our institution helps in maintaining overall prescribed target time for patients for oesophago-gastric cancer. The diagnostic yield for oesophageal cancer was 6%, which is similar to known rates in patients presenting with dysphagia.[1] Other benefits are discharge of patients from endoscopy and expedition of management as investigations and referrals can be made from endoscopy.

**REFERENCE**
1 Rosenstock AS, Kushnir VM, Patel A, *et al*. Su1509 Diagnostic yield in the evaluation of Dysphagia. *Gastrointestinal Endoscopy*. 2011;**73**:AB287

**Disclosure of Interest** None Declared

## PTH-141 GASTROINTESTINAL MALIGNANCY – SAME DAY CT SCANNING POST ENDOSCOPY SAVES TIME RESULTING IN EARLIER MDT DECISIONS

[1]HL Lee*, [2]S Peterson, [1]AM Verma. *[1]Gastroenterology; [2]Radiology, Kettering General Hospital NHS foundation trust, Kettering, UK*

10.1136/gutjnl-2016-312388.544

**Introduction** Staging CT scanning is essential in guiding the management of patients with newly diagnosed gastrointestinal malignancy when discussed in multi-disciplinary team (MDT) meetings. Long waiting times for staging CT causes delays in MDT decision making for patients and initiating treatment.

Kettering General Hospital (KGH) implemented a pathway in December 2014 in which patients with newly detected malignancy on endoscopy can have staging CT scan post endoscopy (same day). We are auditing the effectiveness of this pathway in terms of time saved.

**Methods** Data was analysed between January 1st 2014 to December 31st 2015 from endoscopy, radiology and cancer MDT reporting systems to compare time from day of endoscopy to day of CT and to date of MDT discussion pre and post implementation of the pathway. Patients who underwent endoscopy in December 2014 were excluded, as the pathway was being implemented.

**Results** There were 90 and 104 patients found to have new possible malignancy on endoscopy in 2014 and 2015 respectively. The median (and mean) days awaiting staging CT and MDT discussion prior to the pathway were 12.5 (11.4) days and 15.0 (16.0) days respectively. Since the implementation of the pathway, median (and mean) days for staging CT was 0 (1.6) days and MDT discussions were 6.0 (7.2) days ($p = <0.01$). The median days saved waiting for a CT staging and MDT discussion are 12.5 and 9 days.

**Conclusion** This data shows significant improvement in median time to MDT discussion from endoscopy since the pathway was implemented (15 vs 6 days). The patient pathway implemented by our organisation has helped shortened decision time for MDT outcomes and is highly effective in improving patient care. Patients are diagnosed and staged quickly, requiring fewer visits to the hospital and starting their treatment earlier. We commend this pathway to other endoscopy / radiology departments around the country.

**Disclosure of Interest** None Declared

## PTH-142 GASTROINTESTINAL MALIGNANCY NOT DETECTED ON CT SCANNING

[1]HL Lee*, [2]S Peterson, [1]AM Verma. *[1]Gastroenterology; [2]Radiology, Kettering General Hospital NHS foundation trust, Kettering, UK*

10.1136/gutjnl-2016-312388.545

**Introduction** The British Society of Gastroenterology (BSG) guideline on the management iron deficiency anaemia advocates the use of unprepared CT scans for patients who are elderly frail or have significant co-morbidity (in those not suitable for endoscopy). The guideline does state that unprepared CT may miss cancerous lesions. Despite this, CT scanning is regularly used as a diagnostic modality for gastrointestinal (GI) cancer.

We have data of CT reports of patients with endoscopically diagnosed upper GI (UGI) and lower GI (LGI) cancers from 2014–2015 in Kettering General Hospital (KGH). We are auditing the proportion of GI cancers not detectable on CT scans.

**Methods** Data was analysed between January 1st 2014 to December 31st 2015 from endoscopy and radiology reporting systems to see what proportion of cancers were not detectable on CT scans. This covers two cohorts, patients (with GI cancers) with unprepared CT (days after index endoscopy) and patients that had their CT immediately post endoscopy (same-day – hence fasted pre-endoscopy for UGI endoscopy and prepared colons for LGI endoscopy).

**Results** Values represent cancers not detectable on CT scans.

Unprepared CT: LGI cancers 2 out of 78 (2.56%), UGI cancers 2 out of 29 (6.90%)

Prepared CT: LGI cancers 7 out of 68 (10.29%), UGI cancers 0 out of 25

All CTs: LGI cancers 9 out of 146 (6.16%, 95% CI 3.23–11.15%)

UGI cancers 2 out of 54 (3.70%, 95% CI 1.02–12.54%)

All cancers 11 out of 200 (5.50%, 95% CI 3.10–9.58%)

**Conclusion** Our audit shows that whilst CT scanning picks up the vast majority of endoscopically detected GI cancers, 6.16% of LGI and 3.70% of UGI cancers are not detected on CT. This rate isn't improved in the prepared CT cohort (having CT immediately post endoscopy). Overall, 11 out of 200 cancers were not detected on CT (5.50% 95% CI 3.10–9.58%). Clinicians need to bear this in mind when using CT scanning to diagnose/rule out GI cancers.

### REFERENCE

1 Goddard AF, James MW, McIntyre, AS, Scott BB, on behalf of the British Society of Gastroenterology. Guidelines for the management of iron deficiency Anaemia. *Gut* 2011;**60**:1309-1316. doi:10.1136/gut.2010.228874

**Disclosure of Interest** None Declared

## PTH-143 MANAGEMENTOF PATIENTS WITH HEREDITARY HAEMOCHROMATOSIS (HH) A SINGLE INSTITUTION'S EXPERIENCE

[1]I Koutsavlis*, [2]S Mitchell, [2]A MacGilchrist. *[1]Haematology; [2]Gastroenterology, NHS Lothian, Edinburgh, UK*

10.1136/gutjnl-2016-312388.546

**Introduction** HH is a common inherited disorder of iron metabolism. We reviewed risk factors for cirrhosis, screening tests, rates of end organ damage and the outcome of patients treated with venesection.

**Methods** A retrospective analysis of 167 patients with HH in the Royal Infirmary of Edinburgh attending the venesection service in 2013 and 2014.

**Results** 118 males and 49 females were identified with a mean age of 56 (range 19–83). 79 (47%) had end-organ involvement at presentation: 18% cirrhosis, 17% endocrine, 10% arthropathy, 1% cardiac, 1% skin. The most common endocrine problems were diabetes and hypogonadotropic hypogonadism. Arthropathy was generalised and mostly involved the small joints. 50% had deranged liver function tests (LFTs) at diagnosis. With therapeutic venesection, LFTs improved in 93% whereas arthropathy improved in only 31%.

Of the 30 patients with cirrhosis, 26 had serum ferritin (SF) >1000 μg/L at presentation, 25 were C282Y homozygotes, 3 cases progressed to hepatocellular carcinoma, 22 had other risk factors for liver disease [2 Hepatitis C, 13 alcohol and 7 non-alcoholic fatty liver disease (NAFLD)]. Serum Hyaluronic acid (HA), an indicator of hepatic fibrosis, was measured in 73 patients: a normal level reliably excluded cirrhosis [negative predictive value 97.8% (CI 88.7 to 99.9%)].

