CHARM

CANBERRA HEALTH
Annual Research Meeting

PROGRAM

27 – 30 July 2021

Celebrating Health Research in the Canberra Region

Day 1 – 27 July: Big initiatives

Day 2 – 28 July: Mental health research focus day

Day 3 – 29 July: ACT research in focus

Day 4 – 30 July: ACT research in focus

ACT Government · Canberra Hospital Foundation · Australian National University · University of Canberra · UNSW Canberra · ACU Australian Catholic University · AIS

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Heart of the community

WELCOME FROM RACHEL STEPHEN-SMITH MLA, MINISTER FOR HEALTH

It gives me great pleasure to welcome you to the 2021 Canberra Health Annual Research Meeting (CHARM). After the unfortunate circumstances that meant we had to miss a year of coming together for CHARM due to the COVID-19 pandemic, it is very important you are all at the event in 2021 to celebrate achievements and learn from the excellent research in the Canberra region.

Innovative evidence-based research is critical to delivering the ultimate goal of a sustainable healthcare system that provides the best care to the community. CHARM 2021 explores how interdisciplinary research can contribute to informed decision making and the fulfillment of this goal.

CHARM continues to be an excellent forum for showcasing health research achievements and supporting the community of the Canberra region to innovate and maximise the impact and contribution made by our healthcare researchers. It is great that CHARM is running virtually from 27-30 July this year to enable more people to access this research and be part of the CHARM experience.

The program details each presentation, highlighting important research questions in mental health, preclinical and clinical, allied health, nursing and midwifery research. Each day high profile keynote speakers will present on innovative engineering for disability support, positive mental health, psychosocial impacts of disasters and bias in research.

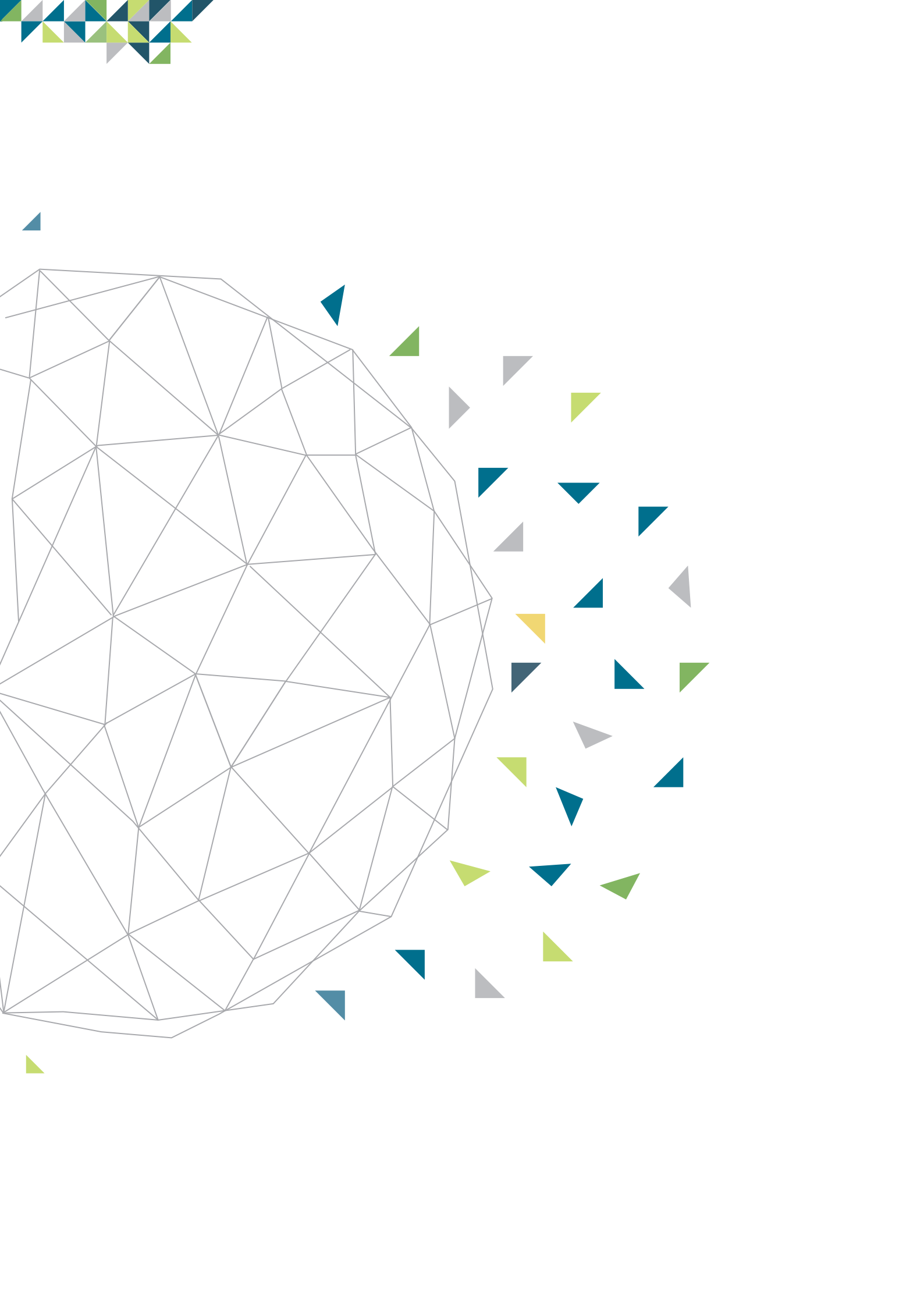
CHARM 2021 provides opportunities for networking, collaboration and capacity building for researchers and clinicians in the ACT and beyond. Workshops by Dr Jordan Nguyen and the Health Analytics Research Collaborative (HARC) provide further networking and learning opportunities.

CHARM has been organised by the ACT Health Directorate Centre for Health and Medical Research, in collaboration with Canberra Health Services and our academic partners. Each of these organisations have contributed greatly to the success of CHARM and I also thank the members of the CHARM program and scientific review committees for their hard work.

Thank you to the sponsors for their generous support of this meeting. It is extremely valuable to have others committed to the important work of health research in the ACT.

I hope you have a great CHARM experience this year!

Rachel Stephen-Smith MLA
Australian Capital Territory Minister for Health



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Day 1	
27 July: Big initiatives	
Keynote speaker	
Dr Jordan Nguyen	A human's guide to the future and removing barriers to disability
Presentations	
HealthANSWERS: Improving service-university collaboration to improve health in our region	
Research Innovation Fund: Overview and outcomes	
Mobilisation of knowledge	
Big initiatives: UNSW Canberra	
Big initiatives: Australian Catholic University	
Big initiatives: The Australian National University	
Big initiatives: University of Canberra	

Day 2	
28 July: Mental health research focus day	
Keynote speaker	
Dr Andy Cope	Rising stronger: Using positive psychology to build resilience
Invited speakers	
Dr Elizabeth Moore Dr Denise Riordan	Overview of mental health care in the ACT
A/Prof Michelle Banfield	Lived experience research
Prof Peter Butterworth	Mental health across the life-course
Snr Prof Brin Grenyer	Improving the trajectory of people with personality disorder, self-harm, and suicidal risk from acute to community mental health services: Findings from the Project Air Strategy randomised controlled trial of a whole of service stepped care model

Day 2	
28 July: Mental health research focus day	
Invited speakers	
Prof Debra Rickwood	The spectrum of interventions – mental health promotion, prevention, early intervention
Dr Suneel Chamoli	Neurostimulation – evidence and challenges for mental health
Prof Alison Calear	The role and effectiveness of mental health prevention programs in schools
A/Prof Kasia Bail	Aged care facilities
A/Prof Simon Rosenbaum	Physical health
Dr Joey Le	Forensic mental health: Challenging people or challenging transitions?
Prof Rhonda Wilson	Digital technologies in mental health
A/Prof Fiona Shand	Health services and community research in suicide prevention
Prof Christine Phillips	Innovation in regional and rural health care for mental health: Focusing on community strengths
Dr Graham Gee	Aboriginal and Torres Strait Islander mental health
A/Prof Michelle Banfield	Peer recovery worker
Panel Discussion	Transition(ing) though mental health care

Day 3	
29 July: ACT research in focus	
Keynote speaker	
Professor Kim Usher	Psychosocial impact of emergencies and disasters
Oral presentations	
Rebecca Mathews	Outcomes and predictors of success for very low energy diets from Canberra Obesity Management Service
Karlee Johnston	The psychosocial and work-related impacts of the COVID-19 pandemic on Australian Pharmacists
Emily Jacobs	The role of emotional awareness: A qualitative investigation into the resilience of emergency services personnel
Rebecca Cesnik	Barriers to physical activity for patients with cancer undergoing chemotherapy: A systematic review
Alanah Pike	"Lower drug costs, fewer side effects, and longer lives". Giving voice to women with stage IV breast cancer: Lived experiences of unmet needs expressed on Twitter
Clare Stephenson	Support needs of people with younger onset Parkinson's disease: An interpretative phenomenological analysis
Katelyn Barnes	Who, where, what and why patients seek care outside of hours: A whole system snapshot for the Australian Capital Territory
Stephanie Ellis	Including ethnic minorities in dementia research: Recommendations from a scoping review
Yangsong Huang	So, what does dying look like in Canberra Health Services?
Brett Scholz	From a single voice to diversity: Reframing 'representation' in consumer engagement in the context of COVID-19
Joseph Lynch	In-vivo kinematics during a step-up and down of three total knee replacement designs: A randomised clinical trial
Hayley Fancourt	Serious cycling-related fractures in on- and off-road accidents: A retrospective analysis in the Australian Capital Territory region
Angela Fearon	The natural history of greater trochanteric pain syndrome - an 11-year follow-up study
Kathleen O'Brien	Parents' perceptions of their child's weight among ACT kindergarten children

Day 3	
29 July: ACT research in focus	
Oral presentations	
Macey Barratt	Parent-nurse partnership in children with chronic illness: Empowering expert carers
Rebecca Williamson	Canberra community perceptions and responses to the 2019-20 smoke event: Lessons for social connectedness, vulnerability and resilience
Marguerite Kelly	Impacts of natural disasters including epidemics on end-of-life care: Findings from a systematic review
Bola Fasugba	Barriers and enablers to implementing hospital-acquired urinary tract infection prevention strategies: A qualitative study using the Theoretical Domains Framework
Blake Askelin	The impact of uro-oncology multidisciplinary team meetings on patient outcomes and patient engagement in the process
Amy O'Dea	Identifying the unmet supportive care needs of people affected by kidney cancer: A systematic review
Eleanor Gundry	Have we forgotten the wellbeing of nurses and midwives? Reviewing staff rostering guidelines in the Australian public healthcare setting
Sylvia Nilsson	Research evidence informed generalist palliative care content within undergraduate nursing curriculum: An integrative review
Tricia O'Connor	Holistic care needs of the imminently dying: A systematic review
Kasia Bail	Improving resident-focused documentation and saving nurse time: Mixed methods evaluation of a digital system in residential aged care
Margaret Broom	Reducing Nasal Pressure Injuries: Improving outcomes for high risk neonates!
Nicola Irwin	Trends in hospitalisation for common paediatric infections
Gabriella Michl	Documentation audits have an impact on the nurse's professional role and psychological wellbeing: A rapid systematic review
Shirleen Mutisya	Evidence of alcohol-related harm in universities

Day 3

29 July: ACT research in focus	
Oral presentations	
Celia Roberts	Pregnant women's responses to public health advice about smoke exposure during the 2019-20 bushfires in the ACT and NSW South Coast: Implications for practice
Thilini Sudeshika Salpahewage	Patients' perspectives towards the services of general practice pharmacists in the Australian Capital Territory
Esther Ngan	A standardised enhance recovery after surgery care pathway decreases length of stay in patients undergoing hysterectomy
Daniel Christiadi	Machine learning improves upon clinicians' prediction of end-stage kidney disease
Tom Lea-Henry	Personalised therapy in the treatment of complex autoimmunity
Wubshet Tesfaye	Efficacy and safety of head lice interventions: A systematic review and network meta-analysis of randomised clinical trials
Drew Richardson	Increasing incidence of access block in mental health presentations in Australasia in 2020

Day 4

30 July: ACT research in focus	
Keynote speaker	
Associate Professor Barbara Mintzes	Bias in clinical trials research
3 Minute Thesis	
Tanya Buttikofer	Stepping into the void. Climbing to a better future
Daniel Myyrylainen	To stretch or not to stretch? A novel approach to muscle tightness
Karlee Johnston	We didn't start the fire – burnout, psychosocial and work-related impacts of the global COVID-19 pandemic on Australian pharmacists
Rebekah Parkinson	Developing a new immune-induced mouse model of Parkinson's disease
Cynthia Turnbull	Make autoimmunity a memory, not a disease
Macey Barratt	Children with long-term conditions and their experiences of nursing
YuYao Ma	Predictive model for satisfaction after total knee replacement
Sundus Nizamani	No half measures: It takes two to tango
Abbie Doherty	Feasibility and acceptability of inspiratory muscle training in Parkinson's disease

Day 4

30 July: ACT research in focus	
Oral presentations	
Bernie Bissett	Effect of inspiratory muscle training on the recovery of ventilator-dependent ICU patients: A randomised controlled trial
Sumeet Rai	Long-term psychological burden in families of Australian intensive care survivors
Neha Paranjape	Evaluating optimal care pathway compliance for patients with high-grade glioma
Debbie Cruikshank	Impact of NICU/SCN visiting restrictions during COVID-19 on parental stress and discharge confidence
Bhim Rai	Identifying at-risk eyes utilising multifocal pupillographic objective perimetry in early diabetic macular oedema in type 2 diabetes
Joshua Chu-Tan	Voluntary exercise preserves retinal health in a model of photo-oxidative retinal degeneration
Yvette Wooff	Reduced, reuse, recycle: Replenishing extracellular vesicles lost through degeneration-induced depletion as a novel therapy for the treatment of age-related macular degeneration
Rebekah Parkinson	Developing a new immune-induced mouse model of Parkinson's disease
Chelisa Cardinez	A human novel mutation explains the pathogenic mechanism of psoriatic arthritis
Ainsley Davies	Primary immune deficiency conferred by NFKB2 mutation
David Croaker	A syndrome of Hirschsprung disease (HSCR) and mental retardation (MR) localised to distal chromosome 4q
Yuwei Hao	CTLA4 limits cytotoxic CD4 T cells in human CTLA4 haploinsufficiency with immunodeficiency
David Croaker	"Twirly rats" – a new model of human neurological disease?
Catherine Hilly	Effectiveness of activity and participation interventions for school-aged children (5-18 years) with fetal alcohol spectrum disorder: A systematic review
Richard Lord	Protocol for assessing Indigenous patients at risk of early dementia
Ian Pieper	Relational autonomy in clinical research
HARC	Update on accomplishments, position papers on data access and collaboration, and modes of engagement including upcoming forums and ways that HARC supports research in the ACT

Poster presentations	
Denika Silva	Effects of neuromuscular gait modification strategies on indicators of medial knee joint load in people with medial knee osteoarthritis: Systematic review and meta-analysis
Denika Silva	Minimal clinically important change and minimal clinically important difference of outcome measurement tools in people with knee osteoarthritis: A systematic review
Sian Hopkins	How does telehealth support students to develop competencies in interprofessional collaboration as part of accredited allied health programs: A systematic review
Jiaxiang Mao	Automated meal compliance using deep learning techniques for individualised hospital catering – pilot study
Janna Lutze	Peer assisted learning - when two become one
Debra Paoletti	Trends in reporting third trimester ultrasound in Australia and New Zealand
Hollie Speer	Endothelial function, reactive oxygen and nitrogen species (RONS) production, and hypertension in aging – a review of biological processes and potential interventions
Solomon Bezabh	Antiparasitic activity of tea tree oil and its components against medically important ectoparasites: A systematic review
Sarah Hill	Improving the mealtime eating environment at Canberra Health Services
Kezia Bates	"Rebooting" cancer genetic counselling appointments – an 8-week review
Danish Ahmad	Impact of an integrated microfinance and health literacy program on maternal healthcare awareness and practice in rural India
Nathan C'Dunha	Protocol for the Nutrition and Healthy Ageing Trajectories in Retirement Living (NutriHAT-RL) study in the Australian Capital Territory
Nurul Aini Yakob	Vitamin B3 levels in women who experience first trimester miscarriage
Claudia Reed	Short- and long-term patient outcomes following prolonged mechanical ventilation
Drew Richardson	Prevalence of access block in Australia 2017-2020
Lyana Salim	AHDID Study: After-hours discharge of ICU patients treated for delirium
Emily Heaney	Communicating through the haze: Health messaging for bushfire smoke, a literature review
Jo-Wai Douglas Wang	Age and gender differences in prevalence of comorbidities in hip fracture patients and their influence on outcome

Poster presentations	
Drew Richardson	Prevalence of alcohol-related presentations in Australasia 2017-2020: More crowding and no less alcohol
David Todd	Review of premature babies (PBs) <27 weeks gestational age (GA) from 2017 to 2020 who were ventilated with Neurally Adjusted Ventilation Assist (NAVA)
Ellen Brown	Sentinel diagnosis during COVID-19 pandemic - bronchiolitis
Drew Richardson	Responses to the COVID-19 pandemic in Australasian EDs
Drew Richardson	Emergency demand in Canberra Hospital during the 2020 COVID-19 pandemic
Jordan Barrett	Analysing changes in the pattern of psychiatric admissions to Canberra Hospital during COVID-19
Thomas Woodward	Sentinel diagnoses in the COVID-19 pandemic: Pulmonary embolism
Himasha Nanayakara	Observation of the incidence of eosinophilic oesophagitis (EoE) in oesophageal atresia/ fistula (OA/TOF)
David Croaker	Great balls of fire? Does the rate of testicular maldescent (UDT) parallel the rising rate of hypospadias?
Shahid Mahmood	Long-term efficacy of neoadjuvant chemotherapy in myoinvasive urothelial cancer - a retrospective study from The Canberra Hospital
Manoj Singh	Long-term outcomes of hospital-identified clostridium difficile infections (HICDI) in hospitalised patients
Garima Gahlawat	Emerging treatment strategies for impetigo in endemic and non-endemic settings: A systematic review
Arvind Kamath	A prospective statistical analysis of cardiac catheter lab presentations to The Canberra Hospital Emergency Department during the COVID-19 pandemic
Himasha Nanayakkara	Anxiolysis in diagnostic imaging- no worries?
Rebekah Bowman	Biophysical effects, safety and efficacy of raspberry leaf use in pregnancy: A systematic integrative review
Catherine Bell	Rethinking birth plans: A systematic and integrative review into the impact of birth plans on childbearing women
Amanda McKie	What are the unmet supportive care needs of people affected by chronic kidney disease receiving haemodialysis? A meta-aggregation review

Poster presentations	
Najmeh Alyasin	Living with a mended heart – an integrative literature review of the experiences of women following first acute coronary syndrome
Nikki Johnston	Reliving trauma near death: A systematic review
Natasha Jojo	Effectiveness of behavioural skill training for prevention of sexual abuse among children with intellectual disability
Jojo Joseph	Sleep problems and its relation with autism severity, problematic behaviour and parental distress in children with low functioning autism
Amanda McKie	Spirituality and religiosity in people who have had a renal transplant: A scoping review
James Connor	Piloting 'Leo's Place' – a world's first, non-clinical, palliative care respite house
Andini Pramono	Social value of maintaining baby-friendly hospital initiative accreditation in Australia: Case study
Wubshet Tesfaye	A comparative study of drug approval processes across major regulatory jurisdictions
Satish Chand	Lessons from machine learning in closing the gap between funding and expenditure in the Australian National Disability Insurance Scheme
Nidhi Menon	Aligning healthcare research with consumer, policy, and service needs
John Noel Viana	Responsible innovation as a framework for more inclusive health research in the Australian Capital Territory
Nadia Roberts	Liposomal drug delivery: Targeting therapies for neuroinflammation
Adrian Cioanca	Photoreceptor to glia microRNA exchange by extracellular vesicles: A novel response to retinal degeneration?
Rasel Barua	Comparative genomics shows site-specificity of Escherichia coli in the lower gut of humans
Pratap Pawar	Mapping the intersections of nerve fibres in the optic chiasm using MATLAB
Elmira Mohamed	Superior performance of cellulose nanofibers as a topical haemostat
Ian Allsop	Will tickling rats lead to happier animals?
David Croaker	The sl rat as a model for human Hirschsprung disease (HSCR)
Myra Ruth Poblete	Living with diabetes: Development of therapeutic insoles with overload-sensing via electrical impedance tomography of carbon nanotube networks
Vicky Saunders	Good start in life for young children - developmental needs and service responses in the ACT

Poster presentations	
Harshel Parikh	A comprehensive care bundle reduces harm in patients with central venous access devices
Alice Richardson	Seasonality in testing and positive respiratory bacterial infections in the Australian Capital Territory, 1997-2007
Delilah Shelley	Retrospective study on haematology patients with febrile neutropenia post chemotherapy
Chyi Tho	A standardised enhanced recovery after surgery care pathway decreases patient length of stay in colorectal surgical patients
Tracy Harb	Parental perceptions of the School Kids Intervention Program (SKIP): A program for families with overweight or obese children
Susan Davis	I can't be-leaf how dry this is! A-dressing salad recipes for a better inpatient meal experience
Eric Kim	Textual analysis of clinical notes on pathology request forms to determine sensitivity and specificity for diagnosis of Hepatitis B and C virus infection
Jenny Hawke	Taste changes in oncology? These extra items were mint to be!
Jacinta Bryce	What is possible for nutrition and food service continuity during the COVID-19 pandemic?
Katherine Rae	Comparison of active and reactive mattresses in domiciliary-based pressure injury healing: A randomised control study

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Rosalyn Stanton	Canberra Health Services
Dipti Talaulikar	Canberra Health Services, The Australian National University
Alex Webb	The Australian National University

KEYNOTE SPEAKERS

TUESDAY 27 JULY, 12-1PM

DR JORDAN NGUYEN

FOUNDER - PSYKINETIC

Dr Jordan Nguyen is one of Australia's most innovative engineers, who is committed to improving the lives of as many people as possible, and to help become a driving force behind both human and technological evolution as we move into the future.

An internationally renowned engineer for humanity, Jordan designs life-changing technologies to transform the lives of people with disabilities and the elderly through his role as founder of Psykinetic, a social business committed to bringing positive, sustainable and life-altering change, and shares his adventures through documentaries across the world. Inspired by human endeavour, Jordan has big ambitions to see our world step consciously and creatively into a better future.

WEDNESDAY 28 JULY, 3.45-4.45PM

DR ANDY COPE

CEO - ART OF BRILLIANCE

Andy is a qualified teacher, wellbeing expert and 'recovering academic'. His Loughborough University thesis was 12 years in the making and the reward for grinding out his PhD is that he gets to call himself a 'Doctor of Happiness'.

The good doctor is lucky enough to work with some very large businesses, including DHL, Kelloggs, Hewlett Packard, Astra Zeneca, Lego, L'Oreal, Nationwide and UEFA. Recently, he has tailored his workshops to meet the needs of children and teachers and now delivers to audiences from age eight upwards!

Andy's books are frequently on the best-sellers list. 'The Happiness Revolution' is due out in June and he's currently working on a writing project with Bear Grylls.

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THURSDAY 29 JULY, 12-1PM

PROFESSOR KIM USHER

PROFESSOR OF NURSING - UNIVERSITY OF NEW ENGLAND

Professor Kim Usher AM is currently the Professor of Nursing at the University of New England. An academic and researcher for many years, Kim has been awarded over $7 million in funding and currently leads two category one grants - Medical Research Future Fund and NSW Health. Kim is internationally recognised for her research on issues related to mental health including the psychosocial impact of emergencies and disasters, psychopharmacology, substance use, Indigenous health and workforce issues. Kim has been involved in disaster related research for many years including research related to the psychosocial impact of disasters such as cyclones, earthquakes, infectious diseases, and more recently the COVID-19 pandemic. As a result of her research into disasters, Kim was a member of the Asia-Pacific Emergency Disaster Nursing Network for many years and has completed consultancies for agencies such as the WHO, AusAID and ICN. Kim is the current Editor-in-Chief of the International Journal of Mental Health Nursing, a position she has held for over six years. Outside of work Kim breeds and shows outstanding Red Poll cattle.

FRIDAY 30 JULY, 12-1PM

ASSOCIATE PROFESSOR BARBARA MINTZES

SCHOOL OF PHARMACY AND CHARLES PERKINS CENTRE, UNIVERSITY OF SYDNEY

Barbara Mintzes is an Associate Professor, School of Pharmacy and Charles Perkins Centre (CPC), at the University of Sydney, where she has worked since 2015. Before coming to Australia, she was with the University of British Columbia's School of Population and Public Health. She leads the Evidence Policy and Influence Collaborative at the CPC and co-leads multi-disciplinary research nodes on Pharmaceutical Policy and Evidence Synthesis. Her research includes observational studies on impacts of regulatory policies, systematic reviews, and pharmacoepidemiology research. She has examined the influence of direct-to-consumer advertising on prescribing in primary care, and the quality of safety information provided by sales representatives in Canada, the US and France, and currently leads a comparative study of regulatory safety warnings on medicines in Australia, Canada, the US and the European Union. With Ray Moynihan, she co-authored the book, Sex, Lies and Pharmaceuticals (Greystone Press, 2010).

INVITED SPEAKERS

PROFESSOR CHRISTINE PHILLIPS

ASSOCIATE DEAN (HEALTH SOCIAL SCIENCE) - COLLEGE OF HEALTH AND MEDICINE, THE AUSTRALIAN NATIONAL UNIVERSITY; DIRECTOR, HEALTHANSWERS

PROFESSOR LYNDALL STRANZDINS

DIRECTOR - RESEARCH SCHOOL OF POPULATION HEALTH, THE AUSTRALIAN NATIONAL UNIVERSITY

MR ALAN PHILP

EXECUTIVE GROUP MANAGER - PREVENTIVE AND POPULATION HEALTH, ACT HEALTH DIRECTORATE

DR KAREN GARDNER

SENIOR RESEARCH FELLOW - PUBLIC SERVICE RESEARCH GROUP, SCHOOL OF BUSINESS, UNSW CANBERRA

DR SOPHIE YATES

POSTDOCTORAL FELLOW - PUBLIC SERVICE RESEARCH GROUP, SCHOOL OF BUSINESS, UNSW CANBERRA

ASSOCIATE PROFESSOR ELISABETH JACOB

HEAD - SCHOOL OF NURSING, MIDWIFERY AND PARAMEDICINE VIC, FACULTY OF HEALTH SCIENCE, AUSTRALIAN CATHOLIC UNIVERSITY

ASSOCIATE PROFESSOR VASILIKI BETIHAVAS

DEPUTY HEAD OF SCHOOL NSW - SCHOOL OF NURSING, MIDWIFERY AND PARAMEDICINE NSW/ACT, FACULTY OF HEALTH SCIENCE, AUSTRALIAN CATHOLIC UNIVERSITY

DR NATASHA FRANKLIN

DEPUTY HEAD OF SCHOOL NSW - BN COURSE COORDINATOR/ SENIOR LECTURER IN NURSING, SCHOOL OF NURSING, MIDWIFERY AND PARAMEDICINE NSW/ACT, FACULTY OF HEALTH SCIENCE, AUSTRALIAN CATHOLIC UNIVERSITY

DR NIKOLAY SHIROKIKH

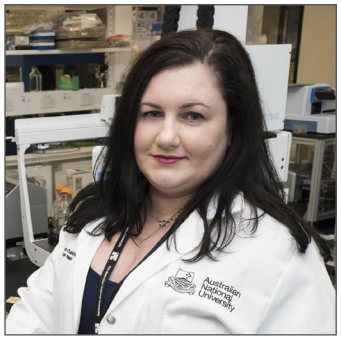
NHMRC EMERGING LEADERSHIP FELLOW - THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

PROFESSOR THOMAS PREISS

PROFESSOR OF RNA BIOLOGY - THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

DR JEAN WEN

GROUP LEADER AND ARC FUTURE FELLOW - THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY



DR AMEE GEORGE

FELLOW - ACRF DEPARTMENT OF CANCER BIOLOGY AND THERAPEUTICS; MANAGER - CENTRE FOR THERAPEUTIC DISCOVERY, THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

PROFESSOR EDUARDO EYRAS

PROFESSOR AND EMBL AUSTRALIA GROUP LEADER - THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

PROFESSOR LEONIE QUINN

PROFESSOR AND GROUP LEADER - THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

ASSOCIATE PROFESSOR RICCARDO NATOLI

HEAD OF CLEAR VISION RESEARCH - ANU MEDICAL SCHOOL AND THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

ASSOCIATE PROFESSOR JACKI SCHIRMER

HEALTH RESEARCH INSTITUTE, UNIVERSITY OF CANBERRA

ASSOCIATE PROFESSOR JULIEN PÉRIARD

INSTITUTE FOR SPORT AND EXERCISE, UNIVERSITY OF CANBERRA

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ASSOCIATE PROFESSOR IN NUTRITION AND DIETETICS - FACULTY OF HEALTH, UNIVERSITY OF CANBERRA; PACES RESEARCH GROUP

CLINICAL ASSISTANT PROFESSOR KELLIE TOOHEY

PACES RESEARCH GROUP; UNIVERSITY OF CANBERRA

MS MELANIE MOORE

CLINICAL SUPERVISOR - EXERCISE PHYSIOLOGY, UNIVERSITY OF CANBERRA; PACES RESEARCH GROUP

PROFESSOR CATHERINE PATERSON

CLINICAL CHAIR IN NURSING - FACULTY OF HEALTH, UNIVERSITY OF CANBERRA; PACES RESEARCH GROUP

DR ELIZABETH MOORE

COORDINATOR-GENERAL - OFFICE FOR MENTAL HEALTH AND WELLBEING, ACT HEALTH DIRECTORATE

DR DENISE RIORDAN

DIRECTOR CLINICAL SERVICES MENTAL HEALTH, AND CLINICAL DIRECTOR CAMHS, JUSTICE HEALTH, ALCOHOL AND DRUG SERVICE, ACT HEALTH DIRECTORATE; CLINICAL SENIOR LECTURER - ANU MEDICAL SCHOOL

ASSOCIATE PROFESSOR MICHELLE BANFIELD

SENIOR FELLOW - CENTRE FOR MENTAL HEALTH RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

PROFESSOR PETER BUTTERWORTH

PROFESSOR - RESEARCH SCHOOL OF POPULATION, THE AUSTRALIAN NATIONAL UNIVERSITY; HONORARY PROFESSORIAL FELLOW - MELBOURNE INSTITUTE OF APPLIED ECONOMIC AND SOCIAL RESEARCH, UNIVERSITY OF MELBOURNE

SENIOR PROFESSOR BRIN GRENYER

DIRECTOR - PROJECT AIR STRATEGY FOR PERSONALITY DISORDERS; SENIOR PROFESSOR OF PSYCHOLOGY - UNIVERSITY OF WOLLONGONG

PROFESSOR DEBRA RICKWOOD

FACULTY OF HEALTH, UNIVERSITY OF CANBERRA; CHIEF SCIENTIFIC ADVISOR - HEADSPACE NATIONAL YOUTH MENTAL HEALTH FOUNDATION

DR SUNEEL CHAMOLI

DIRECTOR - TMS SPECIALISTS CLINICS AND NEUROPSYTECH PTY LTD; SENIOR LECTURER - SCHOOL OF MEDICINE, UNIVERSITY OF QUEENSLAND

