## PIN18
### EPIDEMIOLOGY OF HEPATITIS C PATIENTS IN ITALIAN LOCAL HEALTH UNITS (LHUS)

Degli Esposti L[1], Sangiorgi D[1], Buda S[1], Crovato E[1], Nappi C[2], Lefevre C[3]
[1]CliCon S.r.l., Ravenna, Italy, [2]Bristol Myers Squibb S.r.l., Roma, Italy, [3]Bristol-Myers Squibb, Rueil-Malmaison, France

**OBJECTIVES:** To estimate prevalence of HCV, using data from routine practice in Italy **METHODS:** An observational retrospective cohort based on administrative databases (containing data from pharmacy registries, hospital discharges, outpatient specialist services and laboratory tests) from a sample of six Italian LHUs was performed. The date of the first record related to HCV (i.e., positive HCV testing or medications for HCV) during the study period (July 1st, 2009 - June 31st, 2014) was considered as a proxy of diagnosis, and used as the index date. Patients with data available for at least 6 months prior to index date were followed up from the index date until the first of the end of the study period, date of death, or exiting the database **RESULTS:** Overall, 228,157 health-assisted individuals living in the first analysed LHU (Central Italy) were considered as the starting population in the study; amongst them, 0.4% patients with HCV were enrolled, 56% male, age 58±16 years. The most prevalent genotypes were 1 (51±2%), 2 (24±2%), 3 (19±2%) and 4 (5±1%); other genotypes had a rate lower than 5%. In terms of co-infections, 6% patients were affected by HIV, 3% by HBV, 2% HCV+HBV+HIV, 26% had cirrhosis and 4% HCC. The majority of patients (76%) did not receive an antiviral treatment; compared to treated patients, they were more frequently aged >65 years (44% compared to 14% in treated patients), females (46%, vs 40%), under ongoing substance/alcohol abuse (7% vs 4%). Moreover, 30% of untreated patients had cirrhosis and 5% HCC. Results from other LHUs will be available at ISPOR-EU **CONCLUSIONS:** This observational study showed that 70% of enrolled HCV patients has genotype 1 and 3, and only a small proportion of patients with HCV received antiviral therapy. Future analyses should investigate relationships between patients' characteristics, therapeutic choices and outcomes

## PIN19
### EPIDEMIOLOGICAL DATA USED IN ROTAVIRUS VACCINATION COST-EFFECTIVENESS ANALYSIS IN EUROPE: A LITERATURE REVIEW UPDATE

Li X[1], Theodorou E[2], Standaert B[1]
[1]GSK Vaccines, Wavre, Belgium, [2]UK PHARMA, GSK Vaccines UK, MIDDLESEX, UK

**OBJECTIVES:** Rotavirus gastroenteritis (RVGE) is the leading cause of severe diarrhea in children under 5 years of age. Two rotavirus vaccines are licensed to prevent these infections. More than hundred economic evaluations have been published on rotavirus vaccination since 2006 and their results largely vary. An update of a literature view was conducted aiming to assess whether differences in the epidemiological data used in European evaluations could explain the differences in the results obtained. **METHODS:** A literature review was conducted to retrieve articles reporting the cost-effectiveness of rotavirus vaccination in Europe based on criteria used in a previously published review (limited to 2001-2011 studies, this update extended the search to May 2015), focusing on epidemiological data. The following annual incidence RVGE-related data were extracted from the retrieved articles and grouped by countries: community-acquired hospitalisation (CAH), emergency department (ED) visits, outpatient visits (including general practitioner or paediatrician) and RVGE events (including no medical visits). Variations within countries were also calculated as the ratio between the maximum and minimum value. **RESULTS:** 32 publications (24 manuscripts and 8 conference abstracts) from 13 European countries were retrieved. The European average (minimum and maximum reported value) annual rates were CAH 0.57% (0.09% Portugal; 1.43% Albania), ED visits 1.13% (0.22% Portugal; 2.40% France), outpatient visits 3.11% (0.56% Netherlands; 7.17% Romania) and RVGE events 9.05% (5.63% Germany; 20.01% Spain). For the countries with multiple publications, rates of CAH and outpatient visits showed large variation (CAH: France 2.82; outpatient: Ireland 5.78). RVGE rates were generally consistent except for United Kingdom (1.93) and Germany (2.50). For ED visit rates the largest variability was observed in France (3.16). **CONCLUSIONS:** The RGVE disease burden used as input in economic evaluation varies among the studies in the same country and across Europe. This may explain the difference in the cost-effective results reported.