After completion of the therapeutic phase (SF < 100 μg/L), subsequent venesection requirements were variable: 9 patients did not require venesection for more than 1 year.

With a median follow-up of 6 years, no uncomplicated cases at presentation venesected per protocol developed end organ damage.

**Conclusion** It is important to identify patients with cirrhosis, particularly if other risk factors for liver disease are present. HA is a useful screening test for cirrhosis in this setting. Protocol venesection is highly successful in preventing end-organ damage: uncomplicated patients at presentation would be suitable for a virtual clinic to lessen the burden on out-patient services.

**Disclosure of Interest** None Declared

## PTH-144 ANAEMIA OF CHRONIC DISEASE: HIGH MALIGNANCY YIELD

J Schembri*, MS Lau, J Hebden. *Department of Gastroenterology, Sheffield Teaching Hospitals, Sheffield, UK*

10.1136/gutjnl-2016-312388.547

**Introduction** Anaemia of chronic disease (ACD) is said to be associated with prolonged inflammation or infection, or malignancy. We sought to determine the yield of investigations in a cohort of patients referred to the outpatient clinic with blood tests compatible with ACD.

**Methods** We prospectively collected data on patients attending a single consultant led iron-deficiency anaemia (IDA) clinic, who did not fulfil the criteria for iron deficiency anaemia, from 2013–2015. These patients were investigated according to symptoms and blood tests by a single consultant physician.

**Results** A total of 371 patients were referred with the label of IDA. Iron deficiency anaemia was confirmed in 282 patients, and isolated iron deficiency in a further 11 patients, leaving 78 (21%) who did not fulfil the criteria and were deemed to have ACD (age range 45–92; 53 males). Thirty two (41%) were asymptomatic. Malignancy was discovered in 11 (14%) (colorectal 2, lung 2, prostate 2, combined gastric and colonic 1, gastric 1, renal 1, cervical 1, lymphoma 1). Three of the 11 patients with malignancy were asymptomatic (2 lung, 1

colonic). The majority (9/11) were evident on CT scanning of the chest, abdomen and pelvis. Other diagnoses responsible for ACD (23) were: chronic kidney disease (CKD) 7, haemoglobinopathy 3 (with associated CKD in 1), MGUS 3, myelodysplastic syndrome 2, low B12 2 (metformin in 1), haematoma 1, haemorrhagic gastritis 1, menorrhagia 1, pernicious anaemia 1, polymyalgia rheumatica 1, seronegative coeliac disease 1. No cause for the anaemia was found in 43 (56%) of the cohort.

**Conclusion** The prevalence of malignancy in ACD is high. Cross-sectional imaging as a first line investigation will pick up the majority of malignancies. CKD is a common cause of ACD. No cause of ACD is found in over half of patients.

**Disclosure of Interest** None Declared

## PTH-145 CIRRHOSIS SCREENING WITH A PORTABLE FIBROSCAN® DEVICE IN A COMMUNITY ALCOHOL SUPPORT SERVICE: FEASIBILITY STUDY

[1]K Matthews*, [2]A MacGilchrist, [3]M Coulter Smith, [4]R Cetnarskyj. *[1]Royal Infirmary of Edinburgh (RIE) & Queen Margaret University (QMU); [2]Royal Infimary of Edinburg; [3]Queen Margaret University, Edinburgh; [4]Glasgow Caledonian University, Glasgow, UK*

10.1136/gutjnl-2016-312388.548

**Introduction** Alcohol misuse is the major cause of the increase in deaths from liver disease in the UK,[1] particularly in Scotland[2] and particularly in areas of social deprivation. Liver disease usually presents late, with advanced liver disease and cirrhosis often asymptomatic.[3] Patients with alcohol misuse in areas of social deprivation are a "hard to reach" population. This study assessed the feasibility of using a portable Fibroscan® to measure transient elastography (TE), a non-invasive method of assessing hepatic fibrosis, as a screening tool within a community alcohol support service.

The study monitored the uptake of a Fibroscan® in individuals accessing one community alcohol support service in a deprived area; determined the apparent prevalence of undiagnosed fibrosis/cirrhosis in participants over a 6 month period; and monitored engagement following referral to specialist liver services of those individuals with TE > 7 kPa.

**Methods** Numbered research information packs were issued on request to individuals who self-identified as harmful drinkers. Consented individuals with a TE > 7 kPa were referred to a nurse-led service within the community service for further tests; results of which determined onward referral to a liver specialist. Participants were monitored for compliance with appointments and follow-up interventions.

**Results** 118 research packs issued with 79 participants: (67%) uptake. 3 unreliable Fibroscan® results (n = 76). 20 (26%) participants had a reading >7 kPa requiring referral to nurse led service. 12 (16%) with indications of significant liver disease requiring onward referral to liver specialist including 5 (7%) indicative of cirrhosis.19/20 (95%) participants requiring referral to nurse led service attended for further investigations.11/12 (92%) participants requiring onward referral to specialist services attended initial appointment.

**Conclusion** A 67% uptake suggests a nurse led Fibroscan® service in a community alcohol service is acceptable. Early indications show a high compliance with liver services offering potential for early intervention and improved health outcomes.

### REFERENCES

1 British Association for the Study of the Liver and British Society of Gastroenterology 2009. *The National Plan for Liver Services. A time to act: improving liver health and outcomes in liver disease.*
2 Scottish Public Health Observatory 2015. *Public Health Information for Scotland.*
3 Williams R, *et al.* Addressing liver disease in the UK: a blueprint for attaining excellence in health care and reducing premature mortality from lifestyle issues of excess consumption of alcohol, obesity, and viral hepatitis. *Lancet*. 2014;**384:**1953–1997.

**Disclosure of Interest** None Declared

## PTH-146 OESOPHAGEAL VARICEAL SURVEILLANCE - SHOULD COMMUNITY HOSPITAL ENDOSCOPY UNITS IN GLOUCESTERSHIRE JUMP ON THE 'BAND-WAGON'?

[1]LB Materacki*, [2]C Hollywood, [3]D Beech. *[1]Cheltenham General Hospital, Cheltenham; [2]Gastroenterology and Hepatology; [3]Endoscopy, Gloucester Royal Hospital, Gloucester, UK*

10.1136/gutjnl-2016-312388.549

**Introduction** Patients with liver cirrhosis should engage with a variceal surveillance programme to minimise the risk of variceal bleeding, a major cause of morbidity and mortality.[1] To improve compliance with variceal surveillance it is important to adopt a patient-centred approach and optimise access to endoscopy. Although routine diagnostic upper endoscopy is already established in community hospitals in Gloucestershire safety fears obstruct the provision of variceal surveillance causing potentially unjustified inconvenience to patients.

**Methods** This double-centre, observational study investigated the safety of endoscopic variceal surveillance in adult cirrhotic patients (age range: 29–90 y) and evaluated the feasibility for service expansion into community hospital endoscopy units. Information was collected retrospectively from an electronic database of patients who underwent elective endoscopic variceal surveillance in Gloucester Royal Hospital or Cheltenham General Hospital from February 2013 to August 2014. The medical notes of patients who underwent variceal banding were evaluated for short-term complications of band ligation and length of hospital stay.