PROFESSOR ALISON CALEAR

NHMRC EMERGING LEADERSHIP FELLOW - CENTRE FOR MENTAL HEALTH RESEARCH, THE AUSTRALIAN NATIONAL UNIVERSITY

ASSOCIATE PROFESSOR KASIA BAIL

ASSOCIATE PROFESSOR OF NURSING - FACULTY OF HEALTH, UNIVERSITY OF CANBERRA

ASSOCIATE PROFESSOR SIMON ROSENBAUM

ASSOCIATE PROFESSOR - SCHOOL OF PSYCHIATRY, UNSW SYDNEY

DR JOEY LE

FORENSIC AND CHILD AND ADOLESCENT PSYCHIATRIST - FORENSIC MENTAL HEALTH SERVICES, MENTAL HEALTH, JUSTICE HEALTH AND ALCOHOL AND DRUG SERVICES, ACT HEALTH DIRECTORATE

PROFESSOR RHONDA WILSON

PROFESSOR OF NURSING AND DEPUTY HEAD OF SCHOOL - SCHOOL OF NURSING AND MIDWIFERY, UNIVERSITY OF NEWCASTLE, AUSTRALIA; SCHOOL OF NURSING, MASSEY UNIVERSITY, NEW ZEALAND

ASSOCIATE PROFESSOR FIONA SHAND

ASSOCIATE PROFESSOR AND HEAD OF SUICIDE PREVENTION RESEARCH - BLACK DOG INSTITUTE, UNSW SYDNEY

DR GRAHAM GEE

CLINICAL PSYCHOLOGIST AND SENIOR RESEARCH FELLOW - MURDOCH CHILDREN'S RESEARCH INSTITUTE

ASSOCIATE PROFESSOR BRUCE SHADBOLT

EXECUTIVE BRANCH MANAGER - CENTRE FOR HEALTH AND MEDICAL RESEARCH, ACT HEALTH DIRECTORATE

DAILY TIMETABLE

TUESDAY 27 JULY

Day 1: Big initiatives	
8.55	**Opening**
9.00	**Welcome and introduction** Rachel Stephen-Smith MLA, Minister for Health Introduced by Rebecca Cross, Director-General ACT Health Directorate
9.10	**HealthANSWERS: Improving service-university collaboration to improve health in our region** Prof Christine Phillips, ANU
10.10	**Research Innovation Fund – overview and outcomes**
10.40	**Mobilisation of knowledge** Prof Lyndall Strazdins – Director, Research School of Population Health, ANU Alan Philp – Executive Group Manager, Preventive and Population Health, ACT Health Directorate
11.00	**Big initiatives: UNSW Canberra** **Improving systems for eliminating crusted scabies in Indigenous communities in the Northern Territory, Australia** Dr Karen Gardner **The impact of COVID-19 disruptions on children and young people with disability and their families** Dr Sophie Yates
12.00	**KEYNOTE SPEAKER: DR JORDAN NGUYEN, PSYKINETIC** A human's guide to the future and removing barriers to disability
1.00	**LUNCH**
1.30	**Big initiatives: Australian Catholic University** **Blood sampling from PIVC's – where is the evidence?** A/Prof Elisabeth Jacob **Incorporating the social determinants of health in patient assessment** A/Prof Vasiliki Betihavas **A longitudinal study evaluating the health and economic burden of chronic-disease malnutrition in acute inpatients in the Northern Territory** Dr Natasha Franklin

Day 1: Big initiatives	
2.20	**Big initiatives: The Australian National University** **RNA: From pandemic to future technologies and treatments** Session introduction Dr Nikolay Shirokikh - RNA and RNA advances at the College of Health and Medicine **RNA in science and health** Prof Thomas Preiss - RNA as a versatile discovery platform in multi-omics research Dr Jean Wen - Biologically active RNA elements in single-cell biology **RNA in technology and innovation** Dr Amee George - RNA screening and ribosomopathies Prof Eduardo Eyras - New technologies to characterise RNA molecules in health and disease **RNA in diagnosis and therapy** Prof Leonie Quinn - Understanding the molecular basis of tumour predisposition in ribosomopathy patients A/Prof Riccardo Natoli – Bringing microRNA into focus for the treatment of age-related macular degeneration
3.10	**Big initiatives: University of Canberra** **COVID lockdown and wellbeing: What is the evidence?** A/Prof Jacki Schirmer, Health Research Institute **Protecting the young athlete from exertional heat illness** A/Prof Julien Périard, Institute for Sport and Exercise **Putting cancer through its PACES: Leading interdisciplinary person-centred cancer research** The PACES Research Group
4.00	**Workshop: Dr Jordan Nguyen Evolving technology for better health outcomes.**
4.30	**Close**

WEDNESDAY 28 JULY

Day 2: Mental health research focus day	
8.50	**Welcome** Emma Davidson MLA - ACT Minister for Mental Health, Introduced by Dave Peffer - Acting CEO, Canberra Health Services
9.00	**Overview of mental health care in the ACT** Dr Elizabeth Moore and Dr Denise Riordan, ACT Health Directorate
9.15	**Lived experience research** A/Prof Michelle Banfield, ANU
9.35	**Mental health across the lifecourse** Prof Peter Butterworth, ANU and University of Melbourne
9.55	**Improving the trajectory of people with personality disorder, self-harm, and suicidal risk from acute to community mental health services: Findings from the Project Air Strategy randomised controlled trial of a whole of service stepped care model** Snr Prof Brin Grenyer, University of Wollongong
10.15	**The spectrum of interventions – mental health promotion, prevention, early intervention** Prof Debra Rickwood, University of Canberra
10.35	**Neurostimulation – evidence and challenges for mental health** Dr Suneel Chamoli, Neuropsytech Pty Ltd
10.55	**Q&A** – Moderator: Dr Elizabeth Moore, ACT Health Directorate
11.15	**MORNING TEA BREAK**
11.20	**The role and effectiveness of mental health prevention programs in schools** Prof Alison Calear, ANU
11.40	**Aged care facilities** A/Prof Kasia Bail, University of Canberra
12.00	**Physical health** A/Prof Simon Rosenbaum, UNSW
12.20	**LUNCH BREAK**
12.50	**Forensic mental health: Challenging people or challenging transitions?** Dr Joey Le, ACT Health Directorate
1.10	**Digital technologies in mental health** Prof Rhonda Wilson, University of Newcastle
1.30	**Health services and community research in suicide prevention** A/Prof Fiona Shand, Black Dog Institute/UNSW
1.50	**Innovation in regional and rural health care for mental health: Focusing on community strengths** Prof Christine Phillips, ANU
2.10	**Aboriginal and Torres Strait Islander mental health** Dr Graham Gee, Murdoch Children's Research Institute
2.30	**Peer recovery worker** A/Prof Michelle Banfield, ANU

Day 2: Mental health research focus day	
2.50	**Panel Discussion** **Transition(ing) through mental health care** Facilitator: Dr Elizabeth Moore Co-facilitator: Prof Debra Rickwood Panellists: Dr Graham Gee, A/Prof Michelle Banfield, Prof Alison Calear, A/Prof Simon Rosenbaum
3.45	**Keynote speaker: Dr Andy Cope, The Art of Brilliance UK** Rising stronger: Using positive psychology to build resilience
4.45	**Concluding remarks and close** Dr Elizabeth Moore and Dr Denise Riordan, ACT Health Directorate

THURSDAY 29 JULY

Day 3: ACT research in focus	
8.55	**Welcome**
Open papers: Allied health and nursing and midwifery research	
9.00	**Rebecca Mathews** Outcomes and predictors of success for very low energy diets from Canberra Obesity Management Service
9.10	**Karlee Johnston** The psychosocial and work-related impacts of the COVID-19 pandemic on Australian Pharmacists
9.20	**Emily Jacobs** The Role of Emotional Awareness: A qualitative investigation into the resilience of emergency services personnel
9.30	**Rebecca Cesnik** Barriers to physical activity for patients with cancer undergoing chemotherapy: A systematic review
9.40	**Alanah Pike** "Lower drug costs, fewer side effects, and longer lives". Giving voice to women with stage IV breast cancer: Lived experiences of unmet needs expressed on Twitter
9.50	**Clare Stephenson** Support needs of people with younger onset Parkinson's disease: An interpretative phenomenological analysis
10.00	**Katelyn Barnes** Who, where, what and why patients seek care outside of hours: A whole system snapshot for the Australian Capital Territory
10.10	**Stephanie Ellis** Including ethnic minorities in dementia research: Recommendations from a scoping review
10.20	**Yansong Huang** So, what does dying look like in Canberra Health Services?
10.30	**Brett Scholz** From a single voice to diversity: Reframing 'representation' in consumer engagement in the context of COVID-19

Day 3: ACT research in focus	
10.40	**Joseph Lynch** In-vivo kinematics during a step-up and down of three total knee replacement designs: A randomised clinical trial
10.50	**Hayley Fancourt** Serious cycling-related fractures in on- and off-road accidents: A retrospective analysis in the Australian Capital Territory region
11.00	**Angela Fearon** The natural history of greater trochanteric pain syndrome - an 11-year follow-up study
11.10	**Kathleen O'Brien** Parents' perceptions of their child's weight among ACT kindergarten children
11.20	**Macey Barratt** Parent-nurse partnership in children with chronic illness: Empowering expert carers
11.30	**Rebecca Williamson** Canberra community perceptions and responses to the 2019-20 smoke event: Lessons for social connectedness, vulnerability and resilience
11.40	**Marguerite Kelly** Impacts of natural disasters including epidemics on end-of-life care: Findings from a systematic review
12.00	**Keynote speaker: Prof Kim Usher, University of New England** Psychosocial impact of emergencies and disasters
1.00	**LUNCH**
Open papers: Allied health and nursing and midwifery research	
1.30	**Bola Fasugba** Barriers and enablers to implementing hospital-acquired urinary tract infection prevention strategies: A qualitative study using the theoretical domains framework
1.40	**Blake Askelin** The impact of uro-oncology multidisciplinary team meetings on patient outcomes and patient engagement in the process
1.50	**Amy O'Dea** Identifying the unmet supportive care needs of people affected by kidney cancer: A systematic review
2.00	**Eleanor Gundry** Have we forgotten the wellbeing of nurses and midwives? Reviewing staff rostering guidelines in the Australian public healthcare setting
2.10	**Sylvia Nilsson** Research evidence informed generalist palliative care content within undergraduate nursing curriculum: An integrative review
2.20	**Tricia O'Connor** Holistic care needs of the imminently dying: A systematic review
2.30	**Kasia Bail** Improving resident-focused documentation and saving nurse time: Mixed methods evaluation of a digital system in residential aged care
2.40	**Margaret Broom** Reducing Nasal Pressure Injuries: Improving outcomes for high risk neonates!
2.50	**Nicola Irwin** Trends in hospitalisation for common paediatric infections

Day 3: ACT research in focus	
3.00	**Gabriella Michl** Documentation audits have an impact on the nurse's professional role and psychological wellbeing: A rapid systematic review
3.10	**Shirleen Mutisya** Evidence of alcohol-related harm in universities
3.20	**Celia Roberts** Pregnant women's responses to public health advice about smoke exposure during the 2019-20 bushfires in the ACT and NSW South Coast: Implications for practice
3.30	**Thilini Sudeshika Salpahewage** Patients' perspectives towards the services of general practice pharmacists in the Australian Capital Territory
3.40	**Esther Ngan** A standardised enhance recovery after surgery care pathway decreases length of stay in patients undergoing hysterectomy
3.50	**Daniel Christiadi** Machine learning improves upon clinicians' prediction of end-stage kidney disease
4.00	**Tom Lea-Henry** Personalised therapy in the treatment of complex autoimmunity
4.10	**Wubshet Tesfaye** Efficacy and safety of head lice interventions: A systematic review and network meta-analysis of randomised clinical trials
4.20	**Drew Richardson** Increasing Incidence of access block in mental health presentations in Australasia in 2020
4.30	**Close**

FRIDAY 2 AUGUST

Day 4: ACT research in focus	
8.55	**Welcome**
9.00	**3 Minute Thesis**
	Tanya Buttikofer Stepping into the void. Climbing to a better future
	Daniel Myyrylainen To stretch or not to stretch? A novel approach to muscle tightness
	Karlee Johnston We didn't start the fire – burnout, psychosocial and work related impacts of the global COVID-19 pandemic on Australian pharmacists
	Rebekah Parkinson Developing a new immune-induced mouse model of Parkinson's disease
	Cynthia Turnbull Make autoimmunity a memory, not a disease
	Macey Barratt Children with long-term conditions and their experiences of nursing
	YuYao Ma Predictive model for satisfaction after total knee replacement
	Sundus Nizamani No half measures: It takes two to tango
	Abbie Doherty Feasibility and acceptability of inspiratory muscle training in Parkinson's disease
Open papers: Clinical and Pre-Clinical research	
10.10	**Bernie Bissett** Effect of inspiratory muscle training on the recovery of ventilator-dependent ICU patients: A randomised controlled trial
10.20	**Sumeet Rai** Long-term psychological burden in families of Australian intensive care survivors
10.30	**Neha Paranjape** Evaluating optimal care pathway compliance for patients with high-grade glioma
10.40	**Debbie Cruickshank** Impact of NICU/SCN visiting restrictions during COVID-19 on parental stress and discharge confidence
10.50	**Bhim Rai** Identifying at-risk eyes utilising multifocal pupillographic objective perimetry in early diabetic macular oedema in type 2 diabetes
11.00	**Joshua Chu-Tan** Voluntary exercise preserves retinal health in a model of photo-oxidative retinal degeneration
11.10	**Yvette Wooff** Reduced, reuse, recycle: Replenishing extracellular vesicles lost through degeneration-induced depletion as a novel therapy for the treatment of age-related macular degeneration

Day 4: ACT research in focus	
11.20	**Rebekah Parkinson** Developing a new immune-induced mouse model of Parkinson's disease
11.30	**Chelisa Cardinez** A human novel mutation explains the pathogenic mechanism of psoriatic arthritis
11.40	**Ainsley Davies** Primary immune deficiency conferred by NFKB2 mutation
12.00	**Keynote speaker: A/Prof Barbara Mintzes, Sydney University** Bias in clinical trials research
1.00	**LUNCH**
Open papers: Clinical and pre-clinical research	
1.30	**David Croaker** A syndrome of Hirschsprung disease (HSCR) and mental retardation (MR) localised to distal chromosome 4q
1.40	**Yuwei Hao** CTLA4 limits cytotoxic CD4 T cells in human CTLA4 haploinsufficiency with immunodeficiency
1.50	**David Croaker** "Twirly rats" – a new model of human neurological disease?
2.00	**Catherine Hilly** Effectiveness of activity and participation interventions for school-aged children (5-18 years) with fetal alcohol spectrum disorder: A systematic review
2.10	**Richard Lord** Protocol for assessing Indigenous patients at risk of early dementia
2.20	**Ian Pieper** Relational autonomy in clinical research
2.30	**HARC** Update on accomplishments, position papers on data access and collaboration. and modes of engagement including upcoming forums and the ways HARC supports research in the ACT
3.30	**Close of meeting** Dr Hannah Clarke - Chair of CHARM Program Committee A/Prof Bruce Shadbolt - Executive Branch Manager, Centre for Health and Medical Research
6.30	**Awards dinner – Boat House restaurant, Barton**

CHARM

CANBERRA HEALTH
Annual Research Meeting

DAY ONE
BIG INITIATIVES
ABSTRACTS

KEYNOTE SPEAKER

A human's guide to the future and removing barriers to disability

DR JORDAN NGUYEN

Psykinetic

In this mind-opening presentation Dr Jordan Nguyen - inventor, TV presenter and author of the book A Human's Guide to the Future - will take the audience through some of the transformational technologies of our time, how we can adapt to the rapid rate of change resulting from these advancements, and why there is great opportunity in harnessing these tools to improve our inclusive human connection. Work is changing, life is evolving, and the world is moving into a new era - an era of the imagination, where anything is possible. In this exciting talk Jordan will share his own adventures from around the world and from rapidly building superhuman teams to collectively create inclusive solutions to big dreams, particularly in removing barriers to disability.

Audiences will learn about the ever-growing opportunities for inclusive technology through our advancements in the likes of robotics, artificial intelligence, biomedical technology, virtual reality and more. The only way we can collectively shape the changes upon us is to be aware of what is happening and how we may harness these opportunities for positive impact - for humanity and for life on Earth.

PRESENTATIONS

HealthANSWERS: Improving service-university collaboration to improve health in our region

PROFESSOR CHRISTINE PHILLIPS

Associate Dean, Health Social Science Research, The Australian National University

HealthANSWERS (ACT NSW Education, Research and Services) is a new regional collaboration between 14 health sector organisations across southern NSW and the ACT and three universities (University of Canberra, ANU and University of Wollongong). The collaboration includes three regional LHDs, primary care, hospitals, Aboriginal Health Services and a consumer organisation. Unlike many health sector-research collaborations, the HealthANSWERS collaboration is committed to service-relevant translational research that directly impacts upon health care and health outcomes in our region. Drawing on the work of the HealthANSWERS Implementation Working Group, this presentation discusses the principles and governance of HealthANSWERS, and its approach to capacity development for clinician researchers, regional priority setting, and supporting translational research. The session also outlines areas of early implementation through the bushfires and COVID-19.

Research Innovation Fund – overview and outcomes

The ACT Government, through the ACT Health Directorate's (ACTHD) Centre for Health and Medical Research (CHMR) has established the $3 million Research and Innovation Fund (RIF) to deliver health research within the ACT. Objectives of the fund are to create a world leading health research program to support high quality health care, promote cross disciplinary collaboration and engagement and deliver impacts on health outcomes beyond the life of the project. Four areas of impact focus are knowledge, health, economics, and social impact. Recipients of the grants will deliver short presentations on their proposed research.

Mobilisation of Knowledge

PROFESSOR LYNDALL STRAZDINS

Director, Research School of Population Health, The Australian National University

MR ALAN PHILP

Executive Group Manager, Preventive and Population Health, ACT Health Directorate

Knowledge mobilisation partnerships are recognised as a critical strategy for solving complex population health problems. In June 2020, the Preventive and Population Health Division, ACT Health and the Research School of Population Health, ANU, initiated a deliberative partnership to build a solid foundation for the co-production and mobilization of knowledge. We are evaluating the partnership and researching enabling factors that may inform other successful partnerships between health leaders and researchers. In the first twelve months outcomes have exceeded expectations and there is strong commitment to continue. Our shared vision is for our two organisations to have better capacity to work together to make the ACT healthier and more equitable.

BIG INITIATIVES: UNSW CANBERRA

Improving systems for eliminating crusted scabies in Indigenous communities in the Northern Territory Australia

DR KAREN GARDNER

Senior Research Fellow, Public Service Research Group, School of Business

This study reports on a mixed method before-and-after evaluation of a systems-based program for eliminating crusted scabies in the Northern Territory. We assessed the extent of program implementation and impacts on numbers of new cases, recurrences; primary health care and hospital activity. Marked improvements in treatment completion and follow-up were observed, but patients return to scabies endemic environments. In the context of overcrowding, risk of re-infection is high. We reflect on lessons learned.

The impact of COVID-19 disruptions on children and young people with disability and their families

DR SOPHIE YATES

Postdoctoral Fellow, Public Service Research Group, School of Business

This presentation draws from two surveys about the impacts of the pandemic on children and young people with disability and their families. One assessed respondents' experiences during the early weeks of the pandemic, while the second asked students and their families about their experiences of remote learning. It was clear that respondents faced many inequalities prior to the pandemic, and COVID-19 has further exposed and often exacerbated them. We consider some actions to mitigate these problems.

BIG INITIATIVES: AUSTRALIAN CATHOLIC UNIVERSITY

Blood sampling from PIVC's – where is the evidence?

ASSOCIATE PROFESSOR ELISABETH JACOB

Head, School of Nursing, Midwifery and Paramedicine VIC, Faculty of Health Science

Needle pricks for blood sampling are one of the most painful patient experiences in hospitals – they don't have to be. We can prioritise patient comfort without compromising the quality of care.

Incorporating the social determinants of health in patient assessment

ASSOCIATE PROFESSOR VASILIKI BETIHAVAS

Deputy Head of School NSW, School of Nursing, Midwifery and Paramedicine NSW/ACT, Faculty of Health Science

Currently, assessments of patients managing chronic conditions tends to focus on biomedical factors. However, social determinants of health (SDH) have been shown to influence disease management as well as hospital presentations. Incorporating SDH into patient assessments may improve self-management and potentially decrease hospital admissions.

A longitudinal study evaluating the health and economic burden of chronic-disease malnutrition in acute inpatients in the Northern Territory

DR NATASHA FRANKLIN

Deputy Head of School NSW, BN Course Coordinator/ Senior Lecturer in Nursing, School of Nursing, Midwifery and Paramedicine NSW/ACT, Faculty of Health Science

Malnutrition is well-recognised as a major clinical problem in different clinical contexts; however is frequently under-reported/underdiagnosed resulting in significant loss of activity-based funding. The Northern Territory (NT) Government and NT hospitals are continuously striving for health efficiencies in their operations. A study in the ACT is the first to specifically measure long-term health and economic impact of chronic-disease related malnutrition in regional hospital inpatient settings to identify ways to increase health efficiencies through maximising financial reimbursements.

BIG INITIATIVES: THE AUSTRALIAN NATIONAL UNIVERSITY

RNA: From pandemic to future technologies and treatments

Recently, the world has learned some of the best vaccines are made from RNA. In fact, RNA can perform nearly any function in biology. RNA can be an enzyme, drive telomeric extension, splicing, specific DNA and RNA cleavage. It forms the core of gene expression control of every cell. Not surprisingly, most diseases, whether inherited or acquired in the genomes or epigenetically, manifest through or at the level of RNA. RNA can be a virus or its dysregulation can drive malignancy. RNA controls development, including of the heart and brain. Many RNA therapeutic and diagnostic solutions were developed (mi/siRNA, CRISPR, exome profiling). Many more RNA tools are yet to come that fully exploit its structure forming capacity, biochemical modifications and splicing isoform variations. Using strong representative expertise of ANU RNA groups, we feature recent advances as part of the path in building a national RNA R&D ecosystem and onshore manufacturing.

SESSION INTRODUCTION

RNA and RNA advances at College of Health and Medicine

DR NIKOLAY SHIROKIKH

NHMRC Emerging Leadership Fellow, The John Curtin School of Medical Research

RNA IN SCIENCE AND HEALTH

RNA as a versatile discovery platform in multi-omics research

PROF THOMAS PREISS

Professor of RNA Biology, The John Curtin School of Medical Research

Biologically active RNA elements in single-cell biology

DR JEAN WEN

Group Leader and ARC Future Fellow, The John Curtin School of Medical Research

RNA IN TECHNOLOGY AND INNOVATION

RNA screening and ribosomopathies

DR AMEE GEORGE

Fellow, ACRF Department of Cancer Biology and Therapeutics, and Manager, Centre for Therapeutic Discovery, The John Curtin School of Medical Research

New technologies to characterise RNA molecules in health and disease

PROF EDUARDO EYRAS

Professor and EMBL Australia Group Leader, The John Curtin School of Medical Research

RNA IN DIAGNOSIS AND THERAPY

Understanding the molecular basis of tumour predisposition in ribosomopathy patients

PROF LEONIE QUINN

Professor and Group Leader, The John Curtin School of Medical Research

Bringing microRNA into focus for the treatment of age-related macular degeneration

A/PROF RICCARDO NATOLI

Head of Clear Vision Research, ANU Medical School and The John Curtin School of Medical Research

BIG INITIATIVES: UNIVERSITY OF CANBERRA

COVID lockdown and wellbeing: What is the evidence?

A/PROF JACKI SCHIRMER

Health Research Institute

Jacki will present findings from a longitudinal study that examined wellbeing of ACT residents before, during and after COVID-19 movement restrictions in the ACT in 2020. The talk will identify which groups experienced short term loss of wellbeing followed by rapid recovery, and which were still experiencing lower wellbeing several months after lockdown ended in the ACT in 2020.

Protecting the young athlete from exertional heat illness

A/PROF JULIEN PÉRIARD

Institute for Sport and Exercise

Sport is an integral part of childhood in Australia with a significant feature of the Australian summer being hot ambient conditions. This presentation will discuss whether thermoregulatory differences exist between children and adults that may disadvantage young athletes during exercise-heat stress and increase their risk of exertional heat illness.

Putting cancer through its PACES: Leading interdisciplinary person-centred cancer research

PACES Research Group

This presentation will introduce you to the PACES research group and their current and future research projects within the cancer field.

CHARM

CANBERRA HEALTH
Annual Research Meeting

DAY TWO
MENTAL HEALTH RESEARCH FOCUS DAY
ABSTRACTS

KEYNOTE SPEAKER

Rising stronger: Using positive psychology to build resilience

DR ANDY COPE

Art of Brilliance

From mental health to mental wealth.

The world has moved on and so must our thinking and behaviours.

This session is absolutely not about challenging you to up your game or work harder, it's about nudging you to remember who you are at your best. That's not only good for you. It creates positive ripples that impact on your family, your team and your customers.

Bouncing back is one thing, bouncing forward is quite another. RISING STRONGER has individual and team resilience at its core.

INVITED SPEAKERS

Overview of mental health care in the ACT

DR ELIZABETH MOORE

Coordinator-General, Office for Mental Health and Wellbeing, ACT Health Directorate

DR DENISE RIORDAN

Director Clinical Services Mental Health, and Clinical Director CAMHS, Justice Health, Alcohol and Drug Service, ACT Health Directorate

Clinical Senior Lecturer, ANU Medical School

This session will set the scene with an overview of the current and planned Mental Health service system in the ACT and the work of the Office for Mental Health and Wellbeing. Promotion, prevention and early intervention are important aspects of reducing the Burden of Disease, as is access to a range of acute and recovery focussed community and inpatient services. Partnerships with consumers and carers, the PHN and non-government services are important enablers of good patient outcomes and present opportunities to improve access and responsiveness.

Lived experience research

ASSOCIATE PROFESSOR MICHELLE BANFIELD

Centre for Mental Health Research, The Australian National University

Associate Professor Michelle Banfield will speak about her role as a lived experience researcher at ANU, and her program of research that is driven by lived experience priorities and actively incorporates others with lived experience in the research process. This includes work conducted in partnership with ACT Health and Canberra Health Services to develop peer work roles in the ACT.

Mental health across the lifecourse

PROFESSOR PETER BUTTERWORTH

Professor, Research School of Population, The Australian National University

Honorary Professorial Fellow, Melbourne Institute of Applied Economic and Social Research, University of Melbourne

This presentation draws upon high quality, nationally representative data to examine the prevalence of common mental disorders and psychological distress in Australia. The analysis considers differences in prevalence across the lifecourse, and examines whether the observed results are best explained as age or cohort differences. The presentation will also consider claims that levels of distress and mental ill-health have been increasing in the Australian community, particularly among adolescents and young adults. We will reflect on the different pattern of results obtained using different research methods and what implications this may have for monitoring of population mental health.

Improving the trajectory of people with personality disorder, self-harm, and suicidal risk from acute to community mental health services: Findings from the Project Air Strategy randomised controlled trial of a whole of service stepped care model

SENIOR PROFESSOR BRIN GRENYER

Director of the Project Air Strategy for Personality Disorders and Senior Professor of Psychology, University of Wollongong

People with personality disorders are prevalent in emergency and inpatient mental health services. We present findings from a randomised controlled trial implementing a stepped-care intervention that diverted people away from hospital and into brief intervention clinics. We report that demand on hospital services reduced significantly in the stepped-care site, compared to the TAU site. Patients at the stepped-care site experienced a significantly larger reduction in the number of bed days, and were 1.3 times more likely to experience a reduction in re-presentations to the emergency department and the approach led to direct cost savings. Therapy at the clinics demonstrated patient gains in wellbeing and reduced suicidal risk. Using a stepped-care model of treatment for personality disorder significantly reduced the demand on hospital services and improved patient outcomes.

The spectrum of interventions – mental health promotion, prevention, early intervention

PROFESSOR DEBRA RICKWOOD

Faculty of Health, University of Canberra

Chief Scientific Advisor, Headspace National Youth Mental Health Foundation

Reducing the prevalence and impact of mental illness requires action across the entire spectrum of interventions, from mental health promotion to recovery-focused continuing care. A targeted focus on promotion, prevention, and early intervention is required to, over time, reduce the burden of mental illness, yet there are many systemic forces that work against this focus. This presentation describes the spectrum of interventions, giving examples of each approach for youth mental health. It considers how research informs understanding of effectiveness and efficacy across the spectrum and the specific challenges for promotion, prevention, and early intervention.

Neurostimulation – evidence and challenges for mental health

DR SUNEEL CHAMOLI

Director TMS Specialists Clinics and Neuropsytech Pty Ltd

Senior Lecturer, School of Medicine, University of Queensland

Neurostimulation has rapidly emerged as the science of non-convulsive techniques to modulate the activity of central and peripheral neural tissues in a non-invasive manner. It has vast applications in medicine such as investigation of the complex brain mechanisms and treatment of a range of neurological and psychiatric disorders. Repetitive Transcranial Magnetic Stimulation (rTMS), transcranial Direct Current Stimulation (tDCS), transcranial Alternate Current Stimulation (tACS) and transcranial Random Noise Stimulation (tRNS) have been a focus of intensive research in the last decade. Of these techniques, rTMS and tDCS have made entry into routine clinical practice. The question we face is whether the regulatory, training and health care delivery organisations are ready to accept it in clinical care and what are the challenges to its successful adoption.

The role and effectiveness of mental health prevention programs in school

PROFESSOR ALISON CALEAR

Professor, Centre for Mental Health Research, The Australian National University

Anxiety and depression are common in children and adolescents and identifying ways to prevent mental health problems in this population is important. Schools have been identified as an ideal setting in which to deliver mental health prevention programs, given their universal access to young people. This presentation will highlight the benefits of delivering mental health prevention programs in schools and present the outcomes of two trials assessing the effectiveness of the MoodGYM and SPARX-R online depression prevention programs in Australian secondary schools.

Aged care facilities

ASSOCIATE PROFESSOR KASIA BAIL

Associate Professor of Nursing, Faculty of Health, University of Canberra

The promotion of mental health and the suitable recognition of mental illness in residential aged care is challenging, with multiple phenomena converging in relation to normalisation of deterioration, social ageism, categorisation of behaviours, complex working environments, and a minimalization of the contributions of the older population to their own and broader social wellbeing. This presentation will provide an overview of current mental health services for residents living in aged care and conceptualisation of human rights frameworks in relation to restrictive practices and other risk averse decision making; discuss documentation burdens, the role of health professionals; as well as outlining opportunities for supported decision making and other avenues for promoting agency and quality in residential aged care.

Physical health

Associate Professor Simon Rosenbaum

Associate Professor, School of Psychiatry, UNSW Sydney

From depression to schizophrenia, anxiety to post-traumatic stress – physical activity is an evidence-based strategy to reduce symptoms and promote recovery from various mental disorders. Addressing motivational deficits and overcoming barriers, especially for those that are most unwell remains an ongoing challenge to the routine implementation of physical activity as a component of mental health care. This presentation will use examples of established clinical exercise in mental health programs, with a focus on novel strategies, including staff interventions that can help facilitate culture change and physical activity adoption within mental health facilities.