## PIN20
### CHOLERA DEATH AUDIT IN GHANA: A MEDICAL RECORD REVIEW OF THE 2014 OUTBREAK

Davies-Teye B[1], Nyarko K[2], Brown-Davies C[2], Bredu M[2], Eleeza J[2], Vanootoo La[2]
[1]Ghana Health Service and Drifney Consult Ltd, Accra, Ghana, [2]Ghana Health Service, Accra, Ghana

**OBJECTIVES:** Ghana has documented recurrent Cholera outbreaks (Davies-Teye, 2014); the worst ever in 2014 had high case, death incidence and yet does not routinely audit these deaths. Auditing the deaths would improve healthcare quality delivered to clients This study aimed at developing standardized Cholera Death audit tool, describe the deaths and identify prevalent factors that contributed to deaths. **METHODS:** Standardized cholera death audit tool was developed. Census of cholera deaths from June – December 2014 in Greater Accra Region made. Medical records, surveillance data of deaths from treatment centers reviewed with the developed audit tool. Data abstracted included socio-demographic, clinical, patient monitoring. Data managed in Epi info7. Descriptive, bivariate analysis made and Prevalent Odds Ratio (95% Confidence Interval) determined to identify prevalent factors associated with deaths. **RESULTS:** The region documented 20,199 (Attack rate 432 per 100,000 populations) cholera cases with 121 deaths (CFR 0.60%). La Nkwantanang-Madina and Ladade Kotopon were most affected with Attack rates above 600 per 100,000 populations. Ada East, Ashaiman and LEKMA had case fatalities above 0.9%. Ages ranged 1–82 years, mean 41.0 ±17, median 39.0, mode 24.0 years. Males constituted 65.7% and 90.9% did not have health insurance. Duration of home stay ranged 0-5days. Nineteen percent were dead on arrival and 20.2% within 4hours of arrival.

Fifty one percent severely dehydrated with Systolic BP ranged 0.0–160.0mmHg, median 90.0mmHg. Diastolic BP ranged 0.0-110.0 mmHg, median 60.0mmHg. Total fluids given ranged 0.0–13.9 L, median 5.2 L. Only 1.4% had fluid output monitored. Lacking health insurance (**POR**=2.52, **CI**0.48-13.25), being referred (**POR**=0.05, **CI**0.01-0.21), male (**POR**=0.82, **CI**0.32-2.16), single (**POR**=0.80, **CI**0.26-2.46) were associated with late hospital presentation **CONCLUSIONS:** Instituting routine cholera death audits in Ghana is crucial to reducing case fatality as late presentation, inadequacy of assessment, rehydration, monitoring and lack of Health Insurance were main prevalent factors among deaths in the outbreak.

## PIN21
### AGE RELATED CONSULTATION RATES OF CLINICALLY-DIAGNOSED INFLUENZA AND ACUTE RESPIRATORY ILLNESSES OBSERVED THROUGH A NETWORK OF GP PRACTICES ACROSS ENGLAND

Wiecek W[1], Amzal B[1], Bakshi S[1], Patel V[1], Van Staa T[2]
[1]LASER Analytica, London, UK, [2]University of Manchester, Manchester, UK