**Results** 223 patients underwent endoscopy for variceal surveillance during the 18 month study period. Of these patients 12.1% (n = 27) required endoscopic band ligation including 7 patients with history of variceal haemorrhage. All patients underwent endoscopy as a day-case procedure with same-day discharge regardless of the need for band ligation. Variceal band ligation was not associated with any significant complications within 7 days.

**Conclusion** Endoscopy for variceal surveillance is a safe day-case procedure irrespective of the need for band ligation. The safety concerns obstructing the use of existing endoscopy resources for variceal surveillance in community hospitals in Gloucestershire are unjustified. Broadening access to variceal surveillance represents a cost-effective means to make care more patient-centred. This may improve compliance with variceal surveillance and reduce variceal bleeding in cirrhotics.

### REFERENCE

1 Tripathi D, *et al*. UK guidelines on the management of variceal haemorrhage in cirrhotic patients. *Gut* 2015;**64**(11):1680-1704 doi:10.1136/gutjnl-2015-309262

**Disclosure of Interest** None Declared

## PTH-147 A MORE RESTRICTIVE TRANSFUSION POLICY FOR UPPER GASTROINTESTINAL HAEMORRHAGE WOULD SAVE RESOURCES WITHOUT COMPROMISING CLINICAL OUTCOME

[1]L Summers*, [2]E Wesley, [3]S Prasad. *[1]Torbay Hospital, Torbay; [2]Taunton and Somerset Foundation Trust, Taunton; [3]Royal Devon and Exeter Hospital, Exeter, UK*

10.1136/gutjnl-2016-312388.550

**Introduction** Upper GI bleeding (UGIB) is the most common indication for transfusion in England, comprising 14% of all transfusions.[1] Evidence has demonstrated a restrictive as opposed to liberal transfusion policy improves clinical outcome.[2] In addition to the known clinical benefits, our aim was to asssess whether a more restrictive transfusion policy would save significant resources.

**Methods** We conducted a prospective audit of consecutive patients presenting to the Royal Devon and Exeter hospital with UGIB during a 9 week period from 7.12.12. The case notes and laboratory data were reviewed. Unstable patients, those with evidence of massive UGIB and those not receiving blood transfusion were excluded. Liberal transfusion was defined as haemoglobin >80 g/L pre-transfusion or a post transfusion haemoglobin >90 g/L. We calculated the number of additional units transfused beyond these parameters.

**Results** 79 patients presented with an UGIB. 42 patients received a total of 170 units of red blood cells. 7 patients were transfused 1 unit, 33 patients were transfused 2 units, and 28 patients received ≥3 units. 30/42 were transfused in a liberal manner, resulting in the potentially unnecessary use of 68 additional units at a cost of £8,302.

**Conclusion** A significant number of patients received transfusions according to our definition of a liberal transfusion strategy, usually receiving several units at a time. A restrictive transfusion policy has been proven to be safe and would also result in significant cost savings.

### REFERENCES

1 Wallis JP, Wells AW, Chapman CE. Changing indications for red cell transfusion from 2000 to 2004 in the North of England. *Transfus Med*. 2006;**16**:411–417.
2 Villanueva C, Colomo A, Bosch A, Concepcion M, Hernandez-Gea V, Aracil C Transfusion strategies for acute upper gastrointestinal bleeding. *N Engl J Med*. 2013;**368**:11–21.

**Disclosure of Interest** None Declared

## PTH-148 COMPARING DIETITIAN-LED GROUP CLINICS TO INDIVIDUAL APPOINTMENTS FOR NEWLY DIAGNOSED PATIENTS WITH COELIAC DISEASE (CD)

N Trott, M Kurien*, F Branchi, DS Sanders. *Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.551

**Introduction** Newly diagnosed CD patients should have a nutritional assessment and gluten-free diet (GFD) education by registered dietitians, in accordance with guidelines. Achieving these standards is problematic due to increased CD diagnosis and limited trained dietitians available to deliver these services. Locally, we have shown that patients often wait four to six weeks for a dietetic consultation following CD diagnosis, with patient feedback suggesting this is unacceptably long. This study aimed to address this concern by comparing whether dietetic consultations provided in group clinics was non-inferior to an individual appointment for newly diagnosed CD patients.

**Methods** Between January 2015 and December 2015 newly diagnosed CD patients were seen either by a dietitian in a group clinic or in an individual appointment as part of a local service evaluation project. Group clinics were defined as having a minimum of 6 individuals, and covered the same topics as individual appointments (education on gluten-free diets, prescriptions, travelling and information on Coeliac UK). All patients had nutritional assessments at baseline and bloods performed in accordance with BSG guidelines. These were reassessed at 3 month follow-up appointments, alongside evaluation forms for clinics and assessment of GFD adherence using the Biagi score (A validated 5 point adherence score (0–4), with the highest score indicating strict GFD adherence). Comparisons between groups were made using a student t-test, with a p-value <0.05 considered significant.

**Results** 56 new CD patients were initially referred for a dietetic consultation. Eight patients (14%) did not attend first appointments and 8 failed to attend follow-up. Of the remaining 40 patients (25 F:15 M, mean age 48 years), 30 were seen in group clinics and 10 had individual appointments. There was no statistically significant difference in baseline BMI ($p = 0.57$), age ($p = 0.10$) or tissue transglutaminase antibody levels ($p = 0.54$) between group patients and individual clinic patients. At follow-up mean GFD adherence scores were similar in both groups (3.3 vs 3.1, $p = 0.51$), with paired t-tests showing significant reduction in both groups in serological markers and haematinics ($p < 0.001$). Evaluation forms supported the merits of group clinics, with 97% (29/30) of patients stating that group clinics met expectations, enhanced understanding and that they would recommend to other patients.

**Conclusion** This study demonstrates how group dietetic clinics for newly diagnosed patients may be a resource saving intervention, which derives no detriment to patient education and GFD adherence. Findings from this work provide proof of concept for undertaking a future randomised controlled trial in this area, including health economic analysis.

**Disclosure of Interest** None Declared

## PTH-149 A ONE STOP IRON DEFICIENCY ANAEMIA CLINIC: A REVIEW OF ITS EFFICACY

[1]MS Lau*, [2]J Schembri, [1]DS Sanders, [2]JM Hebden. *[1]Academic Department of Gastroenterology, Royal Hallamshire Hospital; [2]Gastroenterology, Northern General Hospital, Sheffield, UK*

10.1136/gutjnl-2016-312388.552

**Introduction** Iron deficiency anaemia (IDA) accounts for 4–13% of referrals to gastroenterology. A single consultant led one stop IDA clinic was set up to streamline all required tests (upper and lower gastrointestinal investigations, coeliac serology, intrinsic factor antibodies, immunoglobulins, urinalysis and ultrasound, or CT if appropriate) at the first clinic in order to reach a diagnosis quicker and reduce unnecessary follow ups. We aimed to evaluate the discharge rate after the first clinic visit compared to patients with IDA attending general gastroenterology clinics, and assess the patients' compliance of haemoglobin (Hb) monitoring by general practitioners (GP) and response to iron post discharge to primary care.