Forensic mental health: Challenging people or challenging transitions?

DR JOEY LE

Forensic and Child and Adolescent Psychiatrist, Forensic Mental Health Services, Mental Health, Justice Health and Alcohol and Drug Services, ACT Health Directorate

Mental illness, problem behaviour and offending are inextricably linked to a complex psychosocial matrix characterised by poor access to services which presents as a significant contributing factor to poor outcomes for people with mental ill health. Those with mental illness who intersect with the criminal justice system have additional barriers to care that exist because of systems that were not designed for changes in complex needs across the lifespan, let alone changes in context. These challenges with transitions arguably entrench problem behaviour, but existing systems are ill placed to address them. Can we do better?

Digital technologies in mental health

PROFESSOR RHONDA WILSON

Professor of Nursing, Deputy Head of School – Central Coast, Head of Indigenous, School of Nursing and Midwifery, College of Health, Medicine and Wellbeing, University of Newcastle

The rapid advancement of incorporating digital technology in mental health care delivery profoundly challenges dominant health paradigms Traditional biomedical psychiatric discourses are shifting, as too, are the assumptions that have evolved with them over time. This presentation will discuss some of the shifts that have occurred and highlight some of the benefits that have resulted as we pursue future digital mental health solutions.

Default gendered and privileged assumptions underlying the development, clinical trial and implementation of therapeutic interventions should be re-examined, with digital mental health facilitating a turning of the tide where women, older peoples and priority groups are beneficiaries. This presentation will draw examples from a current portfolio of research that explores topics such as: First Nations accessibility; tailored approaches to precision digital dosing; digital health recommendations arising from mental health inquires; AI (Artificial Intelligence) solutions; telehealth for older people; and innovation to support women during menopause. Together, supporting the notion that digital technological mental health solutions improve capacity to address equity, disadvantage and health outcomes for priority groups.

Health services and community research in suicide prevention

ASSOCIATE PROFESSOR FIONA SHAND

Associate Professor and Head of Suicide Prevention Research, Black Dog Institute, UNSW Sydney

In this session, Fiona will draw on her suicide prevention research at the Black Dog Institute to describe what we know about community and health services suicide prevention strategies, their effectiveness, and the extent to which these strategies have been implemented in Australia. This presentation will also provide an overview of research recently conducted in the ACT on the experiences of people seeking help for suicidal distress, and offer some insights into how these findings align with new health service and suicide prevention developments in the ACT.

Innovation in regional and rural health care for mental health: Focusing on community strengths

PROFESSOR CHRISTINE PHILLIPS

Associate Dean (Health Social Science), College of Health and Medicine, The Australian National University

There are national shortages in specialised health professionals for mental health. This presentation addresses innovative models for health care using primary care and community to develop strengths and resilience. Drawing on decades of work in areas with highly traumatised people, and reflecting on current experiences of sustained community trauma, this talk addresses models of community strengthening and mental health care in general and ambulatory care in regional Australia as potential best practice models.

Aboriginal and Torres Strait Islander mental health

DR GRAHAM GEE

Clinical Psychologist and senior Research Fellow, Murdoch Children's Research Institute

Dr Graham Gee will briefly introduce an Aboriginal and Torres Strait Islander perspective of mental health and social and emotional wellbeing, and related current national data. He will then talk about some Aboriginal-led research on mental health related patterns of distress, and present some of his own work that has involved investigating complex trauma outcomes, psychological distress, and associations with a range of resilience and cultural determinants of wellbeing. Graham will conclude with some reflections about ways forward and practice considerations when working in the area of Aboriginal and Torres Strait Islander mental health and wellbeing.

Peer recovery worker

ASSOCIATE PROFESSOR MICHELLE BANFIELD

Senior Fellow, Centre for Mental Health Research, The Australian National University

Associate Professor Michelle Banfield and the Lived Experience Research Unit at the ANU have been conducting a number of projects on the development and implementation of peer work roles across multiple organisations including NSW Health, Canberra Health Services and NGOs. This presentation will describe work in partnership with ACT Health and Canberra Health Services to develop the Peer Recovery Worker role and explore early experiences with its implementation.

PANEL DISCUSSION

Transition(ing) through mental health care

The panel will explore key issues emerging from the presentations on this day.

FACILITATOR: DR ELIZABETH MOORE

CO-FACILITATOR: PROF DEBRA RICKWOOD

PANELLISTS: DR GRAHAM GEE, A/PROF MICHELLE BANFIELD, PROF ALISON CALEAR, A/PROF SIMON ROSENBAUM

CHARM

CANBERRA HEALTH
Annual Research Meeting

DAY THREE
ACT RESEARCH IN FOCUS
ABSTRACTS

KEYNOTE SPEAKER

Psychosocial impact of emergencies and disasters

PROFESSOR KIM USHER

Professor of Nursing, University of New England

A disaster is a serious event that occurs over a short or long period of time. It causes widespread human, environmental, economic and material loss that often exceeds a community's ability to cope. Unfortunately, disasters are an inevitable part of life that may escalate as a result of climate change. Australia has witnessed a number of recent disasters: the extensive drought in some parts of Australia that started in 2018, the wildfires of 2019, the floods in 2020, and the more recent COVID-19 pandemic. While the mental health impact of disasters is an often-neglected area of research, it is one that warrants further exploration. We know that disasters cause many serious consequences for communities and individuals; psychological distress is one of those consequences. The reason people experience this distress is often related to the unpredictability of disasters; they are often totally unexpected, leaving people in a state of shock that can lead to denial. In this paper I will outline some of the psychological consequences of disasters, describe some of our recent work in the area and our findings, and finally, share some work we are doing with communities to assist recovery.

Outcomes and predictors of success for very low energy diets from Canberra Obesity Management service

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INTRODUCTION: Very low energy diets (VLED) can contribute to sustained weight loss and improved lipid and glycaemic control. However, factors that predict significant weight loss from VLED are not well studied. Canberra Obesity Management Service (COMS) conducts VLED using 12 weeks of Optifast based caloric restriction under medical supervision.

AIMS: This study aimed to examine weight and metabolic outcomes following 6 and 12 weeks of VLED at COMS, and baseline factors that predicted clinically significant weight loss.

Methods: We undertook a retrospective clinical audit of data from patients completing VLED between February 2018 and July 2020 at COMS. T-test analyses evaluated changes in weight, body mass index (BMI), glycemic control, blood pressure and cholesterol and medications for weight-related comorbidities following 6 and 12 weeks of VLED. Multivariate analysis explored baseline variables which predicted clinically significant weight loss following VLED.

Results: For the 66 patients who completed VLED, we found statistically significant weight loss following 6 and 12 weeks of VLED, and statistically significant improvements in glycemic control, blood pressure, and cholesterol, and reductions in medications required to manage these comorbidities. Prior engagement with an exercise physiologist at COMS was the only variable which statistically significantly predicted clinically significant weight loss following 12 weeks of VLED.

Conclusion: VLED significantly reduce weight and improve metabolic outcomes in COMS patients. Prior engagement with an exercise physiologist may contribute to more significant weight loss following VLED.

Significance: To our knowledge, this is the first study to demonstrate the impact of prior exercise physiology engagement on VLED outcomes.

The psychosocial and work-related impacts of the COVID-19 pandemic on Australian pharmacists

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INTRODUCTION: COVID-19 has impacted the psychological wellbeing of pharmacists and has seen a high rate of burnout in the profession.

AIMS: To describe the experiences of pharmacists working during COVID-19 and the factors affecting their work.

METHODS: An online survey investigating burnout, psychosocial and work factors affecting pharmacists during COVID-19 was distributed to a convenience sample of pharmacists practicing in any setting in Australia during April and June 2020. The survey was distributed via social media and professional organisations. This study was a thematic analysis of the free-text final question of the survey: "Please provide comments on your experience or anything you think is important to report about providing pharmacy services during COVID-19". The comments were thematically analysed and the Job-Demands and Resources theoretical framework was used to guide analysis.

RESULTS: Of 647 total survey responses 215 (33.2%) participants responded to the free text question. Thematic analysis revealed increased demands on pharmacists during COVID-19 with decreased resources available. Increased workload associated with changing processes, managing medication supply, remaining accessible to the community and poor consumer behaviour were all additional demands affecting pharmacy service provision. Resources that pharmacists reported lacking during this period included management and team support, adequate training and consistent communication, personal safety and recovery time as well as a lack of recognition.

CONCLUSION: Pharmacists have experienced increased demands and reduced resources, which leads to burnout.

SIGNIFICANCE: Knowledge of these demands and resources can inform interventions that both organisations and individuals could implement to support pharmacists and other healthcare professionals working during difficult and uncertain times in the future.

The role of emotional awareness: A qualitative investigation into the resilience of emergency services personnel

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Emergency services personnel are frequently confronted with stressors, ranging from occupational pressures to life-threatening situations. They are at risk of emotional ill-health because their daily routine involves unpredictable traumatic stressors. Recent research suggests emotional awareness may be a key variable promoting resilience. To further investigate these potential links, this study explored the experiences of emergency services personnel and links between emotional awareness and resilience. We adopted thematic analysis of eleven in-depth interviews with emergency services personnel. Participants identified resilience as crucial when coping with stressors, however, they defined resilience as remaining unemotional and unaffected by these stressors. These potentially unhealthy beliefs may impact their ability to remain resilient, demonstrating low emotional awareness. Participants defined emotional awareness as understanding emotions, triggers and reactions, and recognised associated benefits on communication, coping, resilience and burnout. Nonetheless, most participants did not engage in practices to improve their emotional awareness. Although most participants were aware of the benefits, there remained barriers such as beliefs or lack of skills, that interfered with participants' ability to cultivate emotional awareness to promote resilience. With this in mind, some participant narratives described profound improvements in resilience and more adaptive coping, in response to trauma, through the cultivation of emotional awareness through mindfulness and reflective practices. Thus, developing emotional awareness may help emergency services personnel process difficult experiences and enhance their resilience, promoting well-being and career longevity. Training on resilience and emotional awareness would be beneficial at the individual, organisational and economic level.

KEYWORDS: emergency services, mental health, burnout, awareness, resilience

Barriers to physical activity for patients with cancer undergoing chemotherapy: A systematic review

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INTRODUCTION: Cancer is a leading cause of death and disability in Australia. Physical activity (PA) can improve chemotherapy side-effects, survival and treatment adherence. Evidence suggests that PA interventions may be a cost-effective way to improve PA levels and reduce associated healthcare costs. Preliminary data suggests most people undergoing chemotherapy in the ACT are insufficiently active despite the known benefits.

AIMS: This review aimed to identify the self-reported barriers to PA in adults undergoing chemotherapy for the treatment of cancer within current literature.

METHODS: Intervention and observational studies that met the eligibility criteria were included in the systematic review. Databases searched included CINAHL complete, PubMed, Cochrane Library, EMBASE, AMED, Joanna Briggs Institute, OVID Medline and Google Scholar. All articles were assessed two authors to determine eligibility and risk of bias.

RESULTS: 11 studies were reviewed as meeting the eligibility criteria. The literature identified that the greatest barriers to PA were side-effects of treatment (reported by 10 out of 11 studies), and time/competing priorities (seven studies). These are the same as the reported barriers to PA for this people undergoing chemotherapy within the ACT.

CONCLUSION: Despite the benefits, people undergoing chemotherapy are insufficiently activity; with reported barriers being treatment side-effects and time. Some research has been undertaken to support this population to increase their PA levels, however more is required.

SIGNIFICANCE: Healthcare professionals should work collaboratively to support ongoing PA despite these barriers and consider referring individuals reporting barriers to PA to an Exercise Physiologist or Physiotherapist for specialised support.

"Lower drug costs, fewer side effects, and longer lives". Giving voice to women with stage IV breast cancer: Lived experiences of unmet needs expressed on Twitter

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INTRODUCTION: Women living with incurable breast cancer have a range of unmet supportive care needs and are now turning to other modes of support due to feelings of isolation within the healthcare service. Social media platforms such as Twitter, afford women the opportunity for sharing their experiences of living with metastatic breast cancer as well as providing a platform for mutual support.

AIM: To identify unmet support needs among women living with stage IV metastatic breast cancer through online digital discourses related to health and illness experiences.

METHODS: This qualitative study analysed the content of a cross-sectional sample of publicly available tweets written by women living with stage IV metastatic breast cancer. The data were analysed using interpretative phenomenological analysis.

RESULTS: Data from 20 women living with stage IV metastatic breast cancer were included. Four key themes were identified: 'wondering, waiting and worrying', 'networks of support', 'treatment of the condition' and 'global platforms for development'.

CONCLUSIONS: There are clear supportive care gaps across the continuum for women diagnosed with stage IV metastatic breast cancer, it is apparent that changes need to be implemented to improve education, support, and access to and cost of treatment for this population. Support networks, including social media networks should form part of the clinical consultation discussion, to identify any unmet supportive care needs that could potentially assist in improving the outcomes of a woman diagnosed with metastatic breast cancer.

SIGNIFICANCE: This study identified the supportive role of the platform, Twitter, for women diagnosed with stage IV metastatic breast cancer.

Support needs of people with younger onset Parkinson's disease: An interpretative phenomenological analysis

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INTRODUCTION: People with younger onset Parkinson's disease (YOPD) report trouble navigating the health system and managing their Parkinson's disease symptoms. This impacts their everyday responsibilities, such as:
1) maintaining employment,
2) caring for children, or
3) ensuring financial commitments are met.

AIM: To highlight the support needs of people living with YOPD as perceived by people with YOPD and guide further development of the CHS Parkinson's disease service for people with YOPD.

METHODS: Semi-structured interviews were conducted with four participants and transcribed verbatim. Interpretative phenomenological analysis (IPA) was applied for in-depth exploration of the participant's experience, allowing the participant and the researcher to 'make sense' of their descriptions. Application of the hermeneutic circle allowed for exploration of the lived experience as it is described through the participants point of view, without any judgement or misrepresentation.

RESULTS: Several themes were identified with four clear overarching themes: 1) 'The pre-diagnosis of Parkinson's: denial', 2) 'What is next?', 3) 'Knowledge is power, mostly', 4) 'Loss of identity'.

CONCLUSIONS: A diagnosis of YOPD causes significant distress, particularly for those who are trying to maintain employment or care for children. This stress is associated with denial, trying to conceal the diagnosis and lack of psychosocial support initiated by the health system. People with YOPD highlighted the need for this support to be instigated at the point of diagnosis.

SIGNIFICANCE: Evidence to inform service development from a lived experience perspective.

Who, where, what and why patients seek care outside of hours: A whole system snapshot for the Australian Capital Territory

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INTRODUCTION: Out of Hours (OOH) medical care is provided by primary and tertiary services. To provide appropriate care OOH, we need to know who and what is presenting, where, and why patients chose to attend.

AIM: To describe patients and their reasons for presentation to OOH medical services, and to compare by service type.

METHODS: A patient-completed survey was collected across OOH services in the ACT, for one weeknight and weekend in 2019. Surveys were voluntarily conducted at 31/51 general practices (GP) open OOH (of 86 total GP practices), 3/3 GP locum services (CALMS), 3/3 Nurse led Walk-in-Clinics (WICs), and 2/2 public emergency departments (ED). Simultaneous practitioner record was collected in WIC, CALMS and GP. Retrospective EDIS records were collected from ED.

RESULTS: 1992 patient surveys and 934 practitioner records were returned. 526 de-identified ED records were sourced. Presentations differed by service type with the most common being: respiratory or skin for GP and CALMS, WIC, and musculoskeletal for ED. Patient reasons for attendance differed by service type, with perceived need most common in CALMS, WIC and ED, whereas personal preference was most common in GP. Patient reasons for selecting specific services indicate preference for usual GP care. Modifiable patient reasons for attending ED included access to facilities (e.g., x-ray) and being unaware of other options.

Conclusions: Patients present OOH due to perceived need for medical care and personal preference for OOH care.

SIGNIFICANCE: Findings could help to redirect inappropriate presentations and reorient health services to support timely access to appropriate levels of care for patients OOH.

Including ethnic minorities in dementia research: Recommendations from a scoping review

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INTRODUCTION: Ethnicity influences dementia aetiology, prognosis, and treatment, while culture shapes help-seeking and care. Yet ethnic minorities remain underrepresented in dementia research, meaning that clinical and policy decisions are likely to be based on data reflecting the needs of only some groups. The problem has been widely recognised by dementia, and broader medical, researchers alike.

AIMS: To investigate approaches to enhance the recruitment, and consistent collection and analysis of variables relevant to ethnic minorities in dementia studies to make recommendations for consistent practice in dementia research.

METHODS: A scoping review, searching relevant databases for articles published between 1 January 2010 and 7 January 2020. Dementia clinical and cohort studies that actively recruited ethnic minorities in high-income countries were included. An expert steering group developed criteria to identify high quality studies.

RESULTS: 66 articles were retrieved. Use of interpreters/ translators was most commonly used to facilitate recruitment. Common variables collected included race/ ethnicity, native language, country of birth, and time in settlement country. Six high quality studies facilitated inclusion through community engagement, collected information on multiple aspects of ethnic diversity, and adjusted/sub-stratified to analyse the impact of ethnicity on dementia.

CONCLUSION: The scoping review offers recommendations to reduce barriers to participation; develop relationships with communities; and promote consistency in collecting and reporting information on cultural and ethnic diversity.

SIGNIFICANCE: The recommendations can improve the overall rigour of dementia research, which can improve the wellbeing of ethnic minorities living with dementia; help policy-makers and program designers reduce health and care inequities; and ensure ethnic minorities share in the benefits of advances in dementia science.

So, what does dying look like in Canberra Health Services?

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INTRODUCTION: Approximately 700 people die in Canberra Health Services each year. Staff and community have shared concerns about and the need to improve end-of-life care in Canberra Health Services.

AIM: The aim of this research was to understand what elements of end-of-life care Canberra Health Services do well and the impact of the introduction of a Comfort Care Pathway.

METHODS: 200 and 100 retrospective deaths in 2019 and 2020 respectively were audited with the Canterbury Quality of Death (CQD) tool to examine the quality of death (QOD). A higher accumulated score from positive answers indicates a better QOD. A third file audit of 49 deaths was undertaken in January 2021 where a Comfort Care Pathway was in place at the time of death. Ethics was approved and waived the need for consent.

RESULTS: Quality of death scores increased from 2019 (Mean = 19.28; SD 3.44; IQR 3) to 2020 (Mean 22.85; SD 2.88; IQR 3.5) ($p<0.001$). The trial of the Comfort Care Pathway in December 2020 further increased the CQD score for the 49 patients where a comfort care pathway was in place (Mean 25.19, SD 1.77; IQR 2).

CONCLUSION: Although documentation of QOD indicators increased from 2019 – 2020, the presence of a Comfort Care Pathway was correlated with significantly higher QOD scores ($p<0.001$).

SIGNIFICANCE: This study provides much needed translational evidence of how acute hospital settings can improve the quality of death.

From a single voice to diversity: Reframing 'representation' in consumer engagement in the context of COVID-19

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INTRODUCTION: Contemporary policy requires consumer engagement at all levels of health services. Such engagement is often through 'consumer representatives' serving on committees or projects. Health professionals often misunderstand who or what consumers in these roles are representing, with the findings of previous research suggesting consumers can be disempowered or silenced by health professionals claiming they are not representative enough. COVID-19 had particular implications for the ways engagement was facilitated given the way particularly marginalised groups (including older people, and people with disabilities) were represented in engagement strategies.

AIMS: The current study examines consumer engagement in the context of the development of the triage process for COVID-19 within the ACT.

METHODS: Ten interviews were conducted with consumers and non-consumer health professionals about the engagement strategy for COVID-19 triage development. Data analysis was informed by a discursive psychological approach.

RESULTS: Requiring consumers to represent the broader population served to dismiss their expertise (and held them to expectations not placed on other stakeholders). However, consumers were empowered by the onus being placed on health services to seek more consumers with a range of diverse experiences.

CONCLUSION: Requiring individual consumers to represent the broader population could reproduce traditional power imbalances between consumers and health systems. Shifting the way health services seek representation (from focusing on an individual consumer, to focusing on seeking a broader range of consumers with diverse experiences) can support the development of improved engagement strategies.

SIGNIFICANCE: Policy makers and service providers who seek out a broader diversity of consumers can challenge power imbalances in collaborative relationships with consumers.

In-vivo kinematics during a step-up and down of three total knee replacement designs: A randomised clinical trial

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INTRODUCTION: Modern total knee replacement prostheses are designed to reduce pain and restore function. Implant choice is guided by implant survival, surgeon preference and kinematic performance. However, the debate over which implant to use for optimal kinematic performance is still unresolved.

AIM: To prospectively compare kinematic outcomes of three TKR designs: posterior-stabilised fixed-bearing (PS-FB), cruciate-retaining fixed-bearing (CR-FB) and cruciate-retaining rotating-platform (CR-RP) designs.

METHODS: 68 participants were randomised to receive either a CR-FB, CR-RP or PS-FB design. Patients completed a step-up and down task while being imaged using single-plane fluoroscopy at a minimum of 1-year follow-up. Implant CAD models were registered to the fluoroscopic images to generate six-degree-of-freedom kinematics. Differences in kinematics between design were compared.

RESULTS: There were no difference in terminal extension between the groups. The PS-FB design had less total anterior-posterior femoral translation compared to CR designs during the step-down ($p<0.05$). Furthermore, the CR-FB design was more posteriorly positioned throughout flexion compared to the other two designs ($p<0.05$). Additionally, the CR-RP design was in more external femoral-rotation when compared with both fixed bearing designs ($p<0.05$). However, there were no differences in total rotation for either step-up or step-down.

CONCLUSION: We found that implant design did influence knee kinematics. Specifically, CR-FB designs were more posterior across both movements compared the other designs, while CR-RP designs remained relatively more externally rotated than the fixed bearing designs.

SIGNIFICANCE: These findings provide insight into the performance of common knee replacement designs. They also provide clinicians with a more kinematically informed choice for implant selection and information for management of functional expectations.

Serious cycling-related fractures in on- and off-road accidents: A retrospective analysis in the Australian Capital Territory region

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Cycling as a means of leisure, transport and an extreme sport is increasingly popular. This increased engagement is accompanied by a rise in fracture-related injuries. However, there is a poor understanding of the relative burden of cycling-related injuries in different cycling modes.

The aim of this study was to describe and compare contemporary patterns of cycling-related fracture requiring hospitalisation as a function of cycling mode.

A retrospective analysis of cycling-related-fractures resulting in hospitalisation in the ACT region between July 2012 and December 2019 was undertaken. Cycling mode was identified (on-road, mountain, BMX, leisure, unspecified) and demographics, length of stay, and fracture site/s were described. Logistic regression models were used to calculate probabilities of fracture at different sites by mode.

2104 cycling-related hospital admissions were recorded over the 7.5 years of which 64% involved a fracture. Of these, 442 (33%) were on-road, 658 (49%) off-road, and in 242 (18%) cycling mode was not reported. Median age was 37 (IQR 16,52) and 79% were male. Length of stay varied from 1 to 64 days with on-road including the longest stays. Cycling modes had different fracture profiles, but probability estimates only identified some of these differences. Off-road cyclists sustained fractures as severe as on-road cyclists. Skull fractures comprised nearly one-fifth of all BMX-related fractures. Serious on-road fractures decreased after the introduction of a minimum passing distance but have since returned to previous levels.

Cycling-related injuries are increasing with equal severity from on- and off-road accidents. BMX skull fractures are a surprising concern. This data will serve to inform mitigation strategies for cyclists.

The natural history of greater trochanteric pain syndrome - an 11-year follow-up study

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INTRODUCTION: Greater trochanteric pain syndrome (GTPS) is the most common lower limb tendinopathy. It negatively affects function, work participation and quality of life. The natural history of GTPS has not been reported although associated hip osteoarthritis is noted.

AIM: To determine the proportion of people who have GTPS or have developed hip osteoarthritis, and to determine the level of function and quality of life 11-years after initial assessment.

DESIGN: Prospective 11-year natural history study.

METHOD: Two mutually exclusive groups [Group 1 = GTPS group (n=24), Group 2 = asymptomatic control group (n=20)] were evaluated at baseline, 12-months and 11-years. Participants were clinically assessed for greater trochanteric pain syndrome and hip osteoarthritis (imaging confirmation at baseline), completed modified Harris Hip Score, Oswestry Disability Index, Assessment of Quality of Life, 10 metre-walk-test, time-up-and-go, and hip abduction and external rotation strength.

RESULTS: At 11-years 45.0% of Group 1 had GTPS compared to 5.3% of Group 2 (p=0.008), and 40.9% of Group 1 were clinically diagnosed with hip osteoarthritis compared to none of Group 2 (p=0.002). Group 1 reported more pain and disability than Group 2 but similar levels of quality of life.

CONCLUSION: After 11 years, people with GTPS are more likely to be clinically diagnosed hip osteoarthritis than controls. Between-group differences in quality of life seen at baseline are not found at 11-years follow-up. Functional differences were more complex.

SIGNIFICANCE:

- People with GTPS have a high chance of experiencing long term hip pain.
- Clinicians treating people with GTPS may need to change their management strategies.

Parents' perceptions of their child's weight among ACT kindergarten children

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INTRODUCTION: Accurately perceiving whether a child's weight is in the healthy range enables parents to identify when changes may be required for managing their child's health. Exploring parents' perceptions of and comments about their child's weight may help understand where perception differs from measured assessment.

AIMS: To describe overweight/obesity in early childhood, and explore parents' reported perceptions and comments about their child's weight.

METHODS: Mixed-methods analysis of the 2014-2017 Kindergarten Health Check, a survey of all children enrolled in their first year of primary education in the ACT.

RESULTS: 20,427 children participated in the survey between 2014-2017. 693 children (3.4%) were classified as obese based on measured body mass index (BMI), and a further 2,322 (11.4%) were overweight.

Among children who were overweight/obese, 86% of parents described their children's weight as being healthy and 13.3% as overweight/obese. Just 11% of parents whose children were later measured in the overweight/obese BMI categories identified having concern about their child's weight.

Parents' comments varied widely and were often incongruent with the known health risks associated with their child's measured BMI. Comments from parents whose children measured as obese often were normalising, whilst parents of children in the healthy range expressed concerns about underweight.

CONCLUSION: Parents do not accurately perceive their child's weight and few document concerns, even among children measuring in the obese BMI category.

SIGNIFICANCE: A lack of concern makes early interventions challenging as parents are in the "pre-contemplative" stage of behaviour change and may see public health campaigns or clinicians attempts to address their child's weight as irrelevant or unhelpful.

Parent-nurse partnership in children with chronic illness: Empowering expert carers

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INTRODUCTION: Parent-nurse partnership is fundamental to paediatric and neonatal nursing. Partnership is characterised by five attributes: parental participation, negotiation, mutual trust and respect, shared roles and decision making, and communication. Little is known about the parental experiences of partnership nursing specific to children living with a long-term chronic illness.

AIM: To explore how parents of children with chronic illness experience partnership in paediatric and neonatal nursing care, and to identify existing partnership barriers and facilitators.

METHODS: A comprehensive qualitative meta-aggregation review following Joanna Briggs Institute meta-aggregation approach was conducted using six electronic databases. Studies were assessed according to the inclusion and exclusion criteria. Qualitative findings with illustrative quotes from included studies were extracted and grouped into categories which informed the synthesised findings.

RESULTS: 4,404 studies were screened, and 162 studies were assessed in full-text. A total of six studies were included. Parents of children with chronic illness articulated the importance of existing partnership attributes. This meta-aggregation identified three overarching synthesised findings which included: 'empowering parents to become involved', 'effective communication to recognise mutual expertise' and 'collaborative nurse-family relationships'.

CONCLUSION: The findings support existing attributes of partnership nursing and provides additional new insights into other attributes which were perceived as vital to maintain optimal parent-nurse partnership. Parents valued collaboration where both parents and nurses are recognised equally for their skills and expertise and a power struggle existed between parents and nurses when expertise was not mutually appreciated.

SIGNIFICANCE: Nurses need to recognise the skills and knowledge that parents have surrounding the care requirements of their own children.

Canberra community perceptions and responses to the 2019-20 smoke event: Lessons for social connectedness, vulnerability and resilience

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INTRODUCTION: For almost a month during the 2019-2020 bushfires, Canberra was obscured by smoke from surrounding fires. Exposure to smoke poses a significant public health threat.

AIMS/QUESTIONS: The study qualitatively examines how people at higher risk of social isolation in the ACT region experienced the smoke, including their perceptions of risk, level of disruption to everyday life, and levels of social support.

METHODS: 20 semi-structured interviews were conducted with a range of Canberra residents potentially vulnerable to the effects of the smoke due to their personal or social circumstances, including elderly residents, people with chronic health conditions, people with a history of mental health illness, and parents with young children. Interviews were analysed using NVIVO software.

RESULTS: The study found: 1) Participants experienced physical and mental ill health from smoke; most people found their mood deteriorated, 2) People wanted more information about health risks associated with smoke exposure, 3) Organized social connections and support were temporarily disrupted and residents relied on more proximal social supports.

CONCLUSION: The study recommendations included: 1) To expect and prepare for poorer psychosocial health 2) To provide clarification of the risk and impact of smoke, particularly for vulnerable adults and children, and how to respond 3) To better assist those who are disadvantaged and vulnerable by improving resources, social infrastructures, and communication.

SIGNIFICANCE: This study identifies ways in which understandings of risk, social connections, and government supports are crucial in community members' experience of a smoke event. Dissemination of findings can assist with appropriate policy responses to similar smoke events in the future.

Impacts of natural disasters including epidemics on end-of-life care: Findings from a systematic review

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INTRODUCTION: Natural disasters are becoming more frequent and severe, and place additional strains on end-of-life care services and users. At end-of-life, people desire to be in the presence of family/friends, pain-free, and retaining their dignity, but natural disasters can hinder their experience. Although end-of-life and palliative care are considered essential components of disaster planning and response, there are gaps in understandings about their real-life application, and how natural disasters impact end-of-life care.

AIM: To synthesise existing evidence of the impacts of natural disasters (e.g., bushfires, communicable pandemics, etc.) on end-of-life care.

METHODS: A systematic review with a narrative synthesis was undertaken. The review was registered on PROSPERO (registration: CRD42020176319). PubMed, Scopus, PsycINFO, Science Direct, and Web of Science were searched for studies published between 2003-2020, with findings explicitly mentioning end-of-life care impacts in relation to a natural disaster.

RESULTS: Thirty-six empirical studies met inclusion within the review. Findings were synthesised into three key themes: impacts on service provision, impacts on service providers, and impacts on service users. This review demonstrates that natural disasters impact profoundly on end-of-life care, representing a stark departure from a palliative care approach.

CONCLUSION: Clinical practitioners, policy makers and researchers must continue to collaborate for viable solutions to achieve universal access to compassionate and respectful end-of-life care, during natural disasters.

SIGNIFICANCE: Using models, policies, and practices, already developed in palliative care, involving those most impacted in disaster planning, and anticipating barriers, such as resource shortages, enables development of end-of-life care policies and practices that can be rapidly implemented during natural disasters.