**OBJECTIVES:** Influenza infection can be recorded under number of respiratory diagnoses when patients visit a GP. In addition, the incidence of influenza and respiratory infections are known to be highest in younger and elderly age groups. Our objective was to describe the consultation rates for eight respiratory diagnoses across four influenza seasons as observed through GP consultations in England. **METHODS:** Data were obtained from 775,000 respiratory related GP consultations, across four influenza seasons (2010-2014) from the Clinical Practitioners Research Datalink. Eligible patients were registered and had 12 months history with a practice at the start of the season. An influenza season was defined as 1 September through to 13 April of the following year. Practice-level consultation rates for each outcome were determined by age (seven groups were defined) and season. A Poisson mixed effect model was fitted to analyse age effect with inter-practice and inter-season as random effects. 18 to 65 age group was the reference population. **RESULTS:** Across all outcomes, consultation rates for influenza or respiratory illness were highest amongst young children, with highest rates observed for the 0 to <2 age group, followed by the 2 to <4 age group. Focussing on individual diagnoses recorded during GP consultations, younger children were particularly at risk for upper respiratory tract infection and otitis media. Patients over 65 were found to be more at risk for pneumonia and lower respiratory tract infection. Inter-practice variation in diagnoses rates was dominating inter-season variations for most influenza-related diagnoses. Biggest seasonal impact was on consultations for influenza-like-illness, which were particularly high during the 2010-2011 season, likely due to the H1N1 epidemic. **CONCLUSIONS:** Our findings confirmed that children and the over 65 population are most at risk of influenza and respiratory illness, and that incidence can reliably be evaluated through analysis of GP consultation rates.

## INFECTION – Cost Studies

## PIN22
### HEALTH ECONOMIC IMPACT OF 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN FINNISH HOME CARE CUSTOMERS ≥50 YEARS WITH UNDERLYING CHRONIC MEDICAL CONDITIONS

Mankinen PT[1], Soini EJ[1], Laine J[2], Linna M[3], Åhman H[2], Martikainen J[1]
[1]ESiOR Oy, Kuopio, Finland, [2]Pfizer Oy, Helsinki, Finland, [3]Aalto University, Espoo, Finland

**OBJECTIVES:** Hospital-treated pneumonias (HTP) are associated with substantial individual and societal burden in adults (≥50 years) and elderly. Moreover, adults e.g. with vascular, metabolic or respiratory diseases have a 3-6 times higher risk of HTP when compared with their healthy controls. Persons at risk are likely to benefit most from pneumococcal vaccinations. The 13-valent pneumococcal conjugate vaccine (PCV13) has showed to prevent community-acquired pneumonia and invasive pneumococcal disease in adults. The objective of this study was to estimate the expected 5-year health economic impact of targeted PCV13 compared with no vaccination in Finnish home care customers. **METHODS:** A budget impact model was developed to predict the impact of PCV13 vaccination in terms of costs and HTP events avoided at the national and municipal level. A dynamic-cohort Markov modelling approach and a time horizon of 5 years was used. The baseline number of home care customers and HTP events were gathered from Finnish national registries. The efficacy of PCV13 was estimated based on CAPITA trial. Only direct costs in 2014 value were considered in the analysis. **RESULTS:** All 105,572 Finnish home care customers are considered to be at moderate or high risk for HTP because of underlying chronic medical conditions. Vaccination of these people with PCV13 could provide an undiscounted net budget savings of about €49.2 million compared with the current no-vaccination situation over the next 5 years. Among the risk groups considered, the largest absolute undiscounted net savings (€22.3 million) could be obtained by vaccinating people with heart disease, due to its high prevalence in the target population. **CONCLUSIONS:** In Finland, the direct immunization of home care customers with PCV13, is estimated to lead to substantial cost savings in the following 5 years after vaccination.

## PIN23
### BUDGET IMPACT ANALYSIS OF SOFOSBUVIR-BASED REGIMENS FOR THE TREATMENT OF HIV/HCV CO-INFECTED PATIENTS IN NORTHERN ITALY: THE LIGURIA REGION SIMULATION

Cenderello G[1], Artioli S[2], Gaggero D[1], Pasa A[1], Dentone C[3], Fraguglia C[1], Giacomini M[4], Giannini B[4], Pastorino