**Methods** We prospectively reviewed all cases referred with iron deficiency (IDA and isolated hypoferritanaemia) attending

the clinic from 2013–14. The discharge rate after the first visit was analysed. We assessed the discharged patients' response to iron at 3 or 6 months, defined by normalisation of Hb, excluding those with cancer. We reviewed their compliance with Hb monitoring at 3, 6, 9 and 12 months as advised by the consultant in clinic and also via letters to the GPs and patients, and compared it to that of patients who were followed up in clinic.

**Results** A total of 214 iron deficient patients attended the clinic. The discharge rate was 90.2% (193/214) versus 26% for IDA patients attending general gastroenterology clinics (80% consultant led) in our previously published data in 2014. We excluded 24 patients with cancer, and 19 who did not have their Hb checked at 3 or 6 months, leaving 150 discharged patients for analysis. 51.3% (77/150) responded to iron therapy at 3 or 6 months. Of those, 68.8% (33/48) had a sustained response at 12 months after excluding 29 patients who did not have their Hb checked at 12 months. The compliance rate for Hb monitoring by the GP at 3, 6, 9 and 12 months in the discharged group was 24.9% (42/169), versus 9.5% (2/21) in the follow up group.

**Conclusion** This one stop IDA clinic had a significantly higher discharge rate compared to general gastroenterology clinics for IDA patients. Half of the discharged patients had an initial response to iron, where two thirds of them had a sustained response at 12 months. It is unclear whether this was due to poor adherence to iron therapy or missed pathologies, however all patients underwent a comprehensive range of investigations. The compliance with Hb monitoring was low in both the discharge and follow up groups, suggesting that compliance was not necessarily related to whether the patient was followed up or discharged. Further emphasis is needed to relay the importance of Hb monitoring to both patients and GPs, in order to identify those who may require further investigations.

**Disclosure of Interest** None Declared

## PTH-150 IMPROVING EARLY DIAGNOSIS OF OESOPHAGO-GASTRIC CANCERS; A DGH EXPERIENCE PRE AND POST 'BE CLEAR ON CANCER' CAMPAIGN

MA Alam*, A Sajjad, A Dixon, D Das, M Kasimanickam. *Gastroenterology, Kettering General Hospital, Kettering, UK*

10.1136/gutjnl-2016-312388.553

**Introduction** Public health England launched a national campaign to raise awareness of oesophago-gastric cancers from 26 Jan – 22 Feb 2015. This was based on seven local projects across England between April – July 2012 which showed 26% statistically significant increase in 2 WW (Two week wait) referrals for suspected upper gastro-intestinal cancers Vs 16% increase in control area, 20% increase in oesophageal cancer diagnoses, 9% increase in overall diagnoses of Upper GI cancers with a small decrease in conversion rate. Our study looked at effect of this campaign in a DGH setting.

**Methods** To analyse the impact we collected data of all patients undergoing Upper GI endoscopy following 2 WW referrals from March to August 2015 (post campaign) and compared with the same time previous year 2014 (pre campaign) by identifying through electronic endoscopic reporting (Adam). We looked at indication, age, sex, endoscopic finding and histological confirmation reports.

**Results** 524 patients referred in 2015 on 2 WW pathway compared to 329 patients during the same time of year in 2014 resulting in 59% increase in endoscopy load. 50% increase in diagnoses of any upper GI cancer (24 Vs 16) and 7.7% increase in oesophageal cancer (14 Vs 13). Interestingly 10 gastric cancers were identified compared to 3 in 2014. Conversion rate of 5% was seen resulting in diagnoses of any upper GI cancer compared to 4.9% in 2014. 2.7% of referrals for suspected upper GI cancer resulted in diagnoses of oesophageal cancer in 2015 compared to 4% in 2014.

**Conclusion** Positive impact of campaign on early diagnoses of upper GI cancer with statistically significant increase in endoscopy burden. There were marginal raise in detection of oesophageal cancer and phenomenal increase in gastric cancer while the conversion rate decreased.

**Disclosure of Interest** None Declared

## PTH-151 IMPROVING PATIENT CARE: NURSE-LED THERAPEUTIC PARACENTESIS SERVICE

[1]N Summers*, [2]S Khalid, [2]T Patani, [2]C McEvoy. *[1]Gastroenterology; [2]NHS, Warrington, UK*

10.1136/gutjnl-2016-312388.554

**Introduction** Warrington is home to more patients with a history of alcohol excess and chronic liver disease than the national average. In Warrington hospital we have a cohort of patients dependent on regular therapeutic abdominal paracentesis who traditionally were admitted via A&E. In the trust paracentesis can only be performed on the gastroenterology ward, and so awaiting transfer led to increased length of stay. Once admitted, patients would wait for consultant review and for a junior doctor to finish their ward work before inserting their drain, causing further delay in treatment. Following this we developed a protocol and training scheme to allow band 6 nurses to safely perform the procedure and co-ordinate admissions directly. The aim of this service was to improve access for patients who require regular paracentesis and reduce length of stay, whilst maintaining patient safety.

**Methods** The nurses who volunteered for training began with tutorials, then with demonstration and direct supervision by three gastroenterology consultants. The nurses observed 3 drains inserted by a consultant or registrar, then assisted for 3 procedures, and finally inserted drains themselves under direct supervision. The nurses were assessed at 10, 15, 20 and 25 drains using an assessment tool based on the Paracentesis DOPS assessment form used for doctors. Following this they were deemed competent to perform the task independently. We carried out a prospective audit of all patients involved and analysed the data after 9 months of the service being established. Mean length of stay was calculated using inpatient discharge letters. Patients who had issues not directly related to the insertion of their drain were discounted from the results.

**Results** Since April 2015, a total of 114 drains have been performed in 25 patients. The majority of patients were male (76%). Interestingly we noticed two peaks in age distribution: the majority in the older age group 66–75 years (40%) which were more likely to have NAFLD aetiology; the younger group age 46–55 years (28%) and were shown to be majority ALD patients. We noted that in those elective patients admitted directly to the gastroenterology ward for nurse-led management, mean length of stay was less than 24 hours,

compared with 4.5 days for the patients admitted via A&E. The latter was the path of all patients prior to April 2015. There have been no documented complications following any of the procedures performed by nurses.

**Conclusion** Therapeutic abdominal paracentesis in elective patients can be carried out safely by nurses, improves patient experience and drastically reduces length of stay. We feel this service has greatly improved the care of our outpatients with ascites and we would recommend implementation of this service in other trusts.

**Disclosure of Interest** None Declared

## PTH-152 THE PATIENT PERSPECTIVE OF A NURSE-LED INFLAMMATORY BOWEL DISEASE (IBD) TELEPHONE HELPLINE SERVICE

N Rezwan*, D West, G Tun, A Shirazi-Nejad, K Kapur, D Bullas, A Soliman, V Sathyanarayana, R Atkinson, E Said. *Gastroenterology, Barnsley District General Hospital, Barnsley, UK*

10.1136/gutjnl-2016-312388.555

**Introduction** Barnsley Hospital NHS Foundation Trust (BHFT) has approximately 1300 IBD patients. All patients have access to an IBD helpline (as recommended by IBD standards[1]) which is answered by an IBD specialist nurse between 12.30–13.30 pm, Monday to Friday. The specialist nurse assesses the symptoms of the patient, answers questions, gives reassurance and advice, and arranges follow-up, hospital admission, or alterations in prescription. The patients' perspective of the helpline was analysed in this study.