Barriers and enablers to implementing hospital-acquired urinary tract infection prevention strategies: A qualitative study using the Theoretical Domains Framework

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INTRODUCTION: Implementation of evidence-based hospital-acquired urinary tract infection (UTI) prevention strategies remains a challenge in hospitals. To date, little is known about factors affecting implementation of hospital-acquired UTI prevention strategies in the high-risk subacute care setting.

AIM: To identify the perceived barriers and enablers of clinicians to implementing hospital-acquired UTI prevention strategies in an Australian subacute hospital.

METHODS: Qualitative semi-structured interviews, underpinned by the Theoretical Domains Framework (TDF), were conducted with purposively selected nurses (n=8) and doctors (n=2) at one sub-acute metropolitan hospital. Interview data were content analysed using the TDF as the coding framework.

RESULTS: Eight TDF domains were identified as important in understanding barriers and enablers to implementing hospital-acquired UTI prevention strategies: Knowledge, Skills, Beliefs about capabilities, Emotion, Professional role and identity, Environmental context and resources, Goals and Behavioural regulation. Barriers were poor awareness of clinical practice guidelines for hospital-acquired UTI prevention; lack of training; staff shortages; lack of procedural equipment for urinary catheterisation; difficulty with implementing prevention strategies in cognitively impaired patients; language barriers; and lack of feedback and use of incident reporting data to influence clinical practice. Presence of a proactive staff culture and positive team approach to work emerged as enablers. Audit and feedback, clinical champions and patient information resources in languages other than English were identified as potential enablers.

CONCLUSIONS: These TDF domains serve as potential target areas in the development of effective behaviour change interventions for hospital-acquired UTI prevention in the subacute setting.

SIGNIFICANCE: This knowledge will facilitate clinician uptake and adherence to hospital-acquired UTI prevention strategies, thereby translating to optimal patient outcomes.

The impact of uro-oncology multidisciplinary team meetings on patient outcomes and patient engagement in the process

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BACKGROUND: Cancer multidisciplinary team (MDT) meetings are mainstay management globally. Evidence has identified that within the specialty of uro-oncology not all patients are reviewed by MDTs despite clinical practice guideline recommendations.

AIM: To understand the impact of uro-oncology MDT meetings on patient outcomes and to identify the barriers and facilitators to patient engagement in the MDT process.

METHODS: A rapid systematic review was reported according to PRISMA guidelines. Electronic databases (MEDLINE, CINAHL and PsychINFO) were searched in EBSCOhost from 2010 to 2021. All qualitative and quantitative studies were included according to a pre-defined eligibility criterion. Data extraction and quality assessment was undertaken. The findings were tabulated and a narrative synthesis undertaken.

FINDINGS: 373 articles were screened and seven studies were included. The studies were conducted in a range of countries, providing an overview of uro-oncology MDTs in different healthcare contexts. In the Australian setting, only a third of all patients newly diagnosed with genitourinary cancers are discussed by the MDT, and of those individuals who are discussed the initial management plans changed in 40.7% of cases. The following themes emerged: 1) MDT and clinical outcomes, 2) structure and format, 3) patient engagement in the process, and 4) barriers and facilitators.

CONCLUSION: Further research is needed to understand how MDT clinicians are a barrier to patient engagement and the decision-making processes as to why some genitourinary cancer patients are referred, and others are not.

SIGNIFICANCE: Uro-oncology MDTs are an emerging area. There are a limited number of studies that have examined the impact of uro-oncology MDTs on patient outcomes and engagement.

Identifying the unmet supportive care needs of people affected by kidney cancer: A systematic review

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INTRODUCTION: Kidney cancer is the 14th most common diagnosed cancer worldwide. People affected by kidney cancer can experience various unmet supportive care needs in routine service delivery. It is timely to take stock of the existing evidence to provide valuable insights for future directions for research, policy and practice.

AIMS: To synthesise existing evidence on the unmet supportive care needs of people affected by kidney cancer, across the cancer care continuum.

METHODS: A rapid systematic review was conducted according to the PRISMA Statement Guidelines. Electronic databases were searched using key search terms. Articles were assessed according to pre-specified eligibility criteria. Data extraction and quality appraisal was conducted. The findings were integrated in a narrative synthesis.

RESULTS: 1063 publication were screened and 17 publications met the inclusion criteria. People affected by kidney cancer reported the following domains of unmet needs in order of frequency: psychological/emotional needs (16/17:94%), physical needs (10/17:59%), social needs (4/17:24%), interpersonal/intimacy needs (4/17:24%), patient-clinician communication needs (3/17:18%), family related needs (3/17:18%), health system/information needs (3/17:18%), spiritual needs (3/17: 18%), daily living needs (2/17:12%), practical needs (1/17:6%) and cognitive needs (1/17:6%).

CONCLUSION: There was a wide range of unmet supportive care needs experienced by people affected by kidney cancer. A prominent focus was on psychological and physical needs. Further research is needed to understand how clinical (stage/treatment) and demographic (age/socio-economic/ethnicity) variables may moderate or mediate the relationship with unmet needs over time.

SIGNIFICANCE: This review provides a starting place to inform future work to address the complex unmet supportive care needs of people living with kidney cancer.

Have we forgotten the wellbeing of nurses and midwives? Reviewing staff rostering guidelines in the Australian public healthcare setting

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INTRODUCTION: To respond to the increasing demand for healthcare, focus has been directed towards strengthening rostering practices for nurses and midwives. However, a consideration of the wellbeing of staff members is largely ignored. As a result, high levels of workplace stress, burnout, and a desire to leave the profession are commonly experienced. With Australia's public healthcare system already facing significant service demand pressure, a deficit such as this is clearly worrisome.

AIM: This review aims to examine the current staff rostering guidelines in Australia and to identify the best practice for the rostering of nurses and midwives in the public healthcare setting.

METHODS: A scoping review of the literature was used to explore the current approaches taken for staff rostering. Such investigations focused on identifying innovation to support a work/life balance for nurses and midwives.

RESULTS: Three primary approaches to staff rostering were identified: mandated staff to patient ratios, flexible rostering systems, and self-rostering systems. These approaches had varying levels of staff involvement in decision-making and flexibility. It was found that staff frequently report a lack of flexibility, autonomy, and inadequate staffing in rosters. This was found to directly impact the provision of quality patient care- a consequence that imposes detrimental effects.

CONCLUSION: This highlighted that developing a universal rostering system for nurses and midwives is not feasible. However, the lacuna in action focused towards achieving a balance between equitable staff rostering and quality patient care is concerning.

SIGNIFICANCE: This research demonstrates that significant innovation is urgently needed to strengthen rostering practices and support the wellbeing of nurses and midwives.

Research evidence informed generalist palliative care content within undergraduate nursing curriculum: An integrative review

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BACKGROUND: Due to shifting global demographics tertiary education providers are required to produce graduate nurses who can deliver safe and effective generalist palliative care at the point of registration. However, research evidence indicates that undergraduate nursing students report feeling inadequately prepared to provide optimal care for individuals at the end of life in practice.

AIM/QUESTION: Within undergraduate nursing curriculum what research evidence exists on generalist palliative care content? Within undergraduate nursing curriculum what topics are taught within generalist palliative care content?

METHOD: In accordance with PRISMA guidelines a systematic integrative literature review was conducted. A range of key words were searched in CINAHL, Medline, APA PsycINFO, SCOPUS, Cochrane Library and ProQuest Nursing & Allied Health databases from January 2000 to October 2020, and articles screened according to a pre-determined eligibility criteria. Quality assessment, data extraction and a narrative synthesis were undertaken.

RESULTS: Of the 845, 10 studies met the inclusion criteria (n=1 mixed method, n=9 qualitative) with the majority being published from the USA. Minimal high quality primary research exists within the area. The most frequently taught topics in generalist palliative care content for the undergraduate nursing students were communication, pain, symptom management, grief and bereavement care.

CONCLUSION: This review contributes by informing educational providers and clinicians on the lack of high quality research which exists to inform generalist palliative care curriculum content for the undergraduate nurses. More research evidence on generalist palliative care curriculum content is needed to inform undergraduate nursing education.

IMPLICATIONS: There exists a lack of primary research to inform undergraduate nursing generalist palliative care curriculum content.

Holistic care needs of the imminently dying: A systematic review

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INTRODUCTION: Perceptions exist that unconscious patients do not experience pain and suffering. The conscious state of the dying deteriorates as death approaches. This results in a reduced ability to communicate distressing symptoms, which may go unrecognised and untreated. Dignity in dying, and freedom from pain and suffering, are however, human right imperatives.

AIM: To systematically determine the changing conscious state of imminently dying adults, and to identify changes in their care needs over time to death. What is the conscious state of dying adults prior to death and does it change over time? Do the care needs of the dying adult alter depending on their conscious state?

METHODS: An integrative review protocol was registered with PROSPERO (CRD42020160475). Six databases were searched from inception. Inclusion and exclusion criteria were applied. Quality appraisal was conducted.

RESULTS: Six qualitative themes were identified in the literature and synthesised using narrative approach, confirming that the physical and conscious state of the dying declines in the last days of life. The unresponsive dying patient may however have a level of awareness but be voiceless due to the dying process. This can result in an inability to express their care needs. High levels of opioid administration were reported despite the dying patient's ability to report symptoms. Indications of holistic assessment could not be identified.

CONCLUSION: This systematic review challenges perceptions about dying patients and their experience of pain and suffering due to their reduced conscious state.

SIGNIFICANCE: To meet the basic human rights of the dying, further research into their care needs is urgently required.

Improving resident-focused documentation and saving nurse time: Mixed methods evaluation of a digital system in residential aged care

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INTRODUCTION: Health information systems offer an opportunity to contemporaneously record care delivery, streamline documentation, and provide clinicians with access to point-of-care evidence-informed decision-making to optimise holistic person-centred care. However, many systems have not been evaluated. The aim of this study was to evaluate the deployment of Humanetix 'ACE' documentation and decision-support technology system into a residential aged care facility in relation to work efficiency and quality of care.

METHODS: A three-stage, participatory action research design, used concurrent mixed methods to collect data at three time-points over two-years. Data were collected from 65 residents/visitors, 90 staff, 7 managers/consultants and administrative databases. These included 130 pedometer readings; 59 surveys; 47 hallway interviews; 133 hours of time and motion observations; 65 documentation diaries; 27 focus group participants; 38 documentation audits on 19 resident records and 739 incident reports.

RESULTS: Acceptability of the ACE system was demonstrated by high usability and satisfaction scores from staff and residents. Improved work efficiency post-ACE implementation was demonstrated by time saved on searching for information, with a mean 20% of nurse time saved following implementation of ACE. Qualitative data indicated staff felt able to spend more time with residents; more able to respond to resident needs; and better equipped to manage the 'delicacies of resident dignity' when using the ACE system. Quality of documentation improved, with completed resident assessments increasing from 68% to 96%.

CONCLUSIONS: New technologies are integral to aged care and contribute to the provision of quality care. Implementation of ACE was associated with high user acceptability, improved work efficiencies and enhanced quality of resident care.

Reducing Nasal Pressure Injuries: Improving outcomes for high risk neonates!

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BACKGROUND: Neonates requiring Non-InVasive respiratory Support (NIVS) are at high risk of Nasal Pressure Injuries (NPI), with incidence rates of 20-60% in extremely premature infants. Over a four-year period, our team undertook a Quality Improvement Project to review aspects of the clinical management of NIVS: types of interface, introduction of Hydrocolloid dressing and the development and implementation of Nasal Injury Care Plan (NICP).

AIM: To evaluate the impact of NICP on incidence and severity of NPI.

METHOD: A prospective descriptive study was completed in two stages: pre NIPC (2016-2018), post NICP (2018-2020). All neonates <32 weeks or requiring >4 hours of nCPAP were included. Data included: Gestational Age (GA), Birth Weight (BW), NIVS days, incidence, grade and day of NPI. Statistical analysis of Incidence Rate Ratio (IRR) was completed between pre and post groups.

RESULTS: Total NPI recorded were [59/659(9.0%), 26/574(4.5%), IRR=0.5, p=0.0032 respectively]. Analysis showed NPI incidence rates per 1000 NIVS days [(10.6, 5.5) IRR=0.52, p= 0.0001 respectively]. 75(88%) of NPI occurred in the ≤ 32-week group of neonates requiring NIVS. The incidence of stage 1 NPI was [40(67%), 21(80%) respectively]. Pre NICP 5(8.5%) stage 3 injuries were recorded, with none post NICP, additionally 82(96%) of NPI occurred within 7 days of commencing NIVS.

CONCLUSIONS: Implementing the NICP has increased staff awareness and standardised care in extremely premature neonates at risk or that acquire a NPI.

SIGNIFICANCE: The incidence of NPI and consequences such as long-term nasal deformities are often understated. This study is the first to report new evidence that has shown the positive impact of implementing a NICP.

Trends in hospitalisation for common paediatric infections

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INTRODUCTION: Respiratory tract infections (RTIs) and acute gastroenteritis (AGE) significantly impact health service use among children, however recent trends in hospital admission rates are not well documented.

AIMS: Our aims were to describe admission rates for RTI and AGE among children in the Australian Capital Territory over a 10-year period and their associated length of stay (LOS), monetary costs and chronic conditions.

METHODS: Retrospective review of hospital admissions data for ACT residents aged 0-16 years admitted with a primary diagnosis commensurate with RTI or AGE.

RESULTS: Between 2009 and 2018, there were 8,668 admissions. Admission rates rose from 9.2/1000 age-adjusted population in 2009 to 10.5/1000 in 2018. LOS reduced by 10 hours (1 day 19 hours to 1 day 9 hours)(p≤0.001). The median cost per admission was AUD$3,158 (AUD$148 to AUD$175,271). 16.4% of children had a chronic condition, associated with longer LOS (p≤0.001) and higher episode costs (p≤0.001). Median age at admission was 1 year 5 months. Infants were admitted three times as often as older children and admissions for Lower RTI were more common than for Upper RTI or AGE (p≤0.001).

CONCLUSIONS: Pediatric hospital admission rates for RTI in the ACT are increasing and LOS is decreasing. Admissions for AGE remain low following the introduction of the rotavirus vaccine in 2007.

SIGNIFICANCE: Effective public health strategies are needed to reduce the burden of pediatric RTI. Investigation into the drivers of increasing admission rates and decreasing LOS is warranted.

Documentation audits have an impact on the nurse's professional role and psychological wellbeing: A rapid systematic review

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BACKGROUND: Audit and feedback cycles are central to quality improvement to improve patient outcomes, cost-benefits and workflows. Nurses are frequently audited to identify gaps between current and best-practice. Little is known about the impact on nurses.

PURPOSE: To understand the impact of audit and feedback processes on the professional role and psychological wellbeing of nurses.

METHODS: A rapid systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Guidelines. Key search terms, e.g. audit, feedback, burnout, motivation, and wellbeing were searched (CINAHL, MEDLINE, PsycINFO, Google Scholar) from 2009 to March 2021. Pre-eligibility selection criteria, data extraction and quality assessment were guided by PRISMA.

RESULTS: The search revealed 717 manuscripts; five studies met inclusion criteria, underscoring that this is an emerging area. The professional role of the nurse was impacted by audit and feedback in that it informed patient safety and was an opportunity for professional development. Nurse engagement was responsive to content and delivery and aligned with perceived motivation of the audit. Nurses' wellbeing was impacted, in relation to nurses' satisfaction, retention, burnout, stress, motivation and wellbeing.

CONCLUSIONS: Audit and feedback were revealed to have an impact on the professional role of the nurse and on nurse wellbeing. Nurses were more positively engaged in quality improvement processes when the perceived function of the audit was for self-improvement, shared patient goals, and evidence-based practice, compared to when the audit and feedback processes were perceived negatively or weren't transparent.

IMPLICATIONS: The nurse experience of audit warrants further investigation in order to understand impacts on clinical care outcomes.

Evidence of alcohol-related harm in universities

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INTRODUCTION: The research tells us that young people in university settings drink more compared to their peers, hence are at higher risk of alcohol-related harms. There is limited published research describing alcohol-related harm amongst university students in Australia. The Australian Capital Territory (ACT) has a particularly high density of students. Quality data is essential to conduct research on ways to effectively address alcohol consumption and associated harms in universities.

RESEARCH QUESTION: What is the evidence of alcohol-related harm amongst university students within the ACT?

AIMS: This research aims to identify the evidence of alcohol-related harm amongst university students in Australia.

METHOD: Evidence was sought from two sources: (1) a literature review of the peer-reviewed literature describing alcohol-related harms in Australia, and (2) a review of data sources that capture alcohol-related harms in Australia in the ACT.

RESULTS: We found that alcohol-related harms are most commonly reported as physical harms and criminal and aggressive behaviours. Academic and mental health harms were reported in the literature, but there are no data sources identified that capture these for students in the ACT.

CONCLUSIONS AND SIGNIFICANCE: We propose that a more nuanced framework be used in the future to guide data collection in the ACT: (a) physical and sexual harms; (b) criminal and aggressive behaviours; (c) academic and mental harms; and (d) financial and personal harms. Establishing data collection using this framework in the ACT will enable research on the effectiveness of any future actions to address alcohol-related harms in universities in the ACT.

Pregnant women's responses to public health advice about smoke exposure during the 2019-20 bushfires in the ACT and NSW South Coast: Implications for practice

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INTRODUCTION: During the 2019-20 bushfires, ACT public health advice described pregnant women as 'vulnerable', advising them to limit their exposure to smoke. How did women understand this advice? What actions did they take to minimise harms? What are the implications for public health practice?

AIMS/ QUESTION: We interviewed 23 mothers living in Canberra or the NSW South Coast about their experiences of being pregnant, giving birth and/or parenting a new-born baby. Participants described their understanding of the risks of smoke, the steps they took to avoid smoke exposure and the effects of these precautions on daily life.

METHODS: Participants were recruited via the MC2020 study or by word of mouth. Interviews were conducted face-to-face or via Zoom, and were approved by the ACT Health and ANU Ethics Committees. Interviews were audio-recorded, transcribed verbatim and coded by team members.

RESULTS: Participants reported significant lack of clarity about the risks of bushfire smoke to themselves and their foetuses. Some supplemented public health information by engaging with air-quality monitoring data and additional scientific and health information. Participants made divergent decisions about avoiding smoke: some stayed inside, hovering over air purifiers; others continued to exercise outside.

CONCLUSIONS: The Sociology of Health and Reproduction has had little to say about pregnant women's experiences during bushfires. Our study provides empirical evidence about the complex ways pregnant women receive public health advice concerning the risks of smoke and the health-related actions they take during bushfire events. We demonstrate that women want place-specific and time-sensitive advice about how to mitigate the risks of smoke exposure in pregnancy.

Patients' perspectives towards the services of general practice pharmacists in the Australian Capital Territory

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INTRODUCTION: In 2016, general practice pharmacist-led services were first established in the Australian Capital Territory (ACT). However, there is a paucity of research to explore patients' perspectives towards the pharmacist-led services in general practices.

AIM: This study aimed to assess the awareness, perceived need, and satisfaction of patients towards the general practice pharmacist-led services in the ACT.

METHODS: Pharmacists were included into 6 general practices in the ACT to provide non-dispensing services. A cross-sectional survey-based study was conducted for patients who visited these general practices. This survey was informed by the literature, had undergone face validation and was pre-tested. It contains 3 sections comprising demographic information, awareness and perceived need, and satisfaction of patients towards the general practice pharmacist-led services. Respondents were asked to indicate the extent of their agreement or disagreement to statements in a 0 to 10 Likert scale.

RESULTS: Out of 300 surveys distributed, 100 responses were received. Almost 70% of respondents were aware of pharmacist-led services in general practices; however, 46% reported that they utilised these services. Over 90% of patients who visited general practice pharmacists reported that they were highly satisfied towards pharmacist-led services. Most patients (84%) rated that the consultation with the pharmacist was productive and they would recommend pharmacist services to other patients.

CONCLUSION: Patients' satisfaction with pharmacist-led services in general practices was high. Patients found that the services are convenient, comfortable, and professional. Patients supported the expansion of pharmacist-led services in general practices.

SIGNIFICANCE: The findings of this study provide an insight to improve the general practice pharmacist-led services in the ACT.

A standardised enhance recovery after surgery care pathway decreases length of stay in patients undergoing hysterectomy

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INTRODUCTION: Hysterectomy is a common operation and requires significant hospital resources, with some women developing complications. Standardised, multidisciplinary Enhanced Recovery After Surgery (ERAS) care pathways are known to reduce hospital length of stay and patient complications.

AIMS. The primary aim was to reduce the difference between actual and predicted hospital length of stay for adult patients undergoing hysterectomy Canberra Hospital. The secondary aim was to not increase 30 day readmission.

METHODS: A multidisciplinary literature review identified best-practice management of patients undergoing hysterectomy. A standardised care pathway was developed through collaboration and included changes to patient care pre-, intra-, and post-operatively, the employment of a nursing coordinator, development of a REDCap database, and continual audit. Retrospective data on patients managed for 12 months before the introduction of ERAS on February 15, 2021, was compared to patients managed after. Actual length of stay was compared to predicted length of stay from the American College of Surgeons Surgical Risk Calculator.

RESULTS: 71 patients managed prior to ERAS were compared to 28 after. The median difference between actual and predicted length of stay fell from 1.16 (sd 3.55) to 0.76 (sd 0.85) days (0.4 day reduction). 2 patients (2.8%) were readmitted prior to ERAS, and 1 (3.6%) after.

CONCLUSION: Early results following introduction of an ERAS care pathway show improvement in length of stay. The small sample size limits interpretation of 30 day readmission.

SIGNIFICANCE: The improvement in length of stay translates to improved hospital efficiency. Ongoing audit will address patient complications and pathway compliance to maintain the improvements.

Machine learning improves upon clinicians' prediction of end-stage kidney disease

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AIM: To investigate the utility of machine-learning (ML) built with the aid of large datasets in the prediction of end-stage kidney disease (ESKD)

INTRODUCTION: Chronic kidney disease progression to ESKD is associated with a marked increase in mortality and morbidity. Its progression is highly variable and difficult to predict.

METHODS: This is an observational, retrospective, single-centre study. The cohort was patients attending hospital and nephrology clinic at The Canberra Hospital from September 1996 to March 2018. Demographic data, vital signs, kidney function test, proteinuria, and serum glucose were extracted. The model was trained on the featurised time series data with XGBoost. Its performance was compared against six nephrologists.

RESULTS: A total of 12,371 patients were included, with 2,388 were found to have an adequate density (four eGFR data points in the first 2 years) for subsequent analysis. Patients were divided into 80%/20% ratio for training and testing datasets. Of 2,388 patients, 263(11%) developed ESKD in the period of observation.

ML model has superior performance than nephrologist in predicting ESKD within 2 years with 94% accuracy, 60% sensitivity, 98% specificity, 75% positive predictive value, and 95% negative predictive value.
eGFR and glucose were found to be highly contributing to the ESKD prediction performance.

CONCLUSIONS: The computational predictions had higher accuracy and precision, which indicates the potential integration into clinical workflows for decision support.

SIGNIFICANCE: A predictive model built with machine learning can aid clinicians in ESKD prognostication.

Personalised therapy in the treatment of complex autoimmunity

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INTRODUCTION: A 62-year-old male presented with recurrent minimal trauma fractures and severe hypophosphataemia associated with elevated fibroblast growth factor-23 (FGF23). This was in the context of a 10-year history of hypereosinophilic polyarthritis and granulomata poorly responsive to methotrexate, leflunomide, mepolizumab, and secukinumab. The hypophosphataemia required high doses of oral and intravenous phosphate and calcitriol.

AIMS/QUESTION: Can personalised medicine identify novel and successful treatment targets.

METHODS: The patient underwent whole exome sequencing and longitudinal immunophenotyping of peripheral lymphocytes by flow cytometry, RNA sequencing and cytometric bead array for serum cytokines.

RESULTS: Flow cytometric analysis identified inversion of normal peripheral CD4+:CD8+ ratios, and a hyperactive T cell pattern with reduced naïve T cells with commensurate increases in activated and effector memory T cell subsets. Exome sequencing identified a novel genetic variant in the IL-2 inducible T-cell kinase (ITK) gene. This variant constitutively localised to the plasma membrane and resulted in increased nuclear factor for activated T cells (NFAT) expression.

Targeting NFAT with tacrolimus resulted in complete remission of autoimmunity and renal phosphate wasting with 3 years follow-up.

CONCLUSION: Immunophenotyping and exome sequencing can identify putative novel pathways of disease and targeting these pathways can have profound clinical benefits. We also identify a possible link between increased FGF23 and ITK-mediated disease.

SIGNIFICANCE: This is the first identification of human autoimmune disease mediated by ITK and provides proof of concept for the use of personalised medicine techniques in complex disease.

Efficacy and safety of head lice interventions: A systematic review and network meta-analysis of randomised clinical trials

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BACKGROUND: Despite a range of head lice treatments, there is little evidence on comparative safety and efficacy of the interventions. This systematic review and network meta-analysis compared the efficacy and safety of head lice interventions assessed using randomised controlled trials (RCTs).

METHODS: Cochrane CENTRAL, MEDLINE, PubMed, Embase, Web of Science, and CINAHL were searched for RCTs published to date. The primary outcome was cure from head lice at 7 days and/or 14 days after treatment. Rate of adverse events was secondary outcome. A network meta-analysis was conducted using a multivariate meta-analysis comparing head lice interventions. The Cochrane risk of bias tool was used to assess risk of bias, while the Grading of Recommendations, Assessments, Developments, and Evaluation for network meta-analysis was applied to evaluate certainty of evidence.

RESULTS: Overall, 42 studies met the inclusion criteria. Neurotoxins (lindane, malathion, ivermectin and phenothrin), occlusive agents (benzyl alcohol, dimeticone, silylated polyol, isopropyl myristate), and other pesticide-free agents were superior to placebo at 7 days. On day 14, essential oils (tea tree-lavender oil), neurotoxins (permethrin, synergised pyrethrin, phenothrin, ivermectin, spinosad and malathion), occlusive agents (isopropyl myristate, dimeticone, benzyl alcohol, MOOVTM products), and mechanical intervention were effective. Most interventions were safe when compared to placebo. Risk of bias was high for most studies (76%), contributing to low certainty of evidence for most interventions. Ivermectin had high quality evidence, while permethrin, malathion and dimeticone had moderate quality evidence.

CONCLUSION: This work reveals the presence of several efficacious head lice interventions. The low certainty of evidence for most interventions highlights the clear need for further high-quality RCTs.

Increasing incidence of access block in mental health presentations in Australasia in 2020

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BACKGROUND: Mental health patients awaiting inpatient admission are disproportionately likely to experience access block, both a patient care issue and an equity issue.

AIM: To collect Australasian incidence data in 2020 at a time when the COVID-19 pandemic was having minimal effects except in Victoria.

METHODS: Binational voluntary survey of all 150 EDs accredited by the Australasian College for Emergency Medicine (ACEM). Participating EDs reported data for the 7 days from 19 Oct 2020. Access Block was defined as a total ED time of more than 8 hours in an admitted patient.

RESULTS: 59 EDs provided full data comprising 69657 presentations and 15889 admissions (22.8%, 95%CI 22.5-23.1). 3508 mental health presentations (5.0%, 95%CI 4.9-5.2) requiring 941 admissions (26.8%, 95%CI 25.4-28.3) were recorded, with a prolonged boarding rate of 47.5% (95%CI 44.3-50.8) compared to 28.6% (95%CI 27.8-29.3) for those without mental health presentations. In 24 hospitals answering both this and the 2017 survey, outside Victoria presentations rose by 3.6%, mental health presentations by 10.3%, admissions by 10.7%, mental health admissions by 23.0% and access block from 32.3% (95%CI 26.9-38.3) to 44.4% (95%CI 39.0-50.0) in mental health presentations. In Victoria there was a 26.6% decrease in presentations but an 8.0% increase in mental health presentations.

CONCLUSIONS: Access block of mental health presentations has increased over the last 3 years in Australasia by much more than the increase in admissions. The jurisdiction affected by COVID-19 saw decreased activity, but an increase in mental health presentations.

SIGNIFICANCE: Despite major government focus on the issue, access block for mental health presentations continues to worsen.

CHARM

CANBERRA HEALTH
Annual Research Meeting

DAY FOUR
ACT RESEARCH IN FOCUS
ABSTRACTS

KEYNOTE SPEAKER

Bias in clinical trials research

ASSOCIATE PROFESSOR
BARBARA MINTZES

School of Pharmacy and Charles Perkins Centre, University of Sydney

The systematic testing of drugs and other medical interventions in randomised controlled trials (RCTs) represents a 'gold standard' for evidence of the effectiveness of medical interventions. Despite this, many sources of bias exist in how research questions are framed, and in the design, conduct, reporting and interpretation of clinical trial evidence. This presentation will discuss what is known about the effects of commercial influences on the body of available research evidence on the effectiveness and safety of medicines, and what can be done to support greater independence.

3 MINUTE THESIS

The Three Minute Thesis (3MT®) competition celebrates the exciting research conducted by Doctor of Philosophy (PhD) students. Originally developed by The University of Queensland (UQ), 3MT cultivates students' academic, presentation, and research communication skills.

The competition supports their capacity to effectively explain their research in three minutes, in a language appropriate to a non-specialist audience.

The CHARM 3MT competition is a standalone event and participants do not progress to other competitions.

Stepping into the void. Climbing to a better future

TANYA BUTTIKOFER

University of Canberra, Calvary Public Hospital Bruce

In Australia 94% of patients survive the intensive care unit (ICU), but are left with PTSD, mental health and physical problems, and many do not return to full time employment at 12 months. Currently in Australia, ongoing follow-up is not standard practice for ICU survivors. Studies indicate that all members of the multidisciplinary team need to be involved to optimise patient recovery. In the ACT, the needs of ICU survivors is not well understood. My PhD research aims to address this, which will give rise to the design of an ICU follow up service specific for ACT ICU survivors.

To stretch or not to stretch? A novel approach to muscle tightness

DANIEL MYYRYLAINEN

University of Canberra

Currently the only way physiotherapists can identify muscular stiffness, and the impact of clinical treatments, is through palpation. My research will investigate the exciting new technology of shear wave elastography (SWE) and how it can replace the poking and prodding guess work that is currently employed. This innovative technology will help us to better understand the effects of stretching, a commonly used treatment modality, on muscle stiffness. Such information will help to inform clinical treatments and injury prevention programs. Utilising current technological advancements, like SWE, we can bring physiotherapy clinical diagnosis and treatment into the 21st century.

We didn't start the fire – Burnout, psychosocial and work related impacts of the global COVID-19 pandemic on Australian Pharmacists

KARLEE JOHNSTON

The Australian National University

We didn't start the fire, we didn't light it but we tried to fight it- and we got burned! COVID-19 has had irreversible effects on Australia. Pharmacists have remained accessible to patients and have endured some significant changes personally and professionally. Like many others, pharmacists have found this time particularly challenging. My PhD aims to measure burnout in Australian pharmacists during COVID-19 and to understand and share the experiences of these frontline workers. The results can provide insight into solutions and interventions that could be instituted to support not only pharmacists but other healthcare professionals through emergencies, disasters, and pandemics.

Developing a new immune-induced mouse model of Parkinson's disease

REBEKAH PARKINSON

The Australian National University

There is increasing evidence that Parkinson's disease is an autoimmune disorder. However, the precise immune mediated pathophysiology remains unknown. Theories primarily suggest that aggregated forms of α-synuclein proteins are recognised by the immune system as foreign, causing dopaminergic brain cells to be attacked. We propose the first ever immunological model of Parkinson's disease whereby an immune response against α-synuclein triggers dopaminergic cell neurodegeneration, leading to Parkinsonian motor symptoms. This model may potentially account for the 80% of idiopathic cases of Parkinson's disease, opening up avenues for alternative preventive and therapeutic interventions.

Make autoimmunity a memory, not a disease

CYNTHIA TURNBULL

The Australian National University

Autoimmunity occurs when the immune system targets the body's healthy cells, leading to diseases including diabetes and SLE. These diseases are very difficult to treat with many patients on rotations of non-specific drugs, which can be ineffective and have damaging side effects. By examining the DNA of patients with severe forms of disease, we are learning about the key protein-pathways responsible for autoimmunity and have identified a protein pair which regulates disease-causing immune cells. We hope that this research will change how patients are diagnosed and treated, so that one day autoimmunity will be a memory and not a disease.

Children with long-term conditions and their experiences of nursing

MACEY BARRATT

University of Canberra

Children with long-term conditions are more likely to have hospital admissions and undergo medical treatment compared to children with acute issues. Partnering with these children and their families is a fundamental aspect of paediatric nursing. It ensures that the triad relationship that exists between the nurse, child and parent provides safe and effective care for the patient. A systematic review of international literature that analysed the experiences of children with long-term conditions revealed that they are aware of their health care needs and crave a 'seat at a table' when it comes to decision making surrounding their health.

Predictive model for satisfaction after total knee replacement

YUYAO MA

University of Canberra

Total knee replacement is a common surgical procedure treating knee arthritis. However, 15-20% of patients remain unsatisfied with their surgeries. Unfortunately, there are currently no guidelines indicating eligibility nor the optimal timepoint for surgery. The decision is made mainly by experience and intuition. Therefore, a prediction model is constructed based on data from 48 patients, aiming to calculate the likelihood of satisfaction from important pre-operative profiles, which can minimize risks and optimise outcomes. The model will also have the potential to grow into a powerful machine-learning program in the future that can automatically correct the model based on real-time data.

Investigating factors that affect athlete attrition on the high performance pathway: A complex systems approach

SARA GUEVARA

University of Canberra

Talent identification and athlete attrition literature calls for a complex systems approach to help navigate the high performance pathway. The high-performance pathway is multidimensional with a combination of environmental, psychosocial and physiological factors. Negative factors can test an athlete's ability to adapt and question their willingness to remain in high performance sport. Most literature has focused on intrapersonal and interpersonal factors in successful senior elite athletes. Limited literature exists investigating environmental or broader societal factors in this population. A complex systems approach has been proposed to investigate the multilevel, contextual and socioecological nature of athletes on the high performance pathway.

No half measures: It takes two to tango

SUNDUS NIZAMANI

University of Canberra

To date, most of the responsibility has been borne by mothers – in terms of healthy lifestyle prior to conception. However, there is good evidence that the metabolic health of fathers also has an impact on child metabolic health (via epigenetic effects). We believe it timely to involve fathers more directly in the process towards healthy conception.

Feasibility and Acceptability of Inspiratory Muscle Training in Parkinson's Disease

ABBIE DOHERTY

University of Canberra

Parkinson's disease is the fastest growing neurological condition worldwide. There is increasing understanding of the non-motor symptoms of Parkinson's – one of which is shortness of breath. We know inspiratory muscle training is effective for shortness of breath in other populations, so will it be effective for Parkinson's? When researching interventions, it is important to establish firstly whether the intervention is feasible, but more importantly whether it is acceptable to the people we prescribe it to. Particularly if we consider ourselves patient-centred practitioners. As such, our research is looking at feasibility and acceptability of inspiratory muscle training for people with Parkinson's.

ORAL PRESENTATIONS

Effect of inspiratory muscle training on the recovery of ventilator-dependent ICU patients: A randomised controlled trial

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INTRODUCTION: Intensive care unit (ICU) patients who require invasive mechanical ventilation often develop breathing muscle weakness. This weakness hampers ventilator-weaning and results in breathlessness (dyspnoea). Inspiratory muscle training could improve breathing muscle strength and quality of life for these patients.

AIM: To determine whether physiotherapist-supervised high-intensity inspiratory muscle training, with a mechanical threshold device, improves outcomes for ventilator-dependent ICU patients.

METHOD: Randomised single-centre trial with concealed allocation, assessor-blinding and intention-to-treat analysis. 70 participants (mechanically ventilated ≥7 days) were randomised to receive once-daily high-intensity inspiratory muscle training or usual care (control). Primary outcomes were inspiratory muscle strength (maximum inspiratory pressure % predicted), and quality of life (SF-36v2, EQ-5D). Secondary outcomes included dyspnoea(dyspnoea (Borg), duration of ventilation and in-hospital mortality.

RESULTS: There were no statistically significant between-group differences in strength (MIP)(95% CI -7.4 to 14.0). Quality of life improved significantly more in the training group than control (EQ5D 17.2; 95% CI 1.3-33.0) (SF36-PCS 6.97; 96%CI 1.96-12.00). Only the training group demonstrated statistically significant reductions in dyspnoea (-1.5 at rest, -1.9 during exercise). There were no between-group differences in duration of ventilation or other measures. In-hospital mortality was higher in the control group than the training group (9 vs 4, 24% vs 12%, p=0.23).

CONCLUSIONS: In ventilator-dependent patients, inspiratory muscle training improves quality of life and dyspnoea, even in the absence of strength improvements or acceleration of ventilator liberation.

SIGNIFICANCE:

• Inspiratory muscle training improves quality of life for ICU patients even in the absence of strength improvements.
• ICU patients may benefit from reduced dyspnoea if they commence inspiratory muscle training while ventilator-dependent.

Long-term psychological burden in families of Australian intensive care survivors

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INTRODUCTION: There are little published Australian data on the long-term psychological outcomes in families of intensive care unit (ICU) survivors.

AIMS: The aims of this study were to describe the long-term psychological outcomes of family members of Australian ICU survivors.

METHODS: Prospective, multicentre observational cohort study across four intensive care units in Australia, with a 12-month follow up. The primary aim of the study was to determine the prevalence of affective psychological symptoms and Health Related Quality of Life (HRQoL) at 12-months, using validated screening tools. The secondary aim was to compare the families of the intubated and the non-intubated groups of survivors.

RESULTS: Overall, 113 family members of ICU survivors were included in the final analysis, majority (two-thirds) of which were female and over half were partners or spouses. Post-Traumatic Stress Disorder (PTSD) symptoms were evident in 25% at 12-month follow-up, which were higher than published general population norms for Australia. Moderate or worse symptoms of depression (10%), anxiety (7%) and stress (7%) were seen in a reasonable subset of family members at 12-month follow-up. There was no difference in prevalence of affective symptoms between family members of either groups. Few family members had any issues with their self-rated HRQoL.

CONCLUSIONS: At 12-months, a significant proportion of family members of Australian ICU survivors screened positive for symptoms of psychological disorders.

SIGNIFICANCE: More research is needed into the long-term psychological effect of an intensive care stay on family members. In the meanwhile, families of ICU patients should be offered psychological support.

Evaluating optimal care pathway compliance for patients with high-grade glioma

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BACKGROUND: Optimal Care Pathways (OCPs) are a set of national cancer care guidelines commissioned by the Victorian Department of Health. To evaluate its compliance at Canberra Health Services (CHS), the current approach to patients' care with high-grade glioma was assessed against the relevant pathway.

AIMS: To evaluate the extent to which high-grade glioma care at CHS conforms to OCP recommendations.

METHODS: A retrospective clinical audit was conducted of all patients (n=44) with a high-grade glioma diagnosed between August 2019 to December 2020 at CHS. Patients were identified from oncology databases, and records manually reviewed for data collection and analysis. Audit criteria were determined based on optimal timeframes indicated in the OCP. Patients were excluded from analysis when there were no records present, or if criteria were deemed inapplicable.

RESULTS: All patients (37/37) commenced treatment within the recommended 6-weeks of diagnosis. Sixty-three percent (25/40) had a tissue sample obtained within 1-week of referral. Histopathological diagnosis was discussed with 57% of the patients within 1-week of neurosurgical intervention (24/42). Percentage of patients discussed at the fortnightly multidisciplinary team meeting (MDM) was 45% (19/42). The remaining 55% of patients (23/42) still received multidisciplinary input in clinic/ward setting(s) to expedite their care.

CONCLUSION: The timeframe for treatment initiation complied with the OCP. Targets identified for improvement included timeframes for obtaining a tissue sample, discussion of diagnosis, and aiming towards MDM discussion for all patients.

SIGNIFICANCE: This audit captures the current pattern of care for patients with high-grade glioma at CHS and compares it with the OCP.

Impact of NICU/SCN visiting restrictions during COVID-19 on parental stress and discharge confidence

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BACKGROUND: Despite being no cases of COVID-19 in babies or their families in the Canberra NICU/SCN, visiting guidelines were changed to maintain the health and safety of staff, neonates, and parents. Restrictions were placed on parents' presence (one at a time) with exclusion of extended family and visitors.

AIM: Our team was interested in evaluating the effect of these restrictions on parental stress and discharge confidence.

METHOD: A prospective descriptive study utilising survey methodology was undertaken. The survey evaluated parental knowledge and understanding, parental role, communication, and parental stress (admission/discharge), in addition to evaluating COVID-19 visiting restrictions (ETH.2020.LRE.00124). Statistical and thematic analysis was completed.

RESULTS: 33 surveys were returned. Results showed visiting restrictions reduced social contact between partners 26/33(84%), with their other children 14/16(87.5%) and extended family 28/33(84.8%). Parents indicated that they had high levels of confidence in understanding their babies' medical needs (78-93%) and gaining hands-on experience caring for their baby (87-100%). However, 11/33(33%) of parents reported, concerns with discharge processes and gaining consistent information as challenges during their baby's admission. 17/33(51.5) stated their NICU/SCN experience had been very to extremely stressful. Parents openly described how the restrictions had affected their mental/emotional health identifying the need to treat parents as one unit, and a gap in the psychological support available for families.

CONCLUSIONS: Support services and methods of communication with NICU/SCN families need to be prioritised to improve consistency and minimise stress especially peri-discharge.

SIGNIFICANCE: This study provides new evidence regarding parents' perspectives and psychological impact of visiting restrictions and family disruption during a pandemic.

Identifying at-risk eyes utilising multifocal pupillographic objective perimetry in early diabetic macular oedema in type 2 diabetes

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INTRODUCTION: Diabetic Macular Oedema (DMO) is a vision-threatening condition. Earlier diagnosis, treatment and prevention of complications are key factors. Purpose. To investigate regional macular sensitivity and delay utilising multifocal pupillographic objective perimetry (mfPOP) in early DMO.

METHODS: We recruited 33 Type 2 Diabetes (T2D) patients aged 59.2 ± 10.5 years, 17 males (51.5%). Macular 8×8 OCT thickness grid data, mfPOP sensitivities and delays from the objectiveFIELD Analyzer (OFA), and Matrix perimeter data, were mapped onto a common pattern to examine trends and correlations between them. A generalised linear mixed-effects model (glme) determined which variables contributed to clinical diagnosis of DMO.

RESULTS: The mean sensitivity difference compared to normal in T2D patients was negative and the mean delay difference positive, indicating lowered sensitivities and prolonged delays, both increasing with diabetes duration. Short diabetes duration produced peripheral hypersensitivity and shorter delays. OFA and Matrix values correlated well, with hypersensitivity shifting to hyposensitivity with increasing macular thickness. Outer macular thickness correlated with inner and outer OFA sensitivity and delay, all $p<0.0012$ in DMO and a median of $p=0.001$ for diabetic eyes without DMO. This was not true for Matrix data. The glme determined that outer thickness and OFA sensitivity ($p=0.043$), male gender ($p=0.313$) and time in the study ($p=0.001$), contributed independently to the odds of a clinical diagnosis of DMO.

CONCLUSIONS: Mean sensitivities decreased, and mean delays increased with duration of diabetes. Outer macular thickness correlated significantly with inner and outer macular OFA sensitivity and delay. Inner macular thickness did not.

SIGNIFICANCE: Outer macular thickness and functional measures may provide sensitive prognostic data.

Voluntary exercise preserves retinal health in a model of photo-oxidative retinal degeneration

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INTRODUCTION: In the central nervous system, physical activity has been associated with neuronal protection against alterations leading to neurodegenerative diseases such as Parkinson's and Alzheimer's diseases, as well as retinal degenerations. However, exercise research in the retina have typically used "forced" exercise models rendering it difficult to decipher the true effects of physical activity and leading to varied results.

AIMS/QUESTION: Investigating the effects of voluntary, "non-forced" exercise against retinal degeneration.

METHODS: C57BL/6J mice were given free access to running wheels for 4 weeks. Running wheel data was tracked every hour. After 4 weeks, the animals were placed in photo-oxidative damage (PD) for 5 days to induce retinal degeneration. Retinal function was measured using electroretinogram (ERG) in vivo. Gene expression was analysed using qRT-PCR with IBA1 and TUNEL assays used for histological measures of cell death and inflammation.

RESULTS: Exercised animals had an improved retinal function as measured by ERG compared to sedentary controls following PD. The average distance run per day was positively correlated with retinal function. Exercised animals displayed a higher expression of protective microRNA (miR-124 and miR-183). Further, exercised animals displayed less photoreceptor cell death and inflammation than sedentary controls.

CONCLUSION: Voluntary exercise was found to significantly preserve retinal function and ameliorate degeneration of photoreceptors, the light sensing cells of the retina. This may be due to increased expression of protective microRNA.

SIGNIFICANCE: This is the first study to use a voluntary exercise model to demonstrate the benefits of exercise to the retina. This lays the foundation for deeper research into its physiological underpinnings which has remained inconclusive.

Reduced, reuse, recycle: Replenishing extracellular vesicles lost through degeneration-induced depletion as a novel therapy for the treatment of age-related macular degeneration

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INTRODUCTION: Maintaining and transporting necessary levels of retinal extracellular vesicles (EV) and their microRNA (miRNA) cargo is required for immune regulation and retinal homeostasis, with EV depletion correlated to pathological features of Age-related macular degeneration (AMD), the leading cause of blindness in the Western World.

AIM/QUESTION: If supplementation of healthy retinal EV and/or their miRNA cargo will restore homeostatic communication pathways and slow the progression of retinal degeneration.

METHODS: To characterize the miRNA cargo of retinal EV, small RNA-seq was performed on EV isolated from healthy and degenerating mouse retinas. Retinal EV from healthy mouse retinas, were supplemented into the degenerating retina via intravitreal injection at a concentration of 2.0x1010 EV/eye. To investigate the role of EV-miRNA in regulating tissue homeostasis, EV abundant miRNA, miR-124-3p was administered into the degenerating retina using intravitreal injection. Electroretinography and optical coherence tomography were used to measure retinal function and morphology respectively, while TUNEL and IBA-1+ immunohistochemistry were conducted on retinal cryosections to measure cell death and inflammation.

RESULTS: The top ten EV-miRNA made up ~67% of the total retinal miRNA concentration, and were identified to control inflammatory and cell survival pathways known to be heavily involved in AMD pathogenesis. Compared to controls, mice injected intravitreally with retinal EV or miR-124-3p were shown to have significantly higher retinal function, reduced inflammation and decreased photoreceptor cell death ($P<0.05$).

CONCLUSION: Supplementation of healthy retinal EV or highly abundant EV-miRNA, miR-124-3p reduces the pathological features of degeneration.

SIGNIFICANCE: These results support the use of EV-based therapies to restore homeostatic communication pathways and slow the progression of AMD.

Developing a new immune-induced mouse model of Parkinson's disease

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INTRODUCTION/AIM/QUESTION: There is increasing evidence that Parkinson's disease is an autoimmune disorder. However, the precise immune mediated pathophysiology remains unknown. Theories primarily suggest that aggregated forms of α-synuclein proteins are recognised by the immune system as foreign, causing dopaminergic brain cells to be attacked. Therefore, we aimed to develop the first immunological model of Parkinson's disease whereby an immune response against α-synuclein triggers dopaminergic cell neurodegeneration, leading to Parkinsonian motor symptoms.

METHODS: Adapting the established experimental autoimmune encephalomyelitis model, α-synuclein in adjuvant is peripherally administered into healthy mice. Over 40 weeks, immune responses were monitored by blood phenotyping alongside studies of motor symptoms via a battery of behavioural tests and cellular deficits by histological analysis of brain regions altered in Parkinson's disease, including the substantia nigra and striatum.

RESULTS: In the initial weeks we were able to see evidence of autoimmunity to α-synuclein based on enhanced circulating counts of specific immune cells, such as monocytes and T cells. Additionally, α-synuclein-immunised mice displayed subtle motor deficits in the strength and gait kinematics of the forelimbs; as well as an increase of inflammation-activated cells, i.e. astrocytes; and significant decrease of dopaminergic cell density within the substantia nigra.

CONCLUSION: Our findings indicate that an auto-immune response to α-synuclein leads to Parkinson-like motor symptoms, inflammation and neurodegenerative alterations within the brain.

SIGNIFICANCE: The data obtained provides the basis for a new mouse model of Parkinson's disease, for the first time based on immunological responses. This model may potentially account for idiopathic cases of the disease, opening up avenues for alternative preventive and therapeutic interventions.

A human novel mutation explains the pathogenic mechanism of psoriatic arthritis

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INTRODUCTION: Psoriasis (Ps) and acne inversa (AI) are part of a group of inflammatory skin disorders characterized by increased IL-17 production. Both diseases can be complicated by arthritis, particularly psoriatic arthritis (PsA). Recently, we discovered a novel human monogenic immune dysregulation disease caused by a gain-of-function mutation in IKBKB that leads to increased NF-κB activation and IL-17 production, and AI.

AIMS/QUESTION: To investigate how NF-κB regulates pathogenesis of these inflammatory disorders, our study used a CRISPR/cas9 bespoke mouse model engineered to carry the orthologous mutation.

METHODS: We monitored mutant mice for development of skin and joint inflammation that mimics human condition. Cells from spleen, lymph nodes, and skin of affected areas were used for flow cytometry analysis to investigate cellular mechanisms of disease.

RESULTS: IkbkbV203I heterozygous mice developed patchy inflammation of skin and hair follicles. Remarkably, homozygous mice yielded an accurate model of florid psoriatic arthritis, with dactylitis, axial arthritis, enthesitis, and skin inflammation. Mutant mice exhibited cell-intrinsic expansion and enhanced activation of regulatory T (Treg) cells. Mice nevertheless develop inflammatory disease because their conventional T cells (Tconv) are resistant to suppression by both mutant and wild-type Tregs. Further studies are underway to understand how this drives IL-17-mediated inflammation.

CONCLUSION: IkbkbV203I results in a novel and accurate model of PsA. Gene dose determines whether mice develop systemic disease or just dermatitis. Cellular abnormalities include Treg expansion and Tconv activation, which are refractory to suppression.

SIGNIFICANCE: Our findings have contributed to the understanding of the pathogenesis of PsA. Furthermore, study will yield biomarkers to better diagnose and treat patients with disease.

Primary immune deficiency conferred by NFKB2 mutation

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INTRODUCTION: Human NFKB2 mutations cause a rare disease characterised by immune deficiency and autoimmunity. The severity of immune deficiency varies between patients. NFKB2 encodes the protein p100, which is a precursor of the NF-κB transcription factor p52. p100 can also inhibit NF-κB signalling.

AIM: We set out to determine how genetic variation in NFKB2 causes variable immune deficiency.

METHODS: We used CRISPR-Cas9 to generate an Nfkb2 allelic series of mice including truncating and missense mutations in p100. Our allelic series includes a mouse model carrying the orthologous mutation to our index patient. We used biochemical analyses to measure changes in p100/p52 abundance and used flow cytometry to track B cell ontogeny throughout different stages.

RESULTS: We identified B cell developmental arrest in all Nfkb2 mutant mice. Mice lacking p100 and p52 develop B cell deficiency in bone marrow B cell precursors, whereas mice with increased p100/p52 ratio develop B cell deficiency at the splenic T1 stage. Remarkably, Nfkb2 mutations result in a reduction in BAFF receptor expression.

CONCLUSION: Accumulation of p100 results in T1 B cell arrest via potent inhibition of NF-κB signalling and reduced BAFF-R expression. Our findings reveal a cybernetic circuit involving B cell receptor and BAFF-R that accounts for B cell homeostasis at the transitional stage of ontogeny.

SIGNIFICANCE: We have used a unique animal model to dissect the role of p100 at different stages of B cell development. The findings are directly relevant to humans with NFKB2 mutations and are also of relevance to therapeutic approaches in which reducing B cell numbers is a treatment goal.

A syndrome of Hirschsprung disease (HSCR) and mental retardation (MR) localised to distal chromosome 4q

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INTRODUCTION: Hirschsprung disease is a polygenic condition with a strong familial component and a known association to several MR syndromes.

AIM: The authors report three new MR – HSCR cases associated with chromosome 4.

METHODS: A short case series and literature review.

Results: BS and DS are brothers with short segment HSCR and severe MR including epilepsy and autism features. Two older uncles (now deceased) may have had the same condition. The family carries a small interstitial deletion on chromosome 4q31.21. JP is an unrelated male individual with short segment HSCR, MR, abnormal corpus callosum and dysmorphic features. He carries an unbalanced translocation involving a gain of 4q32 - q35.2. Whole exome sequencing has not found a recognised mutation related to HSCR in any of the three. Whole genome sequencing suggests Snyder-Robinson syndrome in BS and DS. Literature review suggests a region of interest between 4q31 and 4q32.

CONCLUSION: There have been a number of cases of HSCR linked to distal 4q including by linkage analysis. Although MR is common in these cases, it is not uniform. We propose that there is a HSCR locus at or close to 4q31, likely in a non coding region, that is necessary but not sufficient for a syndrome of HSCR and MR. Snyder-Robinson syndrome has not been previously reported with HSCR. Reported variation in phenotype is likely due to genetic background and contiguous gene effects.

SIGNIFICANCE: An as yet uncharacterised gene in 4q31 is responsible for rare cases of HSCR, and reinforces the link between enteric nervous system and central nervous system development.

CTLA4 limits cytotoxic CD4 T cells in human CTLA4 haploinsufficiency with immunodeficiency

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INTRODUCTION: Chronic antigenic stimulation drives terminal differentiation of CD8+ T cells, leading to clonal exhaustion characterised by expression of inhibitory co-receptors, such as PD-1, CTLA4 and Tim-3. Blockade of these receptors with checkpoint inhibitors to restore CD8+ T cell immunity has revolutionized cancer treatment. By contrast, terminal differentiation of CD4+ T cells remains poorly defined.

AIMS/QUESTION: We postulated that better understanding of CD4+ T cell terminal differentiation could yield insights into immune dysregulation.

METHODS: We investigated patients with primary antibody deficiency, including CTLA4 deficiency, as natural states of chronic antigenic stimulation. RNAseq is applied to comprehensively analyse terminally differentiated CD4+ T cells.

RESULTS: We observed expansion of granzyme+ CD57+ CD4+ T cells (CD4+ Tcyt) in patients with primary antibody deficiencies. CD4+ Tcyt expansion was particularly prominent in CTLA4 haploinsufficiency and was phenocopied in blood of humans and mice treated with CTLA4 antagonists. Circulating CD4+ Tcyt exhibited a comprehensive cytotoxic transcriptome similar to CD8+ T cells. Acquisition of Tcyt phenotype was marked by CD57 expression and TCF1 downregulation. CD4+ Tcyt have the capacity to kill B cells in vitro and inhibit B cell responses in vivo. This risk appears to be offset in germinal centres. Although Tfh cells are often CD57+ they express high-levels inhibitors and fail to downregulate TCF1.

CONCLUSIONS: Our study explains paradoxical immunodeficiency conferred by CTLA4 haploinsufficiency, clarifies the nature of human CD4+ T cell terminal differentiation, and reveals a new mechanism of B cell regulation.

SIGNIFICANCE: The study contributes to fundamental information about human immune regulation and provides new insights into the actions of checkpoint inhibitors.

"Twirly rats" – a new model of human neurological disease?

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INTRODUCTION: Several rodent models of hyperkinetic movement disorders exist. Three are known to the authors. Candidate genes have been identified for all three. A new syndrome of hyperactive circling behaviour has arisen in our Hirschsprung rat model. It is not linked to the Hirschsprung susceptibility gene. No genetic alteration was found in the exomes of three previously reported candidate genes in our rat model. Our model may point to a new gene responsible for movement disorders.

AIM: To describe the syndrome and exclude known candidate genes.

METHODS: The circling behaviour is described. DNA was taken from both an affected and an unaffected animal and genotyped using published sequences for changes in Myo15a, Myo7a, and Prkcg, genes found to be mutated in potential animal models for Usher syndrome (both Myo's), and Parkinson's disease respectively. Animals are routinely sequenced for the Hirschsprung associated gene in ednrb.

RESULTS: Hyperactive circling behaviour was noted to arise in our existing spotting lethal rat colony. No changes were found in the genes of interest. The condition does not segregate with the ednrb mutation.

CONCLUSION: The negative sequencing findings suggest either a previously undescribed genetic locus for hyperactive circling behaviour in the rat, or an environmental factor. Environmental factors including infections are felt to be unlikely.

SIGNIFICANCE: This new animal model is worthy of further study, and may contribute understanding to Parkinson's disease, Usher syndrome and Tourette's syndrome.

Effectiveness of activity and participation interventions for school-aged children (5-18 years) with fetal alcohol spectrum disorder: A systematic review

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INTRODUCTION: The effects of prenatal alcohol exposure on the developing brain and the impact of fetal alcohol spectrum disorder (FASD) are well known. Intervention studies for children with FASD has evolved over the past 15 years however previous reviews have not investigated participation in everyday life outcomes. Participation influences health and well-being.

AIM: To determine the types, effectiveness and outcome measures of interventions that support participation and activity in the home, school, and community for children with FASD. Additionally, to appraise the methodological quality and strength of findings of included studies.

METHOD: A narrative, descriptive synthesis is presented. The review protocol is registered with PROSPERO. Intervention studies were searched in eight medical, educational, and healthcare databases, and secondary search from reference list between 2005-2020. Studies were independently screened in Covidence by two authors. The Cochrane risk of bias tools and the AMSTAR 2 for systematic reviews were used to assess the papers. Data was extracted using a standardised form.

RESULTS: 35 studies are included. Interventions are classified using the International Classification of Functioning levels of disability coding and type of person-centred construct of the Family of Participation Related Constructs model. Preliminary results indicate commonly used outcome measures are body functions and activity levels.

CONCLUSION: This research provides a synthesis of evidence-based activity and participation intervention outcomes for children with FASD that guides occupational therapy practice towards participation focused outcomes.

SIGNIFICANCE: This is the first systematic review to explore activity and participation outcomes of interventions for children with FASD. Evidence supporting children's participation as a health intervention outcome is lacking.

Protocol for assessing indigenous patients at risk of early dementia

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Indigenous patients are exposed to all of the risk factors for early dementia, which may manifest as early as 40 years old, and currently there is no testing program or protocols for indigenous patients in remote areas. These at-risk patients do not normally have access to MRI/PET scans or biomarker testing, or even standard cognitive testing and may have multiple co-morbidities. It is proposed that a Standard Protocol be developed for MMSE screening and assessment with follow up blood biomarker testing, suitable for application in remote communities. Monitoring of this program over 12 months in Queensland, Northern Territory and North-Western Australia is proposed with a suitable budget, and evaluation to be carried out at end of 12 month period. This could have far-reaching significance in identifying dementia early in the indigenous population, and allowing commencement of assistance or treatment early in the course of dementia and reduction or slowing of symptoms.

Relational Autonomy in Clinical Research

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Society has an expectation that participants in clinical research are volunteers and that they participate in research rather than being subjects. The need to obtain consent prior to including people in clinical research is seen as a way to demonstrate respect for individuals as participants. Respect incorporates the relational aspects of mutual trust and understanding. Consent that demonstrates respect goes beyond the mere acknowledgement of the right to make decisions. Ethically meaningful consent promotes and supports participant decision-making.

This research tested a relational view of autonomy to establish if this perspective could, or should, be adopted as part of the human research ethics guidance and human research ethics review processes for clinical research in Australia.

This research took the theoretical model of relational autonomy and applied it to the practical consideration of the ethical conduct of clinical research. The components of consent were examined through a relational lens and the impacts of a relational perspective of autonomy was discussed in a series of focus groups consisting of Human Research Ethics Committee (HREC) members to establish its credibility as part of the ethical decision-making framework.

A relational approach to consent in clinical research was seen by HREC members to support and promote participant self-governance. This research demonstrated that the application of a relational approach to consent for clinical research can create opportunities to promote greater respect for autonomy through supporting trust and understanding between researchers and participants.
Implementation of these findings has the potential to improve the ethical foundation of clinical research.

HARC - Update on accomplishments, position papers on data access and collaboration, and modes of engagement including upcoming forums and the ways HARC supports research in the ACT

Health Analytics Research Collaborative (HARC), as a collaboration between ACT Health Directorate, Canberra Health Services and academic partners focused on health data science, research methods and analytics in both qualitative and quantitative areas, aims to drive high quality and efficient research and innovation, strengthen collaborations and accelerate translation of knowledge to practice and policy. During the session, HARC will provide an update on the accomplishments since 2019, present the position papers on data access and collaboration and discuss members' modes of engagement, including Special Interest Groups, upcoming Forums and ways HARC supports research in the ACT.

HARC PRESENTATION OUTLINE

HARC accomplishments and presentation of position papers and Special Interest Groups

Clinicians/researchers share their experience engaging with HARC

MS KARLEE JOHNSTON

Lecturer in Pharmacology and PhD candidate, The Australian National University

DR SUMEET RAI

Senior Staff Specialist, Canberra Health Services; Lecturer and PhD candidate, The Australian National University

Institutional engagement with HARC

MS AUGUST MARCHESI

Senior Director, Research Ethics and Governance, Centre for Health and Medical Research, ACT Health Directorate

PROF NICK BROWN

Professor of Allied Health Research, Faculty of Health, University of Canberra

REDcap support/PEAR

MR LACHLAN VIALI

REDcap architect, Centre for Health and Medical Research, ACT Health Directorate

Strategic plan

DR NIDHI MENON

Postdoctoral Biostatistician, Biological Data Science Institute, HARC, The Australian National University

HARC accomplishments and presentation of position papers and Special Interest Groups future directions: Chapters around Australia

A/PROF BRUCE SHADBOLT

Executive Branch Manager, Centre for Health and Medical Research; Research Director, HARC; College of Health and Medicine, The Australian National University

Q&A session with HARC team

CHARM

CANBERRA HEALTH
Annual Research Meeting

POSTER PRESENTATIONS

Effects of neuromuscular gait modification strategies on indicators of medial knee joint load in people with medial knee osteoarthritis: Systematic review and meta-analysis

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INTRODUCTION: Gait modification strategies are used to reduce knee joint load. However, the relative efficacy of one strategy over another has not been reported.

OBJECTIVE: To determine the effects of neuromuscular gait modifications on indicators of medial knee joint load in medial knee osteoarthritis (OA).