**Methods** To evaluate the patients' view of the nurse-led IBD telephone helpline at BHFT. Patient views were collected by questionnaire. Questions explored the accessibility of the service, the clinical competency of the specialist nurse, and what the patient thought was useful. 134 patients attended the nurse-led IBD clinic from November 2015 to January 2016. 37 responses (28%) were received and analysed.

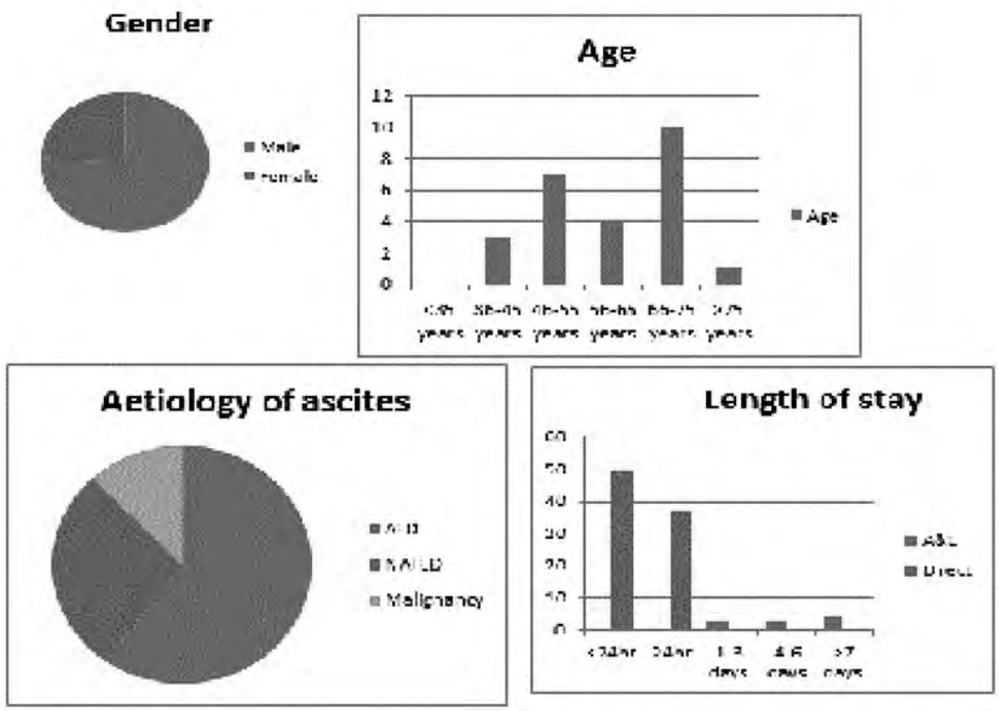
**Results** 54% of the responses were anonymous. 24% of respondents did not use the helpline. 100% of those who used the helpline found the service valuable: 86% had positive feedback; 14% had negative feedback; 100% agreed that the specialist nurse had sufficient clinical knowledge and experience to answer all questions.

Positive comments included:

- The knowledge that help and advice was readily available was reassuring and provoked less anxiety.
- Being able to talk about the disease to someone who understands.
- Easier access to imaging, endoscopy, outpatient services, inpatient admission, and the gastroenterologists compared to GPs
- Discussion of treatment options when in dilemma.

The negative comments concerned the popular demand of the service, leading to long wait times before calls were answered, and the lack of cover for sickness and leave.

**Conclusion** The IBD helpline is an invaluable service to the patients. It answers any immediate concerns, prioritises unwell patients in the community, and facilitates prompt investigation and clinical review. Additional investment in the service will optimise the accessibility of the helpline to the local IBD population.




**Abstract PTH-151 Figure 1**

**REFERENCE**
1 Service Standards for the healthcare of people who have Inflammatory Bowel Disease (IBD), IBD Standards Group, 2009, Standard 11A.

**Disclosure of Interest** None Declared

## PTH-153 THE IMPACT OF AN OPEN ACCESS, NON-FACE TO FACE NURSE LED INFLAMMATORY BOWEL DISEASE SERVICE ON SERVICE TRANSFORMATION AND PATIENT OUTCOMES

RC Reynolds*, C Bull, K Street, K Railton, M Ragheb, P Kerr, A Taylor Gonzales, AR Ansari. *Gastroenterology, East Surrey Hospital, Redhill, UK*

10.1136/gutjnl-2016-312388.556

**Introduction** Inflammatory Bowel Disease (IBD) follows an unpredictable clinical course, adversely affecting quality of life for many patients. Access to specialist IBD services is necessary in addition to routine review in the outpatient setting, when patients are often stable. Accessing these services is a considerable source of frustration amongst IBD patients. Due to the complex nature of IBD management GPs now play a relatively minor role, however often become the first point of contact. It is widely acknowledged that patients value access to specialist services. IBD specialist nurses are invaluable in providing continuity of care and bridging the gap to multidisciplinary secondary care services. By providing an open access, non-face to face nurse led IBD service, we are able to use our dataset to inform and commission service transformation and improve patient outcomes.
**Methods** Data was extracted from a comprehensive dataset of unrestricted non-face to face interactions. This was taken from consecutive patients over a 12 month period for immunosuppression monitoring and a consecutive 3 month sample for all other data.
**Results** The total number of consecutive contacts with the service in 12 months in the year 2015 was 4358, rising from 3000 contacts in 2014. Monitoring of immunosuppressive treatment constituted the greatest workload with 1500 contacts in 12 months from 450 patients. In a 3 month period, provision of our service avoided 20 hospital admissions, 34 accident and emergency department attendances and 110 outpatient appointments. We supported patients by issuing 120 prescriptions, organising 24 procedures, 22 multidisciplinary discussions and 12 urgent surgical reviews. This was achieved via 1600 emails, 1400 telephone calls and 1000 contacts from 400 patients using the 'Patient Knows Best' software, in a 12 month period.
**Conclusion** Our dataset has enabled analysis of the workflow of an open access non-face to face service. The volume of workload demonstrates that patients highly value this form of support. The flexibility of the service has diverted pressure of immunosuppressive monitoring away from busy consultant clinics. This data has helped to inform service transformation by allowing costing on new local tariffs for non-face to face appointments. Contacts are currently tariffed at £25, regardless of time invested, value added or outcome. In the past, this has been a disincentive to seeing IBD follow ups in comparison to the tariffs attracted for new patient workflow. We estimate the tariff for each contact with the non-face to face service to be £60.
**Disclosure of Interest** None Declared

## PTH-154 GASTROINTESTINAL LATE EFFECTS OF CANCER CARE – IS THERE AN UNMET NEED IN PRIMARY CARE?

R Stacey*, H Ludlow, J Turner, J Green. *Gastroenterology, University Hospital Llandough, Cardiff, UK*