METHODS: Five databases were searched for studies in which adults with medial knee OA underwent gait retraining and indicators of medial knee joint load were reported. Quality-adjusted meta-analysis models were used. The certainty of the evidence was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach.

RESULTS: Seventeen studies (k=17) with 362 participants (n=362) were included. Gait modification strategies included trunk lean (k=4, n=73), toe-out (k=6, n=104), toe-in (k=5, n=89), medial knee thrust (k=3, n=61), medial weight transfer at the foot (k=1, n=10), wider steps (k=1, n=15) and, self-directed and combinations of modifications with external knee adduction moment (KAM) feedback (k=4, n=73). Trunk lean reduced early stance peak KAM (KAM1) (ES=-0.67, 95%CI=-1.01, -0.33) and KAM impulse (ES=-0.37, CI=-0.7, -0.04) immediately after single-session with moderate certainty of evidence. Toe-out reduced the late stance peak KAM (KAM2) (ES=-0.42, 95%CI=-0.73, -0.11) with moderate certainty of evidence. Toe-in reduced KAM1 (ES=-0.51, 95%CI=-0.81, -0.20) and increased KAM2 (ES=0.44, 95%CI=0.04, 0.85) with very uncertain evidence.

CONCLUSION: Trunk lean and toe-out likely reduce knee joint load in the short term. Toe-in may reduce KAM1 and increase KAM2 but the evidence is very uncertain.

SIGNIFICANCE: Trunk lean toe-out and toe-in can reduce knee joint load in the short term, however, longer-term gait studies should be considered in future studies.

Minimal clinically important change and minimal clinically important difference of outcome measurement tools in people with knee osteoarthritis: A systematic review

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INTRODUCTION: The efficacy of therapeutic interventions is often reported using statistical significance regardless of clinical importance. Minimal clinically important change and difference (MCIC and MCID) are important at an individual level to evaluate if the patient has responded to the treatment they perceive as “minimally improved/ better' or 'minimally deteriorated/ worse', and at a group level to clinicians and researchers to assess the clinical efficacy of an intervention.

AIM: This systematic review aimed to synthesise the reported MCIC and MCID values for knee osteoarthritis outcome tools.

Methods: Five databases were searched. Studies were screened by two reviewers, first by title and abstract, then by full text, and conflicts between reviewers were resolved by a third reviewer. Studies of any study design and intervention, that included adults with knee osteoarthritis, and assessed MCIC and MCID values were included.

RESULTS: Forty-four studies were included. We found MCIC and MCID values for Western Ontario and McMaster Universities Arthritis Index/ WOMAC total (range between 5.5 to 16.3), Oxford Knee Score (16.3), Knee Society Score/KSS (range between 6 to 12) and knee osteoarthritis outcome score/KOOS (range between 7.8 to 14.95) divided using anchor, consensus or distribution methods. The MCIC and MCID values varied depending on the method of calculation, underlying intervention, and time between measures.

CONCLUSION: MCIC and MCID values range widely due to the heterogeneity of study design and method used to derive them.

SIGNIFICANCE: When designing or interpreting studies, remember that MCIC and MCID values are specific to the intervention, and time between measures.

How does Telehealth support students to develop competencies in interprofessional collaboration as part of accredited allied health programs: A systematic review

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INTRODUCTION: Interprofessional Education (IPE) teaches students to collaborate effectively to deliver high quality service user outcomes. The use of telehealth to deliver health care services has recently increased and demand for health professionals competent in using telehealth is expected to rise. While some research has shown that IPE can have benefits to allied health students, no reviews have been conducted that investigate IPE delivered through telehealth.

AIMS/QUESTION: This systematic review aimed to explore whether telehealth can support allied health students to develop competencies in interprofessional collaboration.

METHOD: A systematic review of studies involving allied health students engaged in telehealth and IPE was conducted. Studies were included where there was one or more allied health student in interprofessional student teams, and where at least one student in the interprofessional team provided care to a real or simulated patient through telehealth. The Interprofessional Education Collaborative (IPEC) competencies were used as a framework for data extraction. Quality appraisal was conducted using the McGill Mixed Methods Appraisal Tool (MMAT).

RESULTS: Of 341 studies screened, six were selected for inclusion. IPE delivered using telehealth was able to address the IPEC competencies. However, the generalisation of the findings is limited by poor methodological quality (MMAT scores 0-50%). Students found service delivery challenging via telehealth due to technical issues and lack of preparedness.

CONCLUSION: Students can develop competencies in interprofessional collaboration through interprofessional telehealth experiences, although the generalisation of the findings is limited by the poor methodological quality.

SIGNIFICANCE: Despite the low methodological quality, these papers provide good grounding for future research in IPE through telehealth.

Automated meal compliance using deep learning techniques for individualised hospital catering – pilot study

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INTRODUCTION: Hospital kitchens are exposed to labour intensive demands ensuring the highest food service quality control on a daily basis. Furthermore, provision of specialised diets is of upmost importance for meeting the nutritional requirements of vulnerable patients. Currently, meal compliance operations rely on human checking which can be ineffective and prone to errors. Recently, use of deep learning techniques (DLT) has demonstrated successful real-life applications in image recognition in other industries and there is a potential to apply these technologies in the hospital kitchens.

AIM: To explore the use of DLT on the applicability of meal recognition to improve meal compliance in an acute care hospital facility.

METHOD: In the hospital kitchen, two cameras facing the meal tray for minimal visual overlap were positioned. A prototype system with a DLT model was implemented based on the transfer learning method built in the closed circuit system. We compared two different DLT models which are Visual Geometry Group (VGG) and Resnet-18.

RESULTS: The collected image datasets were from meal trays consisting of a meal (2 choices) and meal components (16 component choices). For each component category, 150 digital images were collected divided into training (n=90 images), validation (n=30) and testing (n=30). The training and validation results of both VGG and Resnet-18 models provided recognition accuracy of higher than 90% (VGG 98.82%).

CONCLUSION: The use of a DLT image recognition system has a potential to offer a safer food service quality control in the hospital setting.

SIGNIFICANCE: This research highlights the potential of new technologies in the management of food service systems.

Peer assisted learning - when two become one

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INTRODUCTION: In a healthcare environment conscious of resourcing and growing demand, there is increasing interest in supervision models that improve efficiency in providing student placements without compromising learning outcomes. Peer-assisted Learning (PAL) facilitates the reciprocal development of knowledge and skills between two students with a focus on collaborative decision making, and shared reflection and feedback processes.

AIMS/QUESTION: Can a novel PAL model for dietetic students on their first clinical placement support equivalent learning experiences and competency development compared to a traditional model?

METHODS: Implementation of PAL placements occurred over three years. Resources and training to support PAL were identified and modified after stakeholder engagement. The pilot PAL placement was evaluated via supervisor focus group in 2018. Amendments to the model were made (clinical educator support increased) and the revised model was implemented and evaluated via surveys in 2020.

RESULTS: PAL placements increased from one/year to seven/year over the implementation period. All students in the model developed their dietetic competence. Students were more likely to become independent with tasks when actively supporting each other's learning. Students experienced increased volume and quality of feedback, and were able to evidence specific competencies relating to peer mentoring and provision of feedback. Supervisors reported enhanced satisfaction with PAL, entrusting students with greater levels of independence earlier, and improved efficiency of patient care.

CONCLUSION: PAL is an effective way of utilising fewer dietitian supervisors, while maintaining quality learning experiences for students.

SIGNIFICANCE: PAL has been fully embedded for all first clinical placements, and has the capacity to be a model of best practice in dietetics training.

Trends in reporting third trimester ultrasound in Australia and New Zealand

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INTRODUCTION: Inconsistent reporting practices in third trimester ultrasound, the choice of reference charts in particular, have the potential to misdiagnose abnormal fetal growth. But this may lead to unnecessary anxiety and confusion amongst patients and clinicians and ultimately influence clinical management.

AIMS: To determine the extent of variability in choice of fetal biometry and Doppler reference charts and reporting practices in Australia and New Zealand.

METHODS: Clinicians performing and/or reporting obstetric ultrasound were invited to answer questions about fetal biometry and Doppler charts in a web based survey.

RESULTS: At least four population based charts are in current use. The majority of respondents (78%) report the percentile for known gestational age (GA) alongside measurements and 63% using a cut-off of estimated fetal weight (EFW) < 10th percentile when reporting small for gestational age (SGA) and/or fetal growth restriction (FGR). The thresholds for the use of fetal and maternal Doppler in third trimester ultrasound varied in terms of the GA, EFW cut-off, and how measures were reported. The majority of respondents were not sure of which Doppler charts were used in their practice.

CONCLUSION: This survey revealed inconsistencies in choice of reference chart and reporting practices. The potential for misdiagnosis of abnormal fetal growth remains a significant issue and may influence clinical management.

SIGNIFICANCE: These findings highlight the need for a consensus on which reference charts should be used in Australia and New Zealand.

Endothelial function, reactive oxygen and nitrogen species (RONS) production, and hypertension in aging – a review of biological processes and potential interventions

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Cardiovascular disease (CVD) increases with advancing age. A primary risk factor for the progression of CVD is hypertension, which also increases more rapidly with advancing age. The presence of Sarcopenia can further vasodilatory decrements due to endothelial dysfunction. Reactive Oxygen and Nitrogen Species (RONS) in excessive amounts can inflict damage to endothelial and skeletal muscle cells, potentially speeding up the ageing process.

This review focuses on the mechanisms central to hypertension and CVD, with a specific focus on the effects of ageing muscle and RONS production, as well as the influence of exercise and current antioxidant/dietary interventions.

A literature review was conducted from December 2020 - April 2021 to assess available and current literature across 5 topics of focus: 'Endothelial dysfunction', 'Inflammageing', 'Biological Ageing', 'Physical Activity and Exercise Interventions', and 'Use of Dietary Antioxidants and Dietary Modification'.

Poor muscle quality and endothelial dysfunction, in conjunction with excessive RONS production, mitochondrial dysfunction, and inflammation, can result in oxidative DNA damage, leading to hypertension. Targeted mitochondrial antioxidants and dietary interventions have potential to mediate excessive RONS production and upregulate natural antioxidant defences, thereby reducing cellular damage, inflammation and vascular changes.

There is a need to investigate the interrelated cellular, micro- and macro-vascular skeletal muscle environments. Further research is needed to determine the feasibility of optimising endothelial function and decreasing detrimental RONS production with exercise training and/or targeted mitochondrial antioxidants/dietary supplementation.

This work suggests practical means of reversing vasodilatory decrements, thereby reducing the risk for and incidence of CV related diseases such as hypertension, resulting in increased quality of life and healthy ageing.

Antiparasitic activity of tea tree oil and its components against medically important ectoparasites: A systematic review

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INTRODUCTION: Ectoparasites are pathogens that can infect the skin and cause serious pain, discomfort, and disease.

AIM: To assess preclinical and clinical studies exploring the antiparasitic activity of tea tree oil (TTO) and its components against Demodex mites, scabies mites, house dust mites, lice, fleas, chiggers, and bed bugs.

METHODS: We systematically searched for eligible studies in PubMed, MEDLINE (EBSCOhost), Embase (Scopus), CENTRAL, Cochrane Library, CINAHL, ScienceDirect, Web of Science, SciELO, and LILACS databases in any language from inception to 12 November 2020. ToxRTool (Toxicological data reliability assessment) tool, the Joanna Briggs Institute critical appraisal tools, and the Jadad scale were used to assess the methodological qualities of the included studies.

Results: Of 499 identified records, 58 studies were included in this review and most had good methodological quality. Mites, lice, and fleas were the ectoparasites studied in the included studies. TTO showed promising preclinical and clinical activities against mites, lice, and fleas. Most importantly, the compelling in vitro activity of TTO against ectoparasites noted in this review seems to have translated well to the clinical environment. The studies also reported either no adverse events or mild to moderate skin irritation.

CONCLUSION: The findings of this review reveal TTO and its components as the promising option for the treatment of ectoparasitic infestations caused by mites, lice, and fleas.

SIGNIFICANCE: This is, to our knowledge, the first systematic review to comprehensively summarise preclinical and clinical studies exploring TTO against mites, lice, and fleas, providing efficacy and safety evidence of TTO to inform clinicians and researchers in this space.

Improving the mealtime eating environment at Canberra Health Services

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Compromised nutrition intake during an inpatient admission can lead to hospital acquired malnutrition, delayed recovery, and increased length of stay. The NSQHS Standards recognise nutrition as a component of comprehensive care within action 5.27 and 5.28 and identify provision of assistance to patients at mealtimes as a key consideration for meeting nutritional needs. The mealtime environment can be improved through relatively simple and cost-effective strategies which optimise intake and improve the patients' experience of the mealtime environment while in hospital. A baseline audit of mealtimes was completed in February 2020 across sixteen wards of The Canberra Hospital. Of the 160 patient observations conducted, noteworthy results included tray tables being inaccessible for many patients (35%), a low proportion of patients (17%) sitting out of bed for meals, and a lack of systematic identification of patients who require assistance and thus inability to determine if patients are receiving the assistance needed with accessing their tray, positioning for a meal, opening packages, and feeding.

To address these results, a working group was formed between Nutrition, Food Services, Nursing, and Speech Pathology to develop a guideline on Mealtime Assistance, detailing:

- Screening methods to identify patients needing assistance
- Implementation of a coloured meal tray system across all wards to distinguish those requiring set up assistance or full feeding assistance from those who are independent
- Roles and responsibilities of staff in supporting intake
- Special considerations for those with malnutrition or dysphagia

A repeat audit demonstrated improvements in the mealtime environment, specifically in mealtime assistance.

"Rebooting" cancer genetic counselling appointments – an 8-week review

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BACKGROUND: Operation Reboot funding acquired by the ACT Genetic Service was used to hire a part-time Associate Genetic Counsellor for 8-weeks with the aim of consenting 47 patients for cancer genetic testing.

AIM: A review of the patients seen within the 8-weeks of Operation Reboot was undertaken to inform future practice within the ACT Genetic Service and to provide other health professionals insight into our scope of practice within cancer genetics.

METHODS: Patients seen during Operation Reboot (December 2020 – January 2021) were included. Data extracted included specialty of referring doctor, category of cancer referred for, type of testing offered and results. Descriptive statistics were used to analyse the data.

RESULTS: 50 patients were seen during the time period. The three most common referring specialities were General Practitioners (n=25, 50%), Medical Oncologists (n=12, 24%) and Endocrinologists (n=6, 12%). The majority of cancer genetic testing were for breast and ovarian cancers (n=29, 58%), followed by colorectal cancers (n=8, 16%) and endocrine cancers (n=7, 14%). 50% of the referrals were for consideration of diagnostic genetic testing (n=25), with the remainder being for predictive testing (n=25) and 80% of patients proceeded with genetic testing (n=40). 29% (n=9) of the patients required follow up with our offsite cancer geneticist post result feedback, either for positive results (n=6, 66%) or management of high risk despite negative results (n=3, 33%).

CONCLUSIONS: ACT Genetic Service receives referrals from a wide range of medical specialists within the field of cancer and provides personalised risk information for patients which in turn inform valuable preventative management recommendations.

Impact of an integrated microfinance and health literacy program on maternal health care awareness and practice in rural India

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INTRODUCTION: Improving maternal health is a global public health priority with almost 295,000 maternal deaths occurring annually with the majority in Sub Saharan Africa and South Asia. India alone accounts for an estimated 10 per cent of global maternal deaths. Although India has prioritised institutional delivery through conditional cash transfer schemes, substantial gaps persist in early identification and care of maternal complications for rural low-income populations Recently, a promising community-based intervention that builds on the concept of empowering women by providing health literacy through microfinance based women-only Self Help Groups was implemented in rural India for improving maternal health.

METHOD: This research evaluates the impact of membership in this Integrated Microfinance and Health Literacy (IMFHL) program on some key indicators of maternal health knowledge and preparedness for obstetric complications. The quantitative evaluation used secondary survey data collected cross-sectionally from women that had delivered in the last 12 months.

RESULT: The study found that SHGs exerted both a dissemination effect of planned health knowledge and behaviour among members, as well as facilitated a diffusion effect of the natural transfer of knowledge and BPCR practice from members to non-members when SHGs are layered up with a health literacy component.

CONCLUSION: The IMFHL platform presents an example of a novel community-based strategy with the potential to interrupt the mutually reinforcing cycles of poverty and reduced healthcare-seeking to improve maternal health.

SIGNIFICANCE: Lessons from this evaluation provide the opportunity to adapt women's group and enrich them with health literacy components in other harder to reach populations to accelerate global targets towards maternal health goals.

Protocol for the Nutrition and Healthy Ageing Trajectories in Retirement Living (NutriHAT-RL) study in the Australian Capital Territory

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Introduction: There are a growing number of people aged over 55 years living in retirement communities in Australia. These communities typically consist of accommodation, services and community facilities that cater to older people and the desire to maintain independence.

AIMS: The Nutrition and Healthy Ageing Trajectories in Retirement Living (NutriHAT-RL) study aims to investigate nutrition and lifestyle-based behaviours which contribute to healthy ageing and the maintenance of social and physical functioning among people living in retirement communities.

METHODS: The study commenced in 2021 and will recruit a total of 2,770 people aged 55 years or over living in retirement communities in the Australian Capital Territory region for a four-year prospective longitudinal study.

RESULTS: A range of measures, including nutritional intake, health and lifestyle behaviours, cognitive and psychological function, and physical health, will be completed three times over four years. Participants will complete a face-to-face comprehensive, validated food frequency questionnaire at each time point. The risk of malnutrition and nutritional behaviour (emotional appetite and intuitive eating) will also be evaluated. Multiple mental, social, and physical health domains will be assessed, including cognitive and mental health screening, social and occupational functioning, self-reported and observed physical function assessments, and sleep quality. Biomarkers associated with healthy ageing will also be evaluated.

CONCLUSION: The NutriHAT-RL study will be the first Australian longitudinal study focusing on nutrition and healthy ageing in people living in retirement communities.

SIGNIFICANCE: Findings will contribute to understanding nutrition and healthy ageing in this growing population and inform policy and practice related to nutrition and ageing in place.

Vitamin B3 levels in women who experience first trimester miscarriage

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INTRODUCTION: Miscarriage is the most common complication of early pregnancy. It was recently reported in mice that miscarriage can be prevented through the administration of niacin.

AIMS/QUESTION: To explore whether there is an association between Vitamin B3 levels and first trimester miscarriage.

METHODS: We conducted a prospective, exploratory pilot study involving 24 women who were less than 14 weeks pregnant. All women were asked to complete a 24-h food diary to measure niacin intake levels and a subset of the women underwent a 24-h urine collection to measure urinary Vitamin B3, measured as the 1-Methyl-5-carboxylamide-2-pyridone/N-1-methylnicotinamide (2-pyr/MNA) ratio. The primary outcome of the study was miscarriage.

RESULTS: At follow-up, 8 women had a miscarriage and a mean niacin intake of 33.0 mg/day (standard deviation [SD] =16.64) and mean 2-pyr/MNA ratio of 2.2 (SD=0.12). There were 16 women who did not have a miscarriage (controls) and had a higher mean niacin intake of 43 mg/day (SD=19.66) and a higher mean 2-pyr/MNA ratio of 3.8 (SD=0.54). Binomial logistic regression did not show that niacin intake (p=0.24) nor 2-pyr/MNA ratio (p=1.00) could predict miscarriage.

CONCLUSION: In this study although niacin levels did not strongly predict the event of a miscarriage, the difference in mean niacin intake and mean 2-pyr/MNA ratios between women who miscarried and controls suggests that there is a possible threshold of niacin levels that could be applied in the prevention of miscarriage and warrants further investigation.

SIGNIFICANCE: A larger study, adequately powered on this pilot data, could confirm whether Vitamin B3 plays a role in early pregnancy outcome.

Short- and long-term patient outcomes following prolonged mechanical ventilation

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INTRODUCTION: Prolonged mechanical ventilation (PMV) is associated with increased mortality and greater healthcare utilisation following discharge internationally. Outcome data from these settings, particularly the United States, cannot be appropriately interpreted in local clinical decision making. Little research on PMV has been undertaken in Australia.

AIMS: We aimed to assess the short- and long-term outcomes of patients who received PMV in the Australian Capital Territory (ACT).

METHODS: Adult patients who received ≥ 21 days of mechanical ventilation in an ACT intensive care unit between 2009-2018 were included in the retrospective cohort study. Main outcome measures were mortality in hospital and at 12 months following discharge, discharge disposition and readmissions at 12 months.

RESULTS: In a cohort of 98 patients, 36 died in hospital and 41 died within 12 months following discharge. Males were significantly more likely to die (OR 4.398, 95% CI 1.733-11.163, P = 0.002) and died at more than twice the rate of females (HR 2.517, 95% CI 1.222-5.186, P = 0.01). Severity of illness scores and length of ventilation were not associated with mortality. There was a significant difference in mortality at 12 months following discharge between those discharged to further care and those discharged home (P = 0.02). Readmissions within 12 months were inconclusive.

CONCLUSION: In-hospital mortality in this cohort was high. Severity of illness scores were not accurate in predicting mortality compared to baseline patient characteristics.

SIGNIFICANCE: This is the first PMV cohort study in the ACT. Greater reporting of local long-term patient outcome data is required to accurately predict mortality and appropriately inform Australian guidelines.

Prevalence of alcohol-related presentations in Australasia 2017-2020: More crowding and no less alcohol

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BACKGROUND: The Australasian College for Emergency Medicine funds voluntary "snapshot" point prevalence studies of the contribution of alcohol-related presentations at 02:00 local time on the Saturday before Christmas.

AIM: To describe changes in alcohol related presentations 2017-2020.

METHODS: Analysis of responses from hospitals answering the last 4 "snapshot" binational studies of Adult and Mixed Adult/Paediatric Emergency Departments. Results were analysed by jurisdiction and in 2020 by Australian States grouped by recent COVID-19 related community restrictions.

RESULTS: 83/152 eligible hospitals answered all studies. Overall, alcohol-related cases fell from 13.1% of patients in ED in 2017 to 11.1% in 2020, but there was no significant change in the 16 New Zealand hospitals. In Australia there was a steady fall: 13.6% (12.1-15.4) in 2017, 12.7% (11.3-14.2) in 2018, 12.3% (10.9-13.8) in 2019, 10.3% (9.1-11.6) in 2020. This was not due to a decrease in absolute numbers of alcohol related presentations, but a significant increase in the average number of patients in ED, from 25.7 in 2017 to 35.2 in 2020 (37%, P<0.0001, paired t-test). There was a much smaller increase in occupancy between 2019 and 2020 in the recent COVID-19 States compared to the others (4% vs 22%, P=0.007 Chi-square).

CONCLUSIONS: Alcohol-related presentations have remained steady in this study but Australian EDs reported significantly more crowding over the last 3 years, leading to a lesser proportion being due to alcohol. COVID-19 has had little effect on holiday ED activity, but these data suggest jurisdictions under community restrictions saw less activity growth.

SIGNIFICANCE: Alcohol remains a major preventable cause of ED workload and morbidity.

Review of premature babies (PBs) <27 weeks gestational age (GA) from 2017 to 2020 who were ventilated with Neurally Adjusted Ventilation Assist (NAVA).

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INTRODUCTION: Neurally Adjusted Ventilation Assist (NAVA) in conjunction with Continuous Positive Airway Pressure (CPAP) has become one of the primary respiratory supports in extubated Premature Babies (PBs).

AIMS: Review of NAVA use at CHWC in surviving PBs <27 weeks GA from 2017-2020.

METHODS: Retrospective study using prospectively collected data of all surviving PBs <27 weeks GA born between 01/07/2017 and 31/06/2020. Data were collected from the NSW and ACT Neonatal Intensive Care Units (NICUs) Data Registry. Comparisons were between those PBs who were treated with NAVA/CPAP or conventional CPAP in respect to BWt, GA, Intraventricular Haemorrhage (IVH), Chronic Lung Disease (CLD) and Retinopathy of Prematurity (ROP). Statistical analysis was using GraphPad.

RESULTS: 46/54(85.2%) PBs survived and were included in the analysis. 24 PBs received NAVA/CPAP compared to 22 PBs who had CPAP. Although BWt was lower in the NAVA/CPAP group, this difference was not significant (BWt 780.0±127.9g Vs 852.6±139.2g respectively; ns), however the PBs requiring NAVA/CPAP were significantly more premature (24.7±0.6 Vs 25.6±0.7 weeks respectively; p<0.001). More PBs in the NAVA/CPAP group had IVH (19/24 [79.2%] Vs 7/22[31.8%] respectively; p=0.003), and developed CLD (21/24 [87.5%] Vs 11/22 [50%] respectively; p=0.01). There was no significant difference in number of PBs developing ROP between NAVA/CPAP and CPAP.

CONCLUSIONS: PBs requiring NAVA/CPAP were more immature, had higher rates of IVH initially and developed CLD. Further Research is required to understand the risks associated with and the long-term implications on Neonatal health.

SIGNIFICANCE: This paper provides evidence on the respiratory support and outcomes of a new mode of ventilation in very immature PBs.

Sentinel diagnoses during COVID-19 pandemic - bronchiolitis

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INTRODUCTION: The COVID-19 pandemic and the implementation of associated public health measures impacted upon presentations to the ED and the incidence of disease during 2020.

AIMS: This study aimed to analyse presentations at a large tertiary-level mixed ED with a clinical diagnosis of bronchiolitis, to investigate the impact of COVID-19 and related public health mitigation strategies.

METHODS: This prospective study analyses ED presentations clinically diagnosed as bronchiolitis during 2020, with retrospective controls derived from 2017-2019. Mean daily presentations were calculated by quarters, with control comparison using the t-test (unequal variance). Median patient age was calculated in days and compared by the Mann-Whitney Test.

RESULTS: Control data revealed a consistent presentation pattern, with peaks in the third quarter. Presentations in the first and fourth quarter increased by 28% (P=0.09) and 128% (P<0.001) over controls, respectively; with decreases of -86% (P<0.0001) (second) and -82% (P<0.0001) (third). Median age was not significantly different except for a fourth quarter fall from 299 to 241.5 days (P=0.0025). RSV swab rates increased significantly in the fourth quarter from 41.5% (95% CI 36.1-47.2) (control) to 70.4% (64.2-76.0) in 2020, with RSV positive rates rising from 13.6% (8.6-20.7) to 88.3% (82.4-92.4).

CONCLUSIONS: Public health measures were associated with a marked presentation decline related to bronchiolitis during the usual seasonal peak, followed by an end year epidemic. We hypothesise increased contact in family and childcare settings following winter, including contact willingness when children were unwell. The age distribution suggests exposure occurred in a younger cohort.

SIGNIFICANCE: The study will provide conclusions to inform future paediatric practice and health advice.

Responses to the COVID-19 pandemic in Australasian EDs

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INTRODUCTION: The COVID-19 pandemic was associated with rapid changes in Emergency Department (ED) structure and function worldwide in anticipation of increased patient load.

AIM: To describe the reported changes in Australasian EDs.

METHODS: Voluntary survey of all ACEM accredited EDs in July 2020.

RESULTS: Seventy of 152 eligible EDs (46%, 95%CI 38-54) replied, representing all jurisdictions and role delineations. Most, 65/70, 93% (95%CI 83-97) reported setting up a dedicated "Hot Zone" for care of suspected or proven COVID-19 patients. The majority (53/61) of Hot Zones were established between 1-Mar-2020 and 14-Apr-2020, although 5 were earlier and 3 later, and 14 had closed by the end of June. Thirty-one of 70, 44% (95%CI 33-57) reported opening a "Fever Clinic" in the ED at least briefly, although survey answers did not always clarify whether these patients or staff involved were regarded as part of ED workload.

Sixty EDs (86%, 95%CI 75-93) reported having an Observation Unit in February 2020 (all Major Referral Hospitals). Nine (15%, 95%CI 8-27) of these were completely closed and seven (12%, 95%CI 5-23) partially closed to accommodate pandemic-related changes. Overall, 13 departments reported fewer patient spaces (ED plus observation Unit) on 30-Apr-2020 than 1-Mar-2020, and 14 reported more. Additional medical staff were employed by 26 EDs (37%, 95%CI 26-50) and more nursing staff by 35 (50%, 95%CI 38-62).

CONCLUSIONS: There were marked differences between ED approaches to the Pandemic.

SIGNIFICANCE: Data on the approaches taken should be included in any description of ED response.

Emergency demand in Canberra Hospital during the 2020 COVID-19 pandemic

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INTRODUCTION: The Australian Capital Territory (ACT) had a successful public health response to the COVID-19 pandemic, with 118 cases and 3 deaths during 2020 in a population of 431000.

AIM: To describe the effects of the pandemic on demand in the mixed adult/paediatric tertiary Emergency Department.

METHODS: Prospective descriptive study of four consecutive 10-week periods beginning 11 Mar 2020 (Lockdown, Post-lockdown, Winter, Spring) with retrospective controls from 1 Jan 2020 (Baseline) and 2017-2019. Demand was measured as presentations, subdivided by age and as booked ward admissions subdivided by admitting unit.

RESULTS: Presentations averaged 249 daily in the baseline period, similar to 2019 (-0.16%). All four study periods were significantly different (P<0.005) from expected values: Lockdown –24.2%, Post-lockdown –12.1%, Winter –7.3%, Spring +3.6%. For patients aged over 65 the figures were -24.5%, -8.2%%, -14.3% and -7.1% respectively, and for those aged under 15 -37.6%, -36.8%, -21.4% and +8.9%. For admissions: Baseline 62.7 admissions daily, 1.9% more than 2019, and differences with expected values were: Lockdown -16.3% (P<0.0001), Post-lockdown -2.3% (P=0.35), Winter -6.6% (P=0.006) and Spring +5.2% (P=0.04). Three specialty units were significantly different: Respiratory (-25.6%, -32.4%, -47.2%, -26.4% respectively), Pediatrics (-46.9%, -33.1%, -37.0% and +18.7%) and Psychiatry (+7.6%, +12.8%, +26.5% and +14.7% respectively.

CONCLUSIONS: There was an initial marked reduction in ED demand during the lockdown period, reduction during winter, a surge during the Spring. Respiratory disease, particularly paediatrics was a major driver. The demand for mental health services was constant or slightly raised throughout.

SIGNIFICANCE: Contrary to initial predictions, demand was not dominated by COVID-19 but was diminished then surged.

Analysing changes in the pattern of psychiatric admissions to Canberra Hospital during COVID-19

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INTRODUCTION: The COVID-19 lockdown period had a significant impact on psychiatric health, altering the pattern of Emergency Department (ED) admissions in the Australian Capital Territory (ACT). This paper sought to analyse and discuss the nature of the changes in these patterns.

AIMS: To describe changes in the pattern of psychiatric admissions to the ED at Canberra Hospital during the COVID-19 pandemic.

METHODS: Total ED, and psychiatric admission numbers were collected on the emergency department information system over a 6-month period beginning January 1 2020. Data was divided into a lockdown (study) and pre-/post-lockdown (control) periods, based upon the period of lockdown within the ACT, with the lockdown period spanning from 11 March 2020 to 5 May 2020. Data was analysed according to weekly trends in admission numbers during and outside the lockdown period.