10.1136/gutjnl-2016-312388.557

**Introduction** Gastrointestinal late effects of pelvic cancer treatment are common and these patients are recognised as having an unmet need within the health service at present. We have recently set up a dedicated clinic to deal with late effects of cancer care in Cardiff, however noted that all our referrals were received from secondary care oncology. We did not receive any primary care referrals. We aimed to assess the current knowledge of general practitioners in Wales and assess their referral practice.
**Methods** An online questionnaire comprising of 22 questions were sent via email to all GP practices in Wales. 63 GPs replied and completed the questionnaire. The results were collected anonymously using survey monkey online software.
**Results** 63 GPs replied (39 GP Partners, 9 Salaried GPS, 1 GP locum, 14 GP registrars) from all regions of Wales. 78.33% reported having previously seen patients with new gastrointestinal symptoms after treatment for pelvic cancer, (e.g. after radiotherapy) in their practice. The prevalence of late effects of cancer care was underestimated by 96.55% and the impact on quality of life was also underestimated by 39.65% as described in the literature.[1] Most GPs reported that although they were aware of the condition, they only saw less than 1 case per month. 25.86% of GPs felt confident with basic cases, but would need sub-specialty advise with more complex cases felt that they needed expert help for most cases. All other respondents felt either were not confident/ had no experience or somewhat confident, but have minimal experience. 84.48% wanted more education on this topic.
**Conclusion** GPs appear to underestimate the prevalence and impact of late effects on patients. They recognise that expertise is needed to treat these patients and that they lack both this training and frequent exposure to these patients, but also are keen for further education. The treatment of GI late effects has benefitted in secondary care within the last 5 years due to increased exposure, but this has yet to filter down into primary care. There is almost certainly an unmet need in primary care which needs to be addressed via better communication of services available in secondary care and current practice. Clinicians, NHS trusts and supportive charities should aim to improve the awareness of this under recognised condition.

**REFERENCE**
1. Andreyev J. Gastrointestinal symptoms after pelvic radiotherapy: a new understanding to improve management of symptomatic patients. *Lancet Oncol* 2007 Oct 25;**8**(11):1007–17.

**Disclosure of Interest** None Declared

## PTH-155 EVIDENCE FOR A 'WEEKEND EFFECT' IN THE MANAGEMENT OF ACUTE GI BLEEDING IN A CENTRAL LONDON TEACHING HOSPITAL

S Carlson*, J Stephens, H Nightingale, N Direkze, J Hoare, B Graf. *Gastroenterology, St Marys Hospital, London, London, UK*

10.1136/gutjnl-2016-312388.558

**Abstract PTH-156 Table 1**

| | Liver Bundle target | Pre-toolkit (%) | Post-toolkit (%) | p-value | | Liver Bundle target | Pre-toolkit (%) | Post-toolkit (%) | p-value |
|---|---|---|---|---|---|---|---|---|---|
| Ascites | Ascitic tap within 24 h | 23 | 16 | 1 | Variceal bleed | Antibiotics | 39 | 100 | 0.0074 |
| EtoH Excess | Quantitative recording | 24 | 76 | 0.0001 | | Terlipressin | 39 | 87 | 0.0357 |
| | IV Pabrinex | 52 | 90 | 0.0545 | | Vitamin K if Prothrombin time (PT) >13.5 | 89 | 87 | 1 |
| Spontaneous bacterial peritonitis | Antibiotics | 87 | 100 | 1 | | Fresh Frozen Plasma if PT > 20 | 50 | 100 | 1 |
| | HAS | 50 | 100 | 1 | Encephalopathy | Laxatives | 100 | 100 | 1 |
| Acute Kidney Injury | Nephrotoxins held | 85 | 87 | 1 | Gastroenterology review | Review within 24 h | 84 | 80 | 0.2438 |
| | IV fluids/ HAS | 100 | 90 | 1 | | | | | |

**Introduction** NICE guidance recommends that endoscopy should be performed within 24 hours of admission with a non-severe upper gastrointestinal bleed (UGIB). This audit reviewed cases over a six month period in a central London teaching hospital to establish compliance. We also evaluated whether there was a greater delay at weekends compared to weekdays.

**Methods** 41 patients were identified with a non-variceal UGIB. Patient notes were reviewed to collect data on arrival time, endoscopy time and findings, and clinical details to calculate a Rockall score. Arrival and endoscopy time were used to calculate time to endoscopy; these figures were used to compare weekend versus weekday performance.

**Results** Rockall scores were normally distributed with mean of 3.8, median 4 and mode 4. The range was 0–10. Mean time from admission to endoscopy was 21 hours. 61% of patients had an endoscopy within the first 24 hours of admission, and therefore met NICE guidance. The mean Rockall score of patients receiving endoscopy within 24 hours was 4.32. Those whose endoscopy occurred later than 24 hours had a mean score of 3.3. Mean time to endoscopy in those admitted on weekdays was 17 hours, with 66.6% undergoing endoscopy within 24 hours. The range of waiting times was 1–48 hours. In comparison, mean time to endoscopy at weekends was 30 hours with 60% undergoing endoscopy within 24 hours. The range was 10–75 hours. 2 patients (5.1%) had a second UGIB during admission. Both of those were inpatients for other reasons at the time of their first bleed.

**Conclusion** Only 61% of patients underwent endoscopy within 24 hours of admission. However those who got earlier endoscopies had higher mean Rockall scores which suggest they were prioritised appropriately. Patients admitted at the weekend waited longer on average for their endoscopy and even the quickest weekend endoscopy was 10 hours after arrival. There is undoubtedly some "weekend effect" seen. However, the percentage meeting the NICE guidance is similar (60% versus 66%). The longest weekend wait was 75 hours compared to 48 on weekdays,presumably as low-risk patients have a longer wait out of hours. The reason for the delay is likely multifactorial, but significantly the endoscopy department is closed over the weekend. To scope patients the on call endoscopist competes with emergency theatre lists. In a busy London hospital with a Major Trauma Centre and General, Orthopaedic and Vascular surgery, a sub-acute GI bleed will not be prioritised. The fundamental question for the hospital is whether the endoscopy department should open at the weekend. Costing has put this at almost £100 000 per annum (including a seven day out of hours on call nurse) to offer just an emergency service.

**Disclosure of Interest** None Declared

## PTH-156 IMPACT OF BSG AND BASL LIVER CARE BUNDLE INTRODUCTION ON CLINICAL PRACTICE: A UNIVERSITY HOSPITAL EXPERIENCE

[1]S Shahid*, [2]V Cheung, [3]H Meghji, [4]N Rajoriya, [5]G MacFaul. *[1]Gastroenterology, Milton Keynes University Hospital, Milton Keynes; [2]John Radcliffe Hospital, Oxford; [3]Milton Keynes Hospital, Milton Keynes, UK; [4]Gastroenterology, Toronto Centre for Liver Disease, Toronto, Canada; [5]Milton Keynes University Hospital, Milton Keynes, UK*

10.1136/gutjnl-2016-312388.559

**Introduction** The National Confidential Enquiry into Patient Outcome and Death for alcohol related liver disease highlighted the need to improve care of patients with decompensated liver disease. BSG and BASL thereafter developed the Liver Care Bundle toolkit to aid provision of evidence-based care within 24 hours of admission. We performed an audit of care delivered to such patients before and after introduction of the Bundle into clinical practice in our hospital.