RESULTS: There were a total of 4,916 admissions from the ED in the 6-month period, with 746 psychiatric admissions. Overall, weekly admission rates were lower in the COVID-19 study period compared to the control period (200 vs. 163; p = 0.003), but weekly psychiatric admissions remained the same between the control and study periods (28 vs. 27; p=0.803). The proportion of weekly psychiatric admissions increased from 14% to 19% between the control and study periods respectively (p=0.015).

CONCLUSION: Emergency department admission rates fell during the COVID-19 lockdown while the number of psychiatric admissions remained the same, resulting in psychiatric admissions comprising a larger proportion of ED admissions.

SIGNIFICANCE: These findings suggest that COVID-19 lockdown stressors may contribute to psychiatric admission outcomes in patients.

Sentinel diagnoses in the COVID-19 pandemic: Pulmonary embolism

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INTRODUCTION: The COVID-19 pandemic and related public health measures impacted demand and process in Emergency Departments.

AIMS: This study aimed to describe pulmonary embolism (PE) incidence and changes to workflow in a tertiary ED during 2020 as a result of COVID-19.

METHODS: Retrospective descriptive study of all CTPA studies ordered from January-June in 2020. Data on timings were extracted from ED and radiology information systems, and data on diagnoses extracted from patient notes. 1-Jan until the first CTPA of a suspected COVID-19 case (19-Mar) was considered "Pre-pandemic". The period following to 30-Jun was considered "Pandemic". Primary outcomes were waiting time, time from seen until CTPA ordered, time from test ordered until performed, and diagnosis. The Mann-Whitney test was used for comparison.

RESULTS: 123 scans were performed pre-pandemic, 20 positive for PE (16.3%), and 184 during the pandemic, with 34 positive (18.4%). Median waiting times to see a doctor were 0:21:00 and 0:19:30 (P=0.67) respectively, median times from seen until CTPA ordered were 2:19:00 and 2:16:30 (p=0.70) respectively, but median times from ordered to performed were 0:56:00 and 1:10:00 (P=0.0027). “Pandemic” subgroup analysis showed this time was 1:49:30 for the 38 suspected COVID-19 cases and 1:06:30 for the others (P=0.021). The mean difference between these times was 37 minutes.

CONCLUSION: There was no change in the incidence of PE diagnosed in this ED during COVID-19. Changes in infection control protocols appear to have caused significant delays in time taken to perform CTPA.

SIGNIFICANCE: Delays to medical imaging would contribute to delays in clinical diagnosis, with potentially significant ramifications for patient care.

Observation of the incidence of eosinophilic oesophagitis (EoE) in oesophageal atresia/fistula (OA/TOF)

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INTRODUCTION: Recently attention has been drawn to an increased incidence of EoE in OA patients.

AIM: To determine whether EoE is an unrecognised cause of symptoms in OA patients.

METHODS: Retrospective chart review of all patients with a diagnosis of OA/TOF who presented to TCH over 17 years until 2020, whether locally born or not. We recorded patient demographics; whether the patient had a follow-up endoscopy, and endoscopic findings.

RESULTS: There were 47 cases of OA with 28 boys. 10 had a pure OA, 36 OA/TOF, 1 case unknown. Average length of follow-up was 9.8 years. There were four deaths.
20 patients had subsequent oesophageal biopsies recorded. EoE is recorded in six (average age 8.2 years, 50% female); changes of gastro-oesophageal reflux (GORD) in five (average age 11.5 years, all male).

CONCLUSION: We have included all patients with a primary diagnosis of OA/TOF seen here. Not all locally born patients will have had endoscopy. Non-locally born patients will likely only present if symptomatic. This survey will therefore be biased towards those who had symptoms. It is notable that EoE is at least as common as GORD in this cohort – 30% of biopsies. The true incidence of EoE may therefore be higher.

SIGNIFICANCE: The finding changes management. While we have recommended screening endoscopy for older OA/TOF patients for perceived increased risk of early-onset dysplasia, EoE is also a significant and treatable association. We suggest that all patients be considered for screening endoscopy during childhood and dilatation, if performed, should include biopsy.

Great balls of fire? Does the rate of testicular maldescent (UDT) parallel the rising rate of hypospadias?

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BACKGROUND: The authors have previously presented data showing an increasing rate of hypospadias in this region.

AIM: We sought to test the theory that there would also be an increased rate of testicular maldescent during the same time period.

METHODS: The study is a retrospective review of all patients coded for UDT between the years 1990 and 2018. Basic demographic data was obtained, and URN's were cross correlated with the URN's of patients coded for hypospadias from our previous study.

RESULTS: There were 1143 individuals coded for UDT between 1991 to 2018. We had previously surveyed 831 cases of hypospadias (1997 - 2017.) There was a small absolute increase in the annual number of presentations with UDT up to 2017 (Fig 1), but the per capita rate was steady at 1%. There was a 2.7% (31 cases) overall incidence of coexisting hypospadias - significantly higher than the background rate of 0.8%, which is itself increasing. Of these, penoscrotal cases made up 25%, the penoscrotal percentage also increasing. We noted a trend to earlier operation, from a median 6.9 years in 1991 to 4.7 in 2018.

CONCLUSION: This study fails to demonstrate a rising incidence of undescended testis, but does show linkage with hypospadias and reinforces the observation that severity of hypospadias is increasing over the last 30 years. It also demonstrates that the unit is operating earlier, more in line with current thinking on undescended testis.

SIGNIFICANCE: The increase in incidence and severity of hypospadias is again noted, but UDT is more complicated and needs prospective data collection.

Long-term efficacy of neoadjuvant chemotherapy in myoinvasive urothelial cancer - a retrospective study from The Canberra Hospital

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BACKGROUND: The purpose of this study is to look at the long-term efficacy of the neoadjuvant chemotherapy in myoinvasive bladder treated at the Canberra hospital and to observe potential variables affecting the outcome.

METHODS: A retrospective analysis of the patients who received neoadjuvant chemotherapy for myoinvasive bladder cancer from 2009 to 2020 in the Canberra hospital.

RESULTS: We screened 41 patients who received neoadjuvant chemotherapy. All received neoadjuvant chemotherapy with Cisplatin and Gemcitabine except 2 patients who had carboplatin instead of Cisplatin. The response rate was 48%, of which 24% had a complete pathological response and 24% partially responded. Other 48% of patients had no response to the treatment. Median DFS was 17.5 months, and median OS was 23.8 months. The 2-year survival was 59%, 5-year survival was 40%, 7-year survival was 22%, and 10-year survival was 5%. The recurrence rate and death rate were better in patients who responded to neoadjuvant chemotherapy. The recurrence rate was 0%, 20%, and 62.5%, whereas the death rate was 10%, 20%, and 70% in the complete response, partial response, and no response groups. Treatment was well-tolerated, and grade 3 toxicity occurred in 34% of cases. No chemotherapy-related death occurred.

CONCLUSION: Our retrospective study concludes that neoadjuvant chemotherapy efficacy in patients treated at Canberra hospital is similar to the rest of the world. It improves DFS and OS, especially those who responded to the treatment, with a good safety profile. It also indicates a relatively higher recurrence and death rate in non-responders, suggesting the need to further research treatment options in this cohort.

Long-term outcomes of Hospital-identified Clostridium difficile infections (HICDI) in hospitalised patients

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INTRODUCTION: There is limited Australian data on long-term outcomes of Healthcare associated Clostridium difficile infection (HA-CDI).

AIMS / METHODS: We conducted a retrospective cohort study of all adult patients residing in Australian Capital Territory (ACT) who were diagnosed with HICDI during their hospital stay between 2012 and 2016. The primary outcome was 2-year all-cause mortality.

RESULTS: 466 ACT residents accounted for 544 HICDI episodes in study period. 409 patients suffered with single episode, 45 patients had 2 episodes and 12 patients with >2 episodes. Only 7.36% patients were identified in ICU. 55.8% were defined as HA-CDI and 40.2% as community identified CDI (CA-CDI). 78.5% & 55.36% patients received antibiotics & proton pump inhibitor respectively prior developing CDI. Median time taken to develop CDI after hospital admission was 5 days (IQR 1-17). Duration of diarrhea once infected was 6 days (IQR 3-10) and metronidazole was the preferred pharmacotherapy (68.2%) agent with combination therapy used in 5.5% (30/544) episodes. The overall 2-year all-cause mortality was 40.1 % (187/466) and patients who suffered >2 episodes of HICDI had significantly higher mortality (61.4% vs. 33%, p-value 0.007). On multivariate analysis, significant predictors of long-term mortality were age (HR 1.04 per year), multiple CDI (HR 1.24), chemotherapy (HR 2.7), raised WBC count (1.78), low albumin (HR 2.44) and ICU admission (HR2.09). Compared to patients without antibiotic usage before developing CDI, patient with antibiotic usage took 70% longer time for resolution of infection.

CONCLUSION / SIGNIFICANCE: Despite the limitations of the study design, this study gives provides us some important insights on HICDI and its outcomes.

Emerging treatment strategies for impetigo in endemic and non-endemic settings: A systematic review

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BACKGROUND: Impetigo affects 162 million children globally. Lack of consensus on most effective treatment strategy and increasing antibiotic resistance continue to drive research into alternative treatment options for impetigo. We conducted a systematic review to assess the effectiveness of novel treatments for impetigo in both endemic and non-endemic settings.

METHOD: PubMed, MEDLINE, CINAHL, Web of Science, and Embase were searched for studies published between August 2011 to February 2020. The revised Cochrane risk of bias tool was used for risk of bias assessment of randomised trials, while the National Heart, Lung and Blood Institute was used for non-randomised studies.

FINDINGS: We included 10 trials involving 6651 participants, reporting on 9 treatments. In non-endemic settings, ozenoxacin 1% cream appeared to have the strongest evidence base compared to retapamulin and a novel minocycline formulation. Oral co-trimoxazole and benzathine benzylpenicillin G injection were equally effective in treating severe impetigo in endemic settings. Mass drug administration (MDA) intervention emerged as promising public health strategy to reduce the prevalence of impetigo in endemic settings. The risk of bias was heterogenous across studies.

IMPLICATIONS: This review highlights the limited research into new drugs used for treatment of impetigo both in endemic and non-endemic settings. Limited evidence supports use of topical ozenoxacin or retapamulin for impetigo treatment in non-endemic settings, while systemic antibiotics and MDA strategy have evidence for use in endemic settings. Given the troubling rise in resistance to existing treatments, there is a need to ensure judicious use of antibiotics and develop novel treatments and alternative strategies, particularly important in endemic settings.

A prospective statistical analysis of cardiac catheter lab presentations to The Canberra Hospital Emergency Department during the COVID-19 pandemic

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Introduction: A prospective statistical analysis was conducted on cardiac catheter lab (CCL) presentations through The Canberra Hospital Emergency Department (TCH ED) in 2020.

AIMS/QUESTION: Presentations from 2020 were compared to controls from 2019, aiming to ascertain the effect of the COVID-19 pandemic on the number of presentations and door to balloon time (D2B).

METHODS: Chart analysis compared the total number of cases in each year, focusing on those brought in by ambulance (BIBA) to TCH ED. D2B was calculated for patients BIBA to TCH ED, defined as the difference between door time (when the patient presents to TCH ED) and balloon time (time of first balloon inflation).

RESULTS: There were significantly more CCL presentations to TCH ED month on month during 2020 compared to 2019 (P=0.04, paired t-test, two-tailed), as well as more being BIBA to TCH ED month on month (P=0.018, paired t-test, two-tailed). The proportion of BIBA presentations in all TCH ED presentations significantly increased from 76% in 2019 to 86.3% in 2020 (P=0.046, chi-squared test). However, there was no significant change to D2B (0.5, Mann-Whitney U) for patients BIBA to TCH ED.

CONCLUSION: While TCH ED had significantly more CCL presentations month on month in 2020 during the COVID-19 pandemic, especially those BIBA as an absolute number and proportion of the whole, D2B for BIBA patients remained similar across both years.

SIGNIFICANCE: TCH ED's data is unique compared to other emergency departments around Australia and the world, with activation of the CCL minimally affected by COVID-19 in 2020, a positive performance marker for TCH's interventional cardiology team.

Anxiolysis in diagnostic imaging - no worries?

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INTRODUCTION: Anxiolysis is the use of low dose anxiolytics such as benzodiazepines to reduce anxiety and excess motion in diagnostic scans to improve image quality and patient satisfaction. The ANZCR position statement (PS09), endorsed by Radiology Practice Guidelines, provide an overview on conscious sedation prior to radiological diagnostic procedures. However, the wording of the document is open to misinterpretation.

QUESTION: The PS09 doesn't define a diagnostic procedure or minimal sedation, therefore could be wrongly applied to include anxiolysis required for diagnostic scans.

METHODS: If a diagnostic procedure were to include routine scans such as MRI/CT, then according to the guidelines, there is a requirement for pre-assessment, procedural monitoring and other standards as outlined in PS09 when patients are given oral sedation.

RESULTS: This could lead to unnecessary pre-assessment of claustrophobic patients, excessive monitoring during scans and excessive after-care, only because a patient required sedation with a low-dose oral benzodiazepine.

CONCLUSION: Radiologists must be aware of the terminology and implications of levels of sedation, to avoid anaesthetic involvement and excessive monitoring in the administration of oral anxiolytics.

SIGNIFICANCE: Guidelines on anxiolysis should define 'diagnostic procedures' to only encompass interventions whilst 'diagnostic scans' refer to routine CT/MRI scans, as well as defining anxiolysis in the spectrum of sedation, to prevent misinterpretation in the administration of low dose anxiolytics prior to diagnostic scans.

Biophysical effects, safety and efficacy of raspberry leaf use in pregnancy: A systematic integrative review

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INTRODUCTION: Childbearing women have been using herbs to assist with pregnancy and birth for centuries. One of the most common is raspberry leaf. The evidence base for raspberry leaf is however under-developed.

Aim: **TO REVIEW THE RESEARCH LITERATURE TO IDENTIFY THE EVIDENCE** base on the biophysical effects, safety and efficacy of raspberry leaf in pregnancy.

METHODS: A systematic, integrative review was undertaken. Six databases were searched to identify empirical research papers published in peer reviewed journals including in vitro, in vivo, human and animal studies. The search included six databases and identified studies were appraised independently by two reviewers using the MMAT appraisal instrument. An integrative approach was taken to analysis.

RESULTS: Thirteen studies were included. Five were laboratory studies using animal and human tissue, two were experiments using animals, and six were human studies. Included studies were published between 1941 and 2016. Raspberry leaf has been shown to have biophysical effects on animal and human smooth muscle including the uterus. Toxicity was demonstrated when high doses were administered intravenously or intraperitoneally in animal studies. Human studies have not shown any harm or benefit though one study demonstrated a clinically meaningful reduction in length of second stage and augmentation of labour.

CONCLUSIONS: Many women use raspberry leaf in pregnancy to facilitate labour and birth. The evidence base supporting the use of raspberry leaf in pregnancy is weak and further research is needed to address the question of raspberry leaf's effectiveness.

SIGNIFICANCE: It is incumbent on midwives and maternity care providers to provide women with evidence-based information to make informed choices.

Rethinking birth plans: A systematic and integrative review into the impact of birth plans on childbearing women

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INTRODUCTION: Women are required to provide informed consent (or refusal) at various decision points, with various procedures for themselves and their baby. Finding the power balance between care providers and women seems to be a key ingredient in successful birth preparation. We know that effective communication is critical to positive experiences, as is respectful maternity care. The birth plan was introduced in the 1980s to address this balance, but the birth plan is not well understood or implemented. Birth plans are variable in approach and the term 'plan' seems to be misleading or off-putting for both care providers and childbearing women.

AIMS: Improve the understanding of the impact of different approaches to birth plans on childbearing women in order to determine if there is a best approach and a better term to describe it.

METHODS: A systematic review of peer reviewed, English literature reporting clinical outcomes, measures of satisfaction and women's experiences comparing birth plan to no birth plan, published since 2000 was undertaken to describe the terminology and approaches of birth plans.

RESULTS: Ten quantitative articles were included, showing that the general purpose of birth plans is communications, with decision making a key factor. The term plan is avoided beyond naming the document. Having a birth plan was generally associated with positive outcomes, and feelings of control, high satisfaction and met expectations were associated with effective communication.

CONCLUSION: The act of collaboratively creating a birth plan strengthened knowledge and assists communication and aids with realistic expectations.

SIGNIFICANCE: A renamed universal collaborative and woman-centred approach to birth preparation is recommended.

What are the unmet supportive care needs of people affected by chronic kidney disease receiving haemodialysis? A meta-aggregation review

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INTRODUCTION: People with chronic kidney disease experience the heaviest of physical and psychological burdens due to their condition and other restrictions. Due to the complexity of their condition, a range of unmet supportive care needs has been regularly reported by patients.

AIM: To review studies about the experiences of unmet supportive care needs of people living with chronic kidney disease requiring haemodialysis (HD).

METHODS: A meta-aggregation of qualitative studies was conducted using the Joanna Briggs Institute (JBI) methodology for meta aggregation. Six databases (CINAHL, ClinicalTrials.gov, Cochrane Library, MEDLINE, PsychINFO, and Scopus) were comprehensively searched using keywords and subject headings for relevant studies published from January 1990 to September 2019.

RESULTS: 117 findings across 45 categories within the supportive care domains were discovered in this review. The meta-aggregation identified 11 synthesised findings that included: the induvial, practical needs, spiritual and existential needs, physical needs, intimacy and sexual needs, relationship with healthcare professional, supportive self-management, service improvements, social restrictions, impacts on family caregivers and coping emotionally. All studies included the lived experience of people (and family/carers) with chronic kidney disease receiving haemodialysis.

CONCLUSION: The findings from this meta-aggregation have identified many studies within the supportive care domains. Given the impact chronic kidney disease (CKD) has on an individual and their family members, the physical and emotional burden of receiving HD is extremely high.

Significance: Chronic kidney disease is complex and has a dramatic effect on all aspects of a person's life and highlights the need for further research into this dynamic field to provide support and person-centered care.

Living with a mended heart – an integrative literature review of the experiences of women following first acute coronary syndrome

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INTRODUCTION: There is a lack of research on the experiences of women in the recovery process following the first acute coronary syndrome (ACS). Existing research focuses on men's experiences of ACS. Health care following ACS has considerable impact on the recovery and quality of life in women.

AIM: To explore the lived experiences of women following first ACS.

METHODS: Whittemore and Knafl's integrative review method searched PubMed, MEDLINE, EMBASE, CINAHL and Scopus from 2008 to 2018 for articles published in English. Quality appraisal was conducted using Joanna Briggs Institute assessment tools. Findings were integrated using thematic synthesis.

RESULTS: We selected 19 studies. Themes identified were knowledge of the body – physical symptoms; managing with a mended heart – complications through and beyond and ACS event; temporary becomes permanent – self-discovery and impact of ACS on psychological well-being; seeking other options – disruptions and dissatisfaction in relationships; deep connection with oneself and others – the good, the bad and the ugly.

CONCLUSION: This review identified current knowledge and gaps regarding lived experience of women following first ACS. ACS has a significant impact on women's lives. Commonest issues reported were physical limitations, fear and uncertainties about the future, sexual dissatisfaction, and social isolation. Women also reported to have higher short- and long - term mortality rate, stroke, recurrent and hospital readmissions compared to men.

SIGNIFICANCE: It is anticipated that the findings of this research will support new initiatives to improve the care women receive following first ACS and enhance their recovery and quality of life.

Reliving trauma near death: A systematic review

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INTRODUCTION/QUESTION: Dying is a complex physical and psychological experience often associated with suffering and distress. At best, symptoms are identified and managed through partnerships between health professionals, the dying person and their loved ones. At worst, they are unrecognised, and people die badly. Little is known as to why some people behave or respond differently at the end of life, withdrawing from care, rhythmically calling out or becoming aggressive. One hypothesis is that these symptoms are reliving trauma, and little is known about its impact on the experience of dying. This integrative review addresses the following questions: 1) how is previous trauma associated with the experience of death/dying in people with or without cognitive impairment? 2) how is previous trauma identified in people who are dying? and 3) what palliative care interventions are available to people with previous trauma at end of life?

METHODS: Electronic databases were searched using a range of key words for qualitative, quantitative and mixed-methods studies using a pre-defined eligibility criteria. Data extraction will include phenomena of interest, setting, context, participation characteristics, study findings and illustrations. Quality appraisal will be conducted using the JBI critical appraisal tools and a narrative synthesis undertaken.

RESULTS: A total of 1068 abstracts were identified, 222 duplicates removed and a total of 31 articles for full text review. This review is currently being undertaken and aimed for timely completion by July 2021.

CONCLUSION/SIGNIFICANCE: The findings from this review will inform clinicians and researchers about the impact of previous trauma upon the dying process and in turn improve end of life care.

Effectiveness of Behavioural skill training for prevention of sexual abuse among children with intellectual disability

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INTRODUCTION: Sexual abuse of children with Intellectual Disability is a global concern. Rate of Sexual Abuse among Intellectually Disabled is 2-4 times the rate in general population.

AIMS: The main aim of the study is to assess the effectiveness of a Behavioural Skills Training (BST) on knowledge of sexual abuse and resistance ability among children with Intellectual Disability.

DESIGN AND METHODS: A true experimental, pre-test post-test control group design with longitudinal measurement of outcomes was adopted. The study was conducted among 120 children with mild or moderate disability, attending 12 special schools (60 in experimental and control group respectively) randomly selected from 25 special schools. Pre-assessment of subjects in the Experimental (BST) and Control Groups (TAU), in terms of knowledge of sexual abuse and resistance ability was carried out. BST was administered in 3 sessions in a week on alternate days, each session lasting for an hour extended over one month. Post-assessment of the Experimental Group was carried out, one week after the Intervention. Follow up was done at 1,3 and 6 months.

RESULTS: BST was found to be effective in increasing knowledge and resistance ability against sexual abuse among children with ID. There were no significant negative effects reported from participating in the BST.

CONCLUSION/SIGNIFICANCE: BST can be used a prevention programme for sexual abuse for children with ID without affecting them negatively. The scripted intervention package developed as a part of the study can be used for training children with ID by primary caregivers which does not require any additional training to implement.

Sleep problems and its relation with autism severity, problematic behaviour and parental distress in children with low functioning autism

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Introduction: One of the most burdensome and profound complaint among parents of children with autism is disrupted sleep, with more than 40-80% of the children experiencing sleep problems compared with 25-40% in typically developing children.

Aim: The main aim of the study is to assess the sleep problems and its relationship with severity of autism, daytime problem behaviour and parental distress in children with low functioning autism.

Design: A descriptive cross-sectional design was adopted for the study among 40 children aged between 6-16 years of age, recruited from selected special schools and autism centres in Kerala. Sleep problems, autism severity, problematic behaviour and parental distress were assessed using Children's sleep habit questionnaire (CSHQ), Social responsive scale (SRS), The Disruptive Behaviour Disorder Rating Scale, Parenting stress index, respectively.

Results: Prevalence of sleep problems were more among children with low functioning autism. All the children in the study met the cut off score of sleep problems in CSHQ. But sleep problem was not correlated with severity of autism, problematic behaviours, and parental distress. Findings showed that autism severity is related with parental stress ($p=0.046$) and problem behaviour ($p<0.01$) in children with autism. It was also observed that problematic behaviours in children is correlated with parental stress ($p=0.019$).

Conclusion /Significance: Study results emphasize the need for implementing interventions to reduce sleep problems, problematic behaviours, and parental distress.

Sleep problems and its relation with autism severity, problematic behaviour and parental distress in children with low functioning autism

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CONCLUSION /SIGNIFICANCE: Study results emphasize the need for implementing interventions to reduce sleep problems, problematic behaviours, and parental distress.

Spirituality and religiosity in people who have had a renal transplant: A scoping review.

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INTRODUCTION: Spirituality and religion are well known as an effective coping tool for many people with a chronic illness. Spirituality and religion are important concepts that warrant consideration in the context of holistic nursing care and when planning a person's care especially in people with end stage kidney disease (ESKD). To date, very little has been discovered about the presence of spirituality and religion in individuals with ESKD and in people who have received a kidney transplant.

AIMS: The scoping review central question was to discover what is known about the presence of spirituality in people with renal disease and those who have received a kidney transplant.

METHODS: A scoping review was performed in December 2019 that searched the six databases following the scoping review five-stage framework.

Results: Fifty-four studies were included in the review with only four meeting the criteria. In synthesising the information, two key areas became evident within the included studies. Clinical outcomes that include medication adherence, renal function, and graft loss as spirituality was identified as a significant predictor within the management of a person's health. Well-being outcomes that include locus of control and coping were identified as many people use religion as a coping mechanism in managing their transplant.

CONCLUSION: The review will also provide insight into the emotional complexities that some people experience when managing chronic illness and transplantation.

SIGNIFICANCE: The findings of the scoping review will inform further research in formulating specialised care that focuses on the individual's needs and preferences within ESKD and kidney transplantation management.

Piloting 'Leo's Place' – a world's first, non-clinical, palliative care respite house

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Carer burn-out is a core issue for enabling people with a life-limiting illness to stay at home and results in increased loads on health services and poor outcomes for carers and their loved ones. Research indicates that over 70% of people, when asked, would prefer to die at home. Carer resistance to using currently available respite services is a key barrier. To address this issue, Palliative Care ACT is running a proof of concept for a new, world's first model of carer respite.

"Leo's place" is designed to be a 'home away from home' for those with a life limiting illness that allows carers to take time for themselves. It is a non-clinical home setting with trained support staff provided through Carers ACT. There are four bedrooms and three separate communal spaces, with meals provided by a qualified local caterer. Clients can visit Leo's Place for a day, or up to a week.

Leo's Place has been set up to be as comfortable as possible in a suburban home, with support from the community and the ACT Government. This unique approach addresses the problems in the sector of the hesitation of carers to access respite, a lack of bed space, and poor knowledge and use of services in the sector.

To assess the impact of this new model, Palliative Care ACT has engaged UNSW Canberra to evaluate the program via a co-created evaluation process using Normalisation Process Theory, underpinned by reflexive thematic analysis of the data.

Social value of maintaining baby-friendly hospital initiative accreditation in Australia: Case study

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BACKGROUND: Breastfeeding has positive impacts on the health, environment, and economic wealth of families and countries. The World Health Organization (WHO) launched the Baby Friendly Hospital Initiative (BFHI) in 1991 as a global program to incentivize maternity services to implement the Ten Steps to Successful Breastfeeding (Ten Steps). These were developed to ensure that maternity services remove barriers for mothers and families to successfully initiate breastfeeding and to continue breastfeeding after hospital discharge. In 2020 only 26% of Australian hospitals were BFHI-accredited. So what is the social return to investing in BFHI accreditation in Australia, and does it incentivize BFHI accreditation?

RESEARCH AIM: This study aimed to examine the social value of maintaining the BFHI accreditation in one public maternity unit in Australia using the Social Return on Investment (SROI) framework.

METHOD: We interviewed the hospital's Director of Maternity Services and the Clinical Midwifery Educator, guided by a structured questionnaire, which examined the cost (financial, time and other resources) and benefits of each of the Ten Steps. Analysis was informed by the SROI and was supplemented with micro costing studies from the literature that measure the benefits of the BFHI.

RESULTS: The SROI ratio was approximately AU$ 55:1 (sensitivity analysis: AU$ 16–112)

CONCLUSIONS: In this public hospital, the BFHI produced social value greater than the cost of investment, providing new evidence of its effectiveness and economic gains as a public health intervention.

SIGNIFICANCE: BHFI accreditation is an investment in the health and wellbeing of families, communities and the Australian economy, as well as in health equity.

A comparative study of drug approval processes across major regulatory jurisdictions

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BACKGROUND: Drug approval is often a long-protracted process involving a thorough review of scientific evidence. However, disparity in terms of approval requirements across jurisdictions affects the approval rate and outcome by different agencies. Some of the inconsistencies have become more apparent during approval of COVID-19 vaccines. This study aims to compare the regulatory processes of the Australian Therapeutic Goods Administration (TGA) with the US Food and Drug Administration, the European Medicines Agency, and Health Canada. The findings are anticipated to inform policies aiming to ensure a more harmonised and streamlined drug approvals globally.

DESIGN AND SETTING: Relevant data was sourced from TGA for drug submissions between 2015 and 2018, while publicly available information was accessed from databases of the US Food and Drug Administration, European Medicines Agency, and Health Canada.

RESULTS: Between 2015 and 2018, 83 common drugs were approved across the four regulatory agencies. While the concordance across jurisdictions in terms of approval of drugs was fairly high (94%), the time taken for approval was different. The US Food and Drug Administration took the shortest time for approval (median approval time: 221 days), while the Therapeutic Goods Administration took the longest (median approval time: 309 days). The oncology therapeutic area was the major focus across regulatory bodies, as indicated by the highest number of submissions during this period.

CONCLUSION: The variation observed in terms of the time to new drug approval shows the need for additional research to understand the disparities in regulatory requirements in these settings to propose strategies to improve a more harmonised and streamlined regulatory process.

Lessons from machine learning in closing the gap between funding and expenditure in the Australian National Disability Insurance Scheme

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INTRODUCTION: The Australian National Disability Scheme (NDIS) allocates funds to participants for purchase of services contained in their officially approved plans. Just one percent of the sample of 70,106 participants for whom we have data were able to spend more than 90 percent of their allocated budget with two percent (i.e., 1,405 participants) having failed to spend any, meaning that most of the participants were left with unspent funds.

AIM: Explain the gap between the allocated budget and realised expenditure in terms of supply with need of the participant.

METHOD: We employ alternative tools from machine learning to predict the budget and estimate need (expenditure) with historical data to close the resulting gap. Four machine learning models were evaluated with three experiments designed to test the efficacy of each model in terms of their rates of learning compared to humans, the set of explanatory variables chosen by each of the models, and the magnitude of the gap between budget and expenditure.

THE RESULTS SHOW THAT: (i) machines learn faster than humans; (ii) Decision Tree and Deep Learning both outrank Linear Regression and Support Vector Machine (SVM) in closing the funding gap; and (iii), the significant explanatory variables used across models are similar.

CONCLUSION AND SIGNIFICANCE: These findings point to the efficacy of alternative tools from data analytics in closing the gap between funding and expenditure with the policy benefits of reducing under-spend while improving allocation of the total NDIS budget to maximise welfare of the participants.

KEYWORDS: NDIS, Machine learning, Data Analytics, Australia

Aligning healthcare research with consumer, policy, and service needs

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INTRODUCTION: Evidence-based decision-making and research translation into policy and clinical practice improvement are the current and future direction of healthcare. From this perspective, research provides a scientific approach to creatively and systematically increase and improve the advancement of healthcare. However, the health research system consists of diverse stakeholders who have some contributions to health research, but the boundaries around this are not always well defined.

AIMS: To explore the Consumer, Policy, and Service needs within the ACT Health System.

METHODS: We consulted with our key stakeholders comprising the ACT Health Directorate, Canberra Health Services, Australian National University, University of Canberra, and the ACT Healthcare Consumers Association. Consultations comprised of targeted discussions around priority settings that were most valued among different stakeholders; and facilities, equipment, and resources that are vital to each group to perform research. In addition, we asked the HealthCare Consumers Association what they valued most when engaging in healthcare research, to provide some insight into key patient and community-centric values.

RESULTS AND CONCLUSION: The study highlights the system needs from a policy, service, and consumer needs perspective. It provides a critical lens to drive research that focuses on addressing the health system need. Partnerships in research design and practice can increase the translation of research evidence and illuminate new discoveries, transforming the healthcare experience and maximizing the impact of research investment.