**Methods** For the initial audit (August 2014-March 2015), patients presenting with decompensated liver disease were retrospectively identified from ward lists, blood bank data for Human Albumin Solution (HAS), and the endoscopy database. Electronic patient records were reviewed against the toolkit.

The results were presented at hospital Grand round alongside presentation of the Liver Care Bundle which was, thereafter, implemented throughout the Trust from July 2015. Re-audit using the same methodology was performed September to December 2015.

The significance of impact of the Bundle on clinical practice was evaluated using Fisher's exact test.

**Results** 45 patients were identified for the first part of the audit. The average length of stay was 11 days. Notes for 20

patients with 25 in-patient episodes were reviewed for the re-audit. Average length of stay was 18 days.

**Conclusion** The introduction of the Liver Care Bundle at our institution led to improvement in several aspects of care- especially in the management of variceal haemorrhage. Recognition of patients with excess alcohol consumption and use of Pabrinex was improved upon too. There, however, remain clear areas for improvement. Experiences with the Liver Care Bundle should continue to be widely reported in an attempt to standardise and improve in-patient morbidity and mortality in liver disease.

## REFERENCE

1 McPherson S, *et al.* Response to the NCEPOD report: development of a care bundle for patients admitted with decompensated cirrhosis—the first 24 h. *Frontline Gastroenterol.* 2016 Jan;**7**(1):16–23. Epub 2014 Dec 2.

**Disclosure of Interest** None Declared

## PTH-157 THE INTRODUCTION OF BIOSIMILAR INFLIXIMAB (CT-P13) THROUGH A MANAGED SWITCHING PROGRAMME GENERATES SIGNIFICANT COST SAVINGS WITH HIGH LEVELS OF PATIENT SATISFACTION

[1]S Rahmany*, [1]S Cotton, [1]S Garnish, [1]L McCabe, [2]M Brown, [2]R Saich, [1]D Lloyd, [1]JN Gordon. *[1]Hampshire Hospitals Foundation Trust, Winchester; [2]Hampshire Hospitals Foundation Trust, Basingstoke, UK*

10.1136/gutjnl-2016-312388.560

**Introduction** Biosimilar infliximab (CT-P5013) has been licensed in the UK for over a year with the potential for significant cost savings, though uptake to-date has been surprisingly slow. We report the introduction of biosimilar infliximab through a closely managed switching programme.

**Methods** Following the licensing of biosimilar infliximab we made a decision to instigate a closely managed switching programme encompassing all patients on maintenance treatment with Remicade and all new starters. A working party was set up with strong managerial support to deliver the project. We initially estimated savings of £400,000/year to the local health economy. Following meetings with the 3 local CCGs agreement was confirmed for a 50:50 gain share agreement between the CCGs and the Trust. To facilitate and monitor the switching programme a new Band 7 IBD Biological nurse, a Band 7 IBD Biological pharmacist, and an IBD administrator were recruited. All patients were informed by letter of the planned switch and the rationale for it. A variety of clinical and biological markers were also recorded at each visit along with PROM data.

**Results** To date since the start of the project on 16th September 2015 88 patients have been treated with biosimilar infliximab. 78 (63 CD/15 UC) patients on maintenance treatment with Remicade were switched to CT-P13 with unchanged efficacy and safety (the detailed results are the basis of a separate abstract); a further 10 patients received induction therapy (7 CD/3 UC). 3/88 patients requested further clarification from the IBD team with all patients subsequently agreeing to the switch. All patients were seen by either the IBD pharmacist or IBD specialist nurse and stated they felt well informed. Over the first six months the programme has generated total cost savings of £232,576.52 with projected year savings of £540,000. Staff costs totalled £90,000. PROM data from the cohort revealed very high satisfaction with treatment with a mean score of 7.3 (Range 3–10) for overall disease control. Patient feedback was universally positive.

**Conclusion** The introduction of biosimilar infliximab can be achieved through a closely managed programme with very significant cost savings to the local health economy. Engaged conversations between primary and secondary care facilitate realising these savings allowing investment in the local IBD service with direct impact on patient care. Patients were overwhelmingly supportive of the project. Wider uptake in the UK would result in considerable cost savings to the NHS.

**Disclosure of Interest** None Declared

## PTH-158 THE POTENTIAL FINANCIAL BENEFIT OF USING CT COLONOGRAPHY IN SELECTED PATIENTS REFERRED ON A SUSPECTED COLORECTAL CANCER PATHWAY

[1]T Garvey*, [1]C Kane, [2]A Plumb, [1]R Vega, [1]E Seward. *[1]Department of Gastroenterology; [2]Department of Radiology, University College London Hospital (UCLH), London, UK*

10.1136/gutjnl-2016-312388.561

**Introduction** Colonoscopy effectively excludes bowel cancer as a cause for a patient's symptoms but may result in cross-sectional imaging further along the pathway and CT colonography (CTC) may address both issues. We propose to pilot a straight to test (STT) model where patients 75 years and over undergo CTC as routine, and assessed the potential financial benefit of this.

**Methods** Data from 2 week wait referrals for suspected colorectal cancer to UCLH between June 12th 2014 to November 17th 2014 was analysed retrospectively from hospital systems. Data was collected from the time of referral until discharge from the pathway. Using the NHS tariffs (to nearest £) for each investigation/procedure, we calculated the potential financial benefit by directly comparing actual costs incurred versus the potential costs using the STT model.

**Results** In total, 505 patients were referred, with 477 of these patients sent for further tests; 353 referred for endoscopy (332 colonoscopy), and 110 referred for CTC. The average age of patients for endoscopy was 59.3 years versus 71 years for CTC. In the endoscopy group, 46 patients were aged 75 or older (13%). Table 1 details the costs incurred (excluding staging CT).

**Abstract PTH-158 Table 1** Patients 75 or older who had lower GI endoscopy (Tariff)

| Investigation/Procedure (Cost in £) | Patient No. | Cost (£) |
|---|---|---|
| Colonoscopy (433) | 31 | 13423 |
| Colonoscopy +biopsy (465) | 4 | 1860 |
| Therapeutic colonoscopy(469) | 10 | 4690 |
| Flexible sigmoidoscopy (309) | 1 | 309 |
| CTC post endoscopy (238) | 3 | 714 |
| CT Abdomen/Pelvis (AP) post endoscopy (137) | 3 | 411 |
| CT Chest/A/P post endoscopy (135) | 1 | 135 |
| | | **Total = 21542** |

Had all 46 patients had a CTC initially, this would have resulted in a cost of £10948 and follow up costs for endoscopy would have been as per further procedures as in Table 1

(£1860 + £4690 + £309), resulting in a total of £17807. In the 5 month period analysed, a potential saving of £3735 using the STT model, representing a potential annual saving of £8964.

**Conclusion** Potentially ≈ £9000 per annum could be saved using the STT model proposed, and could also have eased pressure on endoscopy capacity. Further increases on financial savings include careful referral to endoscopy after CTC.