SIGNIFICANCE: This study offers a frame of reference for dialogue between stakeholders when working towards improving value in healthcare delivered to a defined patient group or segment of the population.

Responsible innovation as a framework for more inclusive health research in the Australian Capital Territory

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As Australia approaches a "new normal" around COVID-19, there is a significant opportunity to examine ways of promoting an inclusive health innovation ecosystem. Beyond addressing the current and future pandemics, healthcare systems still need to tackle chronic conditions that increase in prevalence with Australia's aging population. The Australian Capital Territory also faces the challenge of tailoring healthcare policies for its growing migrant and refugee populations. To start addressing these trends and challenges, this presentation introduces responsible innovation (RI) as a framework that can encourage greater inclusivity in health innovation. We first present our research that shows how ethnic minorities were disproportionately affected by the COVID-19 pandemic and are persistently underrepresented in medical studies. We then briefly introduce the concept of responsible innovation (RI), which aims to promote ethically acceptable and socially desirable innovation by facilitating anticipation, reflexivity, inclusivity, and responsiveness among researchers, publics, and stakeholders. We will then elaborate on our RI in Health framework that is attentive to the Australian context and demographic. We seek to stimulate a conversation on opportunities for adapting this framework to various ACT biomedical research institutes and initiatives to promote greater inclusivity and diversity in study conceptualisation, participant recruitment, execution, and results dissemination. With COVID-19 still far from over and with aspirations towards precision health to prevent and address chronic conditions that cost the Territory millions of dollars, there is an ever-increasing need to explore and test frameworks that both evaluate and direct health research, ensuring that it addresses the needs of the most marginalised and vulnerable members of Canberran and Australian society.

Liposomal drug delivery: Targeting therapies for neuroinflammation

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INTRODUCTION: Liposomes are drug delivery nanoparticles which may improve treatment targeting in neuroinflammation, such as occurs in multiple sclerosis (MS). Liposomes accrue at sites of disrupted vasculature, such as the inflamed central nervous system, where they are internalised by phagocytic immune cells, which may offer direct targeting to key pathogenic immune populations.

AIMS: We aim to determine the impact of liposomal encapsulation on drug efficacy in the context of neuroinflammation, using liposomal mitoxantrone as proof-of-concept. Further, we aim to delineate liposome uptake by different immune cell populations and assess the mechanistic importance of these interactions.

METHODS: Mice were induced with MS model experimental autoimmune encephalomyelitis (EAE) and treated weekly with 0.5mg/kg liposomal mitoxantrone (LMTX) or free mitoxantrone (MTX). Mice were scored daily for clinical disease, and pathogenic immune cell populations in blood and CNS monitored using flow cytometry. To examine liposome delivery characteristics, EAE-induced mice were dosed with fluorescence-tagged liposomes and interactions with immune cells detected using flow cytometry.

RESULTS: Weekly 0.5mg/kg liposomal mitoxantrone prevents clinical signs of EAE, whereas freely delivered MTX offers minimal protection. LMTX also gives enhanced depletion of pathogenic immune populations including B cells and IL-17-producing T cells. We further identified a specific myeloid cell population depleted by LMTX treatment, which interacts preferentially with liposomes and is correlated with disease severity.

CONCLUSION: Liposomal encapsulation improves mitoxantrone efficacy in EAE. The role of liposome-immune cell interaction is being investigated.

SIGNIFICANCE: These findings highlight the potential application of liposomal drug delivery for MS treatment, and may allow for lower and thus safer drug doses to be used.

Photoreceptor to glia microRNA exchange by extracellular vesicles: A novel response to retinal degeneration?

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INTRODUCTION: Retinal degeneration results from increased local inflammation driven partly by the secretion of proinflammatory cytokines by Muller glia (MG). How microRNA (non-coding gene suppressors) influence MG-driven inflammation in retinal degeneration is unclear.

AIMS: To profile the microRNA landscape of MG following retinal degeneration.

To determine the contribution of intercellular communication by extracellular vesicles (EVs) to the changes in microRNA expression in MG.

METHODS: Retinal degeneration was modelled by exposing adult mice to bright light. MG were isolated by fluorescence-activated cell sorting and microRNA expression was profiled using TaqMan™OpenArrays™. A retinal tissue dissociation protocol was coupled with sequential ultracentrifugation to isolate retinal EVs. Small RNA-sequencing was used to profile the microRNA content of EVs.

RESULTS: Retinal degeneration regulated the expression of 23 microRNAs ($n= 6; p<0.05$) in MG, including pro-inflammatory microRNAs such as miR-146-5p, miR-223-3p as well as a trio of photoreceptor-specific microRNAs comprising of miR-182-5p, miR-183-5p and miR-96-5p (miR-182/183/96). MiR-182/183/96 are heavily packaged in retinal EVs ($n=4$). Pharmacological inhibition of EV biogenesis results in impaired microRNA movement from the photoreceptor to the inner retina where Muller cells reside ($n=4; p<0.05$). Inhibition of EV biogenesis exacerbates retinal degeneration by increasing inflammation, photoreceptor cell death, and reducing retinal function ($n=5; p<0.05$). Subsequent in silico pathway analysis reveals that miR-182/183/96 are modulators of both inflammation and cell death.

CONCLUSIONS: The microRNA landscape of Muller cells is altered in retinal degeneration and microRNA transfer by extracellular vesicles is a potential contributor to this alteration.

SIGNIFICANCE: Photoreceptor to glia microRNA exchange is shown as a novel mechanism for modulating the response of Muller glia to retinal degeneration.

Comparative genomics shows site-specificity of Escherichia coli in the lower gut of humans

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INTRODUCTION: Escherichia coli (E. coli) is commensal of the human gut and previous work suggested that some strains appear to be site-specific, for example residing in the ileum but not the rectum.

AIM: To determine whether or not clone-pairs of E. coli exhibit genomic differences that may explain site-specificity in the human gut.

METHODS: Clone pairs were collected from 34 individuals, where a clone pair represented one ileum and one rectum isolate with identical Multiple-Locus Variable-number of tandem repeat (VNTR)-Analysis (MLVA) profiles from the same individual. Only B2 phylogroup strains were chosen to limit genetic differences associated with phylogroup rather than potential niche specificity. Whole genome sequencing was used to identify the sequence type (ST), serotype, fimH type, antibiotic resistance profile, plasmids, virulence factors. PATRIC was used to identify mutational differences between clone pairs.

RESULTS: On average each clone pair varied by 78 mutations. The number of mutational differences were significantly greater ($p \leq 0.05$) in clone-pairs belonging to STs not commonly associated with humans (e.g., ST372 and ST569; 121-200 mutations per clone pair) compared to human-associated STs (e.g., ST131, ST73, ST95; 4-72 mutations per clone pair). No non-synonymous mutations were common to all ileum or rectum isolates.

CONCLUSION: Clone-pairs of E. coli isolated from different gut regions showed genomic variation that may account for site-specificity in the gut. However, mutational differences are not as common in human, as opposed to non-human, associated STs.

SIGNIFICANCE: This study suggests that strains belonging to human-associated STs are better able to survive in multiple environments.

Mapping the intersections of nerve fibres in the optic chiasm using MATLAB

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INTRODUCTION: It has previously been hypothesised that bitemporal hemianopia results from selective vulnerability of nasal retinal nerve fibres because they cross in the optic chiasm whereas temporal fibres do not. Finite element modelling (FEM) strongly supported this hypothesis but recent evidence has shown the model is too simplistic. Nevertheless, nasal fibres may still cross more often than temporal fibres.

AIM/QUESTION: This study aimed to use modelling techniques to provide a greater understanding of the anatomy of the 2 million nerve fibres traversing the optic chiasm, specifically the probable locations of any fibre crossings and the angles of intersection at those crossings.

METHODS: A MATLAB program artificially generated pathways of multiple optic nerve fibres within the geometric boundary of the optic chiasm. Resulting images were analysed to determine locations and angles of intersection.

RESULTS: Initial results suggest a concentration of crossings in the paracentral regions of the chiasm. It appears that nasal fibres cross other nerve fibres almost twice as often as temporal fibres. The average angle of intersection was 46.05 ± 7.75 degrees. Almost 50% of the fibres crossed at an angle > 50 degrees.

CONCLUSION: This model suggests that nasal fibres are likely to cross almost twice as often as temporal fibres. This is consistent with the hypothesised increased susceptibility to compression and the explanation of bitemporal hemianopia.

SIGNIFICANCE: These results will inform future FEM studies of chiasmal compression which will provide a greater understanding of the pathophysiology of neural compression. These findings will be relevant to compression at other sites such as the carpal tunnel or spinal cord.

Superior performance of cellulose nanofibers as a topical haemostat

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Haemorrhage remains a significant cause of morbidity and mortality following trauma and during complex surgeries. Currently available topical haemostatic agents are sub-optimal due to toxicity to bystander cells, their pro-inflammatory and non-biodegradable nature and high cost. There is a need, therefore, for the design of superior haemostatic agents. We present cellulose nanofibers (CNFs) as a new haemostatic material that outperforms gold-standard haemostats. CNFs were synthesized from cellulose, an abundant sustainable biomaterial, using an economical chemical-free method. CNFs were produced in various forms, including gel, sponge and aerosol, and sterilized using conventional methods. In-vitro thromboelastometry studies, demonstrated CNFs initiated coagulation via contact activation, reducing clotting time in healthy donor blood (by 68±2%), thrombocytopenic patients' blood (by 80±2%) and heparinised blood (by 54±2%). In an in-vivo murine liver injury model, CNFs significantly ($p<0.05$) reduced blood loss by 38±10%. In contrast to the gold-standard haemostat, the pH-neutral CNFs did not damage isolated erythrocytes or impede the growth of cultured fibroblasts or endothelial cells. Subcutaneous implantation of CNFs in mice showed histologically a foreign body reaction at 2 weeks which at 4 weeks was significantly resolved with degradation of CNFs. In contrast to the gold-standard haemostat, tissue scarring was not evident.

The lack of toxic bystander effects combined with excellent haemostatic performance, a variety of forms for topical application and the possibility of scalable environmentally-friendly production, renders CNFs a new class of promising haemostatic materials applicable in wide-ranging medical and veterinary situations. This invention has been characterized by a collaborative team of ANU and TCH engineers, medical researchers, haematologists, surgeons, veterinarians and pathologists.

Will tickling rats lead to happier animals?

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INTRODUCTION: Animal technicians need to handle rats. Animal handling in a laboratory setting is known to cause stress to animals. Increasing positive associations with handling is beneficial to our rats and the technicians who handle them.

AIMS/QUESTION: Will ticking rats lead to happier animals? Rat tickling is a technique in our industry used to interact and play with rats. Tickling mimics the play-fighting behaviours rats engage in as juveniles and is thought to increase positive association with handling.

METHODS: Over 4 weeks technicians will tickle juvenile rats and track positive, neutral, and negative reactions. They will tickle males and females, with a control cage of males and females who aren't tickled.

RESULTS: Based on existing literature, we expect that our tickled rats will show increased positive association with handling (initiating touch, sniffing, hand chasing) and that our control rats will show a relatively higher negative or neutral reaction to handling (freezing, avoidance).

CONCLUSION: Rat tickling at key developmental stages is thought to increase positive associations with handling and lead to happier rats. Technicians at the Canberra Hospital will test the validity of existing literature regarding the benefits of rat tickling and expect to see happier rats.

SIGNIFICANCE: Not only is it ethical to have relaxed and happy animals, but good animal welfare leads to good research outcomes. Promoting natural behaviours and engaging with our rats in a positive manner are ways that our technicians are contributing to high quality research, considering not just the physical needs of animals in our care but their emotional states as well.

The sl rat as a model for human Hirschsprung disease (HSCR)

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INTRODUCTION: The spotting lethal (sl) rat was first noted 70 years ago, occurring as a spontaneous mutation in the ednrb gene resulting in colonic aganglionosis. It is useful as a model of a human disease.

AIM: We sought to validate the model by comparing it to the human equivalent.

METHODS: Animals in the colony were routinely genotyped, and stored colony demographic data from the last 15 years were reviewed. Those animals who had had both a genotype and acetyl cholinesterase stain of the gut recorded were included. Animals generated for a variety of studies were sacrificed by 7 days.

RESULTS: 632 rats were included. There was overall a slight male preponderance. The sl mutation displayed incomplete sex modified penetrance for aganglionosis, as in the human equivalent: 2.5% penetrant in male heterozygotes; 1% for females. 95% penetrant in male homozygotes; 90% penetrant in females.

CONCLUSION: Puffenberger et al published a linkage analysis in 1994 showing association between a mutation in the human EDNRB gene linked to HSCR with the same pattern of variable sex modified penetrance. Our model has a greater tendency to total colonic aganglionosis than Puffenberger's cohort. To our knowledge this simple comparative validation of an important animal model has not so far been performed.

SIGNIFICANCE: We have previously noted a number of altered non-enteric features in the sl rat. We expect that further investigation of these features in the human will be informative. The finding of similar sex modified inheritance in the rat as in the human gives us more confidence in the power of the model.

Living with diabetes: Development of therapeutic insoles with overload-sensing via electrical impedance tomography of carbon nanotube networks

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Composite materials that incorporate carbon nano-tubes feature microscopic conductive networks that permit the movement of electrons and thus facilitate sensing applications. For example, compression can cause piezoresistive changes of the electrical conductivity and damage alters the current distribution inside the material. Consequently, undue pressure by therapeutic shoe insoles for diabetes patients and insole deterioration may be detected early using Electrical Impedance Tomography (EIT). Towards this goal, piezoresistive nanocomposites have been made by embedding multi-walled carbon nanotubes (MWCNT) in thermoplastic polyurethane (TPU) and sensing options have been explored.

MWCNT was integrated in TPU with and without ultrasonication. The conductivity measurements and morphological characterisation with electron microscopy show that the homogeneity of the composite material improves with the length of ultrasonication time.

Electrical Impedance Tomography (EIT) has been investigated for 2.0 weight-% of MWCNT ultrasonicated for 60 min, with and without a 10mm x 10mm square hole, respectively, applying electrical current stimulation via adjacent contacts. Tomographic reconstruction of the current distribution was performed using the Electrical Impedance Tomography and Diffuse Optical Tomography Reconstruction (EIDORS) algorithm. Results indicate that the location of the intentional hole is correctly identified by this approach. The shape is, however, not correctly reproduced. The resolution of the tomographic image may be improved by changing the current stimulation pattern, which is presently being studied.

Good start in life for young children - developmental needs and service responses in the ACT

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The project aims to reduce the proportion of children who are considered developmentally vulnerable according to the Australian Early Development Census (AEDC) in the Belconnen District.

The project has two main research aims: to identify whether a multi-discipline, multi-level intervention will reduce the proportion of developmentally vulnerable children in Belconnen, and to create an integrated network of services for children and families. To achieve these aims, suburbs showing trends of increasing vulnerability were selected using AEDC census data between 2012 and 2018. A range of education, health and community services within these suburbs were included in a needs analysis to identify gaps in service provision and areas of high developmental vulnerability. A service integration survey was completed by early childhood services in the Belconnen District to identify how they collaborate with health and support services to better support young children's development. The analysis of the interviews revealed that speech and language, emotional regulation, nutrition, and physical activity were the most common issues for children under five attending early childhood services. A range of barriers to parent and caregivers seeking and accessing services as well as for services providing programs to support children were identified. This presentation will discuss the results of the baseline data collection and describe how these data have been used to inform the implementation of programme interventions within identified vulnerable suburbs to improve collaboration between local child and family services.

The Good Start in Life project is a quasi-experimental study being undertaken at the University of Canberra and is funded by the Medical Research Futures Fund.

A comprehensive care bundle reduces harm in patients with central venous access devices.

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INTRODUCTION: Central Venous Access Devices (CVADs) deliver therapies in critically unwell patients. A 2019 audit of CVAD complications at Canberra Hospital indicated significantly higher rates compared to peer hospitals.

AIMS: The primary aim was to achieve a central line associated blood stream infection (CLABSI) rate of zero per 1000-line days, and zero major vascular injuries in adult patients undergoing CVAD insertion in critical care departments at Canberra Hospital. Secondary aims were to decrease patients discharged from ICU with CVAD's by 50%, remove all CVADS before the recommended date, and have 80% of ICU JMO's accredited for CVAD insertion.

METHODS: A literature review identified best-practice management of CVAD's in critical care. A standardised care bundle was developed through multidisciplinary collaboration including changes to equipment, addition of a checklist, education packages, accreditation process for CVAD insertion, updated policy for CVAD maintenance, and was launched in February 2020. Re-audit of complications occurred in December 2020.

RESULTS: The pre-intervention CLABSI rate fell from 1.43 to zero per 1000-line days (CI 0.6-2.94, 7/4911 vs CI 0.0-0.96, 0/3835) post-intervention. 3 major vascular injuries occurred pre-intervention compared to zero after. Patients discharged from ICU with a CVAD fell by 74% (8.42% [191/1181]) post-intervention compared to 22.87% (89/351) between July to September 2019. The CVAD removal rate beyond recommended date fell to 5.75% (11/191) compared to 31.9% (112/351) pre-intervention. Post-intervention, 77.7% of ICU JMO's were accredited for CVAD insertion.

CONCLUSION: Introduction of a multidisciplinary, standardised, best-practice care bundle for CVAD insertion and maintenance, decreased CVAD complications. The intervention decreased preventable patient harm and likely related health care costs.

Seasonality in testing and positive respiratory bacterial infections in the Australian Capital Territory, 1997-2007

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INTRODUCTION: Chlamydia pneumoniae (Cp) and Mycoplasma pneumoniae (Mp) bacteria can cause pneumonia and exacerbate underlying conditions such as asthma and chronic obstructive pulmonary disease. In the Australian Capital Territory, there is limited information on the seasonal patterns for testing and positive infections, a gap that has implications for control strategies.

AIMS: The aim of this project is to discover seasonal patterns of results in testing for Cp and Mp.

Methods: We examined monthly counts of immunoassay results of patients from Canberra Hospital, Australia, who were tested for Cp and/or Mp. Pathology data, collected from August 1997 to March 2007 from 7275 patients, were analysed with additive decomposition and regression including a long-term trend, an effect for each month, and autocorrelated errors.

RESULTS: For both pathogens, testing was highest in winter and lowest in summer, and the proportion of positive infections were lowest in winter. Autumn (Chlamydia) and summer (Mycoplasma) were peak seasons for positive results. Testing patterns show an opposite seasonality to the proportion of positive results.

CONCLUSION: Differences in seasonal patterns of testing and in the proportion of positive results suggest that preventative measures for common infections need to account for seasonal testing practices, so as to build an accurate picture of temporal changes in these infections.

SIGNIFICANCE: A clear understanding of the seasonal variation of Cp and Mp testing and positive results can aid health workforce planning and clinician awareness. The methods applied here are also relevant to modelling emerging infections such as COVID-19.

Retrospective study on haematology patients with febrile neutropenia post chemotherapy

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INTRODUCTION: Haematology patients with FN following chemotherapy experience delays in review and antibiotic administration. Delays in treatment are linked to poorer clinical outcomes. To aid timely care, FN pathways have been developed. However, there are reports of poor adherence to FN pathways. Patient outcomes due to delays and rate of adherence to FN pathways is unknown due to insufficient evidence.

AIM: Examine management of patients with Febrile Neutropenia (FN) within inpatient, and outpatient areas.

METHODS: Audit (November 2017 to November 2018) of only haematology patients with FN (temperature ≥ 38° and neutrophils <1.0 x109/L) post chemotherapy, 18 years or older. Excluded medical oncology patients, age 17 years or younger. Retrieved data through Clinical Records Integrated System. Time of temperature spike to time of antibiotic, correlated with length of hospital stay (LOS), intensive care admission, mortality, blood culture results, malignancies and demographics were recorded.

RESULTS: Mean time for inpatients was 90±15 minutes (n=48) and 48±5 minutes (n=31) mean time from medical officer review for outpatients. Inpatients given antibiotics under 60 minutes showed mean LOS of 17±1 days, patients given antibiotics over 60 minutes LOS was 21±3 days. Outpatients given antibiotics under 60 minutes showed mean LOS of 12±2 days. Outpatients given antibiotics over 60 minutes had mean LOS of 9±3 days.

CONCLUSION: The study identified that antibiotic delays were linked to increased length of hospital stays and ICU admission for inpatients.

SIGNIFICANCE: Further research is needed to examine causes of delays and the impact of standardised clinical pathways that allow medication standing orders to make antibiotics accessible for prompt delivery.

A standardised enhanced recovery after surgery care pathway decreases patient length of stay in colorectal surgical patients

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INTRODUCTION: Patients undergoing elective major colorectal surgery require considerable hospital resources and may develop complications. Standardised, multidisciplinary Enhanced Recovery After Surgery (ERAS) care pathways are known to reduce hospital length of stay and patient complications.

AIMS: The primary aim was to reduce the difference between actual and predicted hospital length of stay for adult patients undergoing major elective colorectal surgery at Canberra Hospital. The secondary aim was to not increase 30 day readmission.

METHODS: A multidisciplinary literature review identified best-practice management of patients undergoing elective colorectal surgery. A standardised care pathway was developed through collaboration and included changes to patient care pre-, intra-, and post-operatively, the employment of a nursing coordinator, development of a REDCap database, and continual audit. Retrospective data on patients managed for 12 months before the introduction of ERAS on February 15, 2021, was compared to patients managed after. Actual length of stay was compared to predicted length of stay from the American College of Surgeons Surgical Risk Calculator.

RESULTS: 125 patients managed prior to ERAS were compared to 16 after. The median difference between actual and predicted length of stay fell from 2.68 (sd 8.6) to 0.58 (sd 1.94) days (2.10 day reduction). 13 patients (11.9%) were readmitted prior to ERAS, and 0 after.

CONCLUSION: Early results following introduction of an ERAS care pathway show improvement in length of stay. The small sample size limits interpretation of 30 day readmission.

SIGNIFICANCE: This translates to improved hospital efficiency. Ongoing audit will address patient complications and pathway compliance to maintain the improvements.

Parental perceptions of the School Kids Intervention Program (SKIP): A program for families with overweight or obese children

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INTRODUCTION/AIM: The School Kids Intervention Program (SKIP) is a family-centred service for children aged 4 to 12 years who are overweight or obese, and includes medical, exercise physiology and nutrition assessment and intervention. Childhood overweight and obesity affects 25% children in the ACT. Evidence supports a multidisciplinary approach in addressing childhood weight concerns. We sought to determine the experiences of families participating in SKIP to inform improvements to the program.

METHOD/RESULTS: Former (n = 24) and current (n = 10) families were randomly invited to complete a survey about their experiences with SKIP.

Completed surveys were received from 18 former and current SKIP families. Descriptive statistics and thematic qualitative analyses were utilised. Families strongly agreed/agreed that they had increased knowledge of:

- appropriate foods to offer (84%)
- appropriate portion sizes (89%)
- how to include appropriate foods into family mealtimes (90%)
- how to include physical activity into their family's lifestyle (79%)

screen time limits (a reduction in screen time was experienced by 63% of families).

Positive feedback was reported about the dietitian and exercise physiologist. In addition, the mixed telehealth and face-to-face modes of service delivery in 2020 (due to the COVID-19 restrictions) received favourable feedback.

Parents recommended the introduction of:

- individual psychology/counselling (47%),
- group cooking (53%)
- group exercise (53%)

CONCLUSION/SIGNIFICANCE: Overall families had positive experiences with the program, the session content was relevant and appropriately individualised for most families. These findings and the recommendations from parents will inform the development of groups sessions and other improvements to SKIP to ensure we meet the evolving needs of SKIP families.

KEY WORDS: Children; Exercise Physiology; Intervention; Nutrition; Obesity; Overweight

FUNDING SOURCE: This Quality Improvement project was funded by an Allied Health Research Support Grant

CONFLICTS OF INTEREST: The authors declare no conflict of interest

I can't be-leaf how dry this is! A-dressing salad recipes for a better inpatient meal experience

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INTRODUCTION: Consumer feedback has consistently raised salads at The Canberra Hospital (TCH) as needing improvement. Canberra Health Services (CHS) has endorsed the Agency for Clinical Innovation (ACI) Nutrition Standards for Adult Inpatients. These standards require one Band 1 or Band 2 salad (with prescribed minimum requirements for macronutrients and variety) to be offered at least once per day. While the general diet menu at TCH met this standard, other special diets did not.

AIMS: To offer salads at least once per day meeting the following criteria to consumers on general, vegetarian, vegan, and gluten free diets at TCH:

ACI Band 1 or 2

Achieving consumer satisfaction ratings of >4.0/5 for flavour and appeal

METHODS: Consumers were surveyed about existing salads and their feedback used to inform the development of new salad recipes. TCH stakeholders reviewed and adjusted the recipes before final salads were reviewed by consumers.

RESULTS: Original salads achieved an overall consumer satisfaction rating of 1.8/5. 100% of comments received were negative or contained suggestions for improvement. New salads achieved consumer satisfaction ratings of 4.1/5 for flavour and 4.2/5 for appeal. 79% of comments were positive.

CONCLUSION: Consumers receiving general, vegetarian, vegan and gluten free diets are now offered a Band 1 or Band 2 salad twice per day.

SIGNIFICANCE: New salads on the menu meet the ACI Nutrition Standards. The new recipes also contribute to CHS meeting National Safety and Quality Health Service Standards by ensuring that menu planning at TCH provides safe, acceptable food that meets consumers' needs.

Textual analysis of clinical notes on pathology request forms to determine sensitivity and specificity for diagnosis of Hepatitis B and C virus infection

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Introduction: Clinical notes are often provided by clinicians on pathology laboratory request forms, without consideration of the uses to which they could be put in secondary analyses. The availability of computing technology to extract, read and mine text such as these notes is at the same time increasing.

AIMS: The aim of this project is to determine sensitivity and specificity of clinical notes provided by clinicians to pathology laboratories for identifying status of infection with Hepatitis B or C.

METHODS: The study comprises 179 cases and 166 cases tested for HBsAg and anti-HCV serological markers, respectively, and accompanied by a written description (clinical note) provided on pathology request forms by the clinician on duty. The clinical note sensitivity, specificity, positive (PPV) and negative (NPV) predictive values were calculated using serological HBsAg and anti-HCV tests as gold standards.

RESULTS: The sensitivity and specificity of clinical notes for Hepatitis B infection status were 90% and 56%, respectively. The sensitivity and specificity of clinical notes for Hepatitis C infection status were 86% and 21%, respectively.

CONCLUSION: Clinical note information identifies moderate-to-high sensitivity with regard to Hepatitis B and C viral infection status. However, given low specificity in both diseases, the clinical note is not favourable for ruling in disease, possibly due to high rate of false positives.

SIGNIFICANCE: A robust example of the utility of clinical notes in extracting information from pathology requests can convince healthcare professionals to recognise that the notes they write have a use beyond the clinic and laboratory.

Taste changes in oncology? These extra items were mint to be!

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INTRODUCTION:

Oncology patients at Canberra Hospital are offered the standard menu. This provides limited opportunities to add extra flavours to meals at the bedside to assist with managing treatment-related altered taste sensations.

Oncology patients provided negative consumer feedback regarding the taste and flavour of main meals.

Meal satisfaction across oncology wards was poorer than on other wards, scoring 3.5/5 for taste and 2.9/5 for flavour.

AIMS:

To offer a variety of additional condiments and portion controlled (PC) extra items (taste change extras) for oncology patients to add to their meals at the bedside.

To increase patient satisfaction ratings to ≥4.0/5 in the dimensions of flavour and taste by August 2021.

METHODS:

Oncology patients and dietitians were consulted to inform selection of new products.

Nutrition and food services sourced and prepared new condiments and PC items.

The food service information system was updated to reflect new taste change extras

An information resource, 'Extras Menu List: Taste Changes' was developed for provision to oncology patients by dietitians.

Surveys of patients who received taste change extras were commenced.

RESULTS:

Positive uptake of the taste change extras by Oncology inpatients.

Initial patient surveys indicate improved satisfaction ratings and positive comments and are ongoing.

CONCLUSION:

Taste change extras successfully:

enhanced the flavour of the meals

reduced and disguised altered taste sensations for oncology inpatients.

SIGNIFICANCE: The oncology taste change extras demonstrated an effective intervention for improved patient satisfaction amongst patients experiencing altered taste sensations in the oncology inpatient setting.

What is possible for nutrition and food service continuity during the COVID-19 pandemic?

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INTRODUCTION: Evidence for pandemic preparedness in food services (FS) is limited. COVID-19 prompted planning for continuous provision of food and nutrition at The Canberra Hospital which serves over 2500 meals daily, accounting for potentially reduced staffing, increased admissions, and interrupted supply chains.

AIMS: To offer an alternate FS model for inpatients and staff. To develop meals which met nutrition standards, required reduced labour and were available from multiple suppliers.

METHODS: Nutrition and Food Services considered all COVID-19 response stages across: Staff workflows, food supply, menu innovation and meal delivery.

RESULTS: Staggered shifts/breaks and masks were introduced to counteract non-modifiable factors present in FS, including suboptimal ventilation and confined spaces with limited opportunity for physical distancing. Labour intensive in-house production was replaced with sealed portion-control items. New freezers were installed to store frozen meals, which were sourced from several suppliers, before commencing production in-house. All frozen meals were analysed to assess compliance with nutrition standards and coded to therapeutic diets in FS systems. Food provision processes were transformed on COVID-19 wards, with provision of default selections only and automation of disposable trays and tableware. Trollies were left outside wards for meal distribution by clinical staff. Staff meals were provided to reduce movement.

CONCLUSION: Contingencies were planned and successfully executed to introduce a reduced menu of frozen meals that could be prepared with existing facilities while supporting staff physical distancing and infection control measures.

SIGNIFICANCE: Ultimately, all vulnerable patients received high quality, uninterrupted, nutritious food provision.

Comparison of active and reactive mattresses in domiciliary-based pressure injury healing: A randomised feasibility study

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INTRODUCTION: Pressure mattress prescription is a proven modality for the treatment of pressure injuries however there are a wide variety of mattresses on the market with varying costs. Existing research comparing the effectiveness of mattresses is limited, with no research conducted in a community setting.

OBJECTIVE: To conduct a feasibility study investigating the comparative effectiveness of the two main types of pressure mattresses with regards to healing pressure injuries. To provide insights into the user acceptability of the two main types of pressure mattresses.

METHOD: A feasibility study was conducted in a domiciliary setting in Canberra. Patients 65+ years with an existing Stage 2 pressure injury who slept in a bed were eligible. Participants were randomised to either the active or the reactive mattress group. All participants received standard wound care by community nurses, pressure injury prevention education by occupational therapists, and were provided a cushion for use when not in bed. Photographs were used for blind assessment of wound healing. Secondary information was gathered regarding user acceptability of the mattresses and habitual changes regarding pressure injury prevention strategies.

RESULTS: Four patients completed the study. Results were inconclusive with regards to comparative effectiveness and user acceptability due to the small sample size. Secondary data indicated an increasing trend in pressure injury prevention strategies.

CONCLUSION: This study confirms the need for further high-quality research comparing reactive and active pressure mattresses. Changes to the proposed methodology will be made to increase recruitment in the primary study.

Significance: Trends indicate the importance of including pressure injury prevention education to promote changes in behaviour.

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