Extra-colonic organ review is offered by CTC and may reduce the need for further imaging, and account for those requring CT post endoscopy. A third of patients are estimated to require endoscopy after CTC in the STT model, and although this may increase patient distress and inconvenience due to multiple tests, it allows targeted therapeutic colonoscopy. STT has also been demonstrated to reduce outpatient clinic appointments, thereby reducing costs not analysed in this analysis. However, a trained nurse is required which involves expenditure but is associated with greater patient satisfaction.

**Disclosure of Interest** None Declared

## PTH-159 ALCOHOL DETOXIFICATION DRUG CHART AUDIT

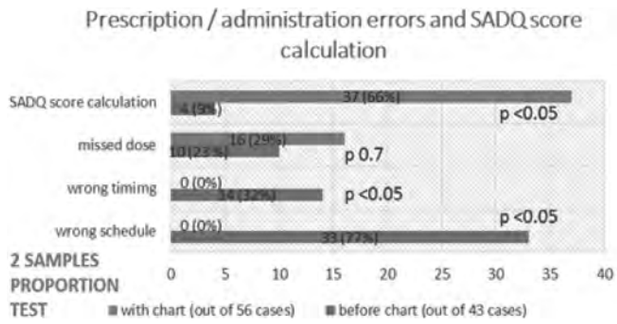
V Galanakis*, K Lambert, S Williams. *Gastroenterology, Ipswich Hospital, Ipswich, UK*

10.1136/gutjnl-2016-312388.562

**Introduction** Alcohol misuse is a rising problem and alcohol related admissions are common. Alcohol detoxification (DETOX) regimes vary and frequently confuse the prescribers and nurses leading to administration errors, compromising the patient's care and possibly contributing to early readmissions, by not achieving maximum detoxification. In order to improve that, we have developed and trialled a chlordiazepoxide prescription drug chart in our emergency assessment unit. Following the introduction of the chart there was a significant reduction in prescription and administration errors. The chart is now the standard means of prescribing alcohol detoxification regimes in our hospital.

**Methods** We reviewed 43 patient's notes with respect to chlordiazepoxide prescription and identified errors in the prescribed DETOX schedule, timing and missed doses. We then developed a drug chart, which was intended to guide the clinician to assess the severity of alcohol dependence using the severity of alcohol dependency questionnaire (SADQ) and then prescribing the correct chlordiazepoxide schedule, bypassing possible prescription errors. We then reviewed 56 medical notes following the introduction of the drug chart and statistically compared the prescription errors (2 population proportion test). We also compared the median total chlordiazepoxide dose given in milligrams and the duration of regimes in days (t test for 2 independent means) in order to identify a possible impact of those elements to alcohol related early (< 28 days) re-admissions.

**Results** The chart has led to significant ($p < 0.05$) reduction of wrong schedule and timing prescriptions, as well as significant ($p < 0.05$) increase in SADQ score calculation. There was no significant reduction in missed doses. It was also noted that the average length (days) and milligrams of detoxification regimes were inversely proportional to the risk of early re-admission, although these results were not statistically significant, suggesting that the chart might contribute to a reduction in early readmission by ensuring adequate detoxification.




**Abstract PTH-159 Figure 1** Prescription/administration errors and SADQ score calculation

**Conclusion** Our experience suggests that DETOX regimes can be cumbersome to prescribe leading to prescription errors, thus compromising patient's care. The idea of introducing a chlordiazepoxide drug chart was to achieve better care for these patients, by simplifying the prescription process. Our results imply that this was achieved with a suggestion that early readmissions were reduced. The chart is now established as part of alcohol DETOX management at Ipswich Hospital.

### REFERENCES

1 Alcohol Misuse Management Guideline Version 1.0 – 2014, Ipswich Hospital
2 Emergency Medicine Journal, 2014.
3 Alcohol use disorders: sample chlordiazepoxide dosing regimens for use in managing alcohol withdrawal, NICE Feb. 2010.
4 Alcohol-use disorders: diagnosis, assessment and management of harmful drinking and alcohol dependence, NICE 2011.

**Disclosure of Interest** None Declared

## PTH-160 'ONE STOP' JAUNDICE PATHWAY IN A DISTRICT GENERAL HOSPITAL: EVALUATION OF A PILOT PATHWAY

[1]W On*, [1]N Mirza, [1]A Lewis, [2]A Tang, [1]K Koss, [1]R Saravanan. *[1]Department of Gastroenterology; [2]Department of Radiology, Macclesfield District General Hospital, Cheshire, UK*

10.1136/gutjnl-2016-312388.563

**Introduction** Jaundice warrants urgent investigations to exclude significant underlying disease. The British Society of Gastroenterology (BSG) commissioned a report in 2013 highlighting the importance of having a streamlined pathway for investigation of jaundice.[1] Macclesfield District General Hospital (MDGH) has a catchment area of approximately 0.2 million and established a jaundice pathway in 2013. The pathway serves as a **'ONE STOP INVESTIGATION'** for jaundiced patients who have been referred from general practice (GP) or other specialties. Initial ultrasound triage by a Consultant Radiologist with hepatopancreatobiliary interest is followed by same day cross sectional imaging as appropriate. Our aim is to evaluate the performance/outcome of this pilot pathway.

**Methods** A retrospective review of all patients on the jaundice pathway was undertaken between March 2013 to October 2015.Data was collated and analysed from hospital electronic records and radiology database.

**Results** Thirty six patients were identified (19 males, 17 females)on the dedicated jaundice pathway . The median age

of the patients was 73.5 years (range 36–92). 86% of patients (31/36) were investigated as outpatients. The median bilirubin level of the investigated patients was 122 μmol/L (range 29–497). The aetiologies of jaundice in this cohort of patients were: malignancies (n = 12), gallstone disease (n = 11), liver cirrhosis (n = 4), parenchymal liver disease (n = 6) and miscellaneous causes (n = 5). The median time from referral to investigations was 4 days (range 0–14) and the median time from investigations to an outcome was 2 days (range 0–20). Outcome was defined by a definitive management plan made after a review by a consultant and/or discussion in a MDT meeting. Overall, the median number of days from a patient being referred to obtaining an outcome was 8 days (range 0–28). For patients with malignancies (n = 12), the median time from referral to outcome was 9.5 days (range 6–28). This exceeds the expectations for the 2 week referral (2 WW) rule for patients with suspected malignancies. The patients with malignancies proceeded to undergo: endoscopic retrograde cholangiopancreatography (n = 5), percutaneous transhepatic cholangiography (n = 3), surgery (n = 2) and palliative treatment (n = 2).

**Conclusion**

- The jaundice pathway at MDGH has proven to be an effective pathway for patients to undergo investigations for jaundice.
- Majority of patients with jaundice **can be managed as outpatients.**
- Adequate resource management is needed to facilitate this dedicated pathway.
- This has now been **adopted as a Gold Standard by the Central Manchester cancer network.**

## REFERENCE

1 http://www.bsg.org.uk/images/Commissioning_report/BSG_Acute_Jaundice.pdf

**Disclosure of Interest** None Declared

# Author Index

***The number next to the author indicates the page number, not the abstract number.***

# Author Index

# Author Index

# Author Index

# Author Index

# Author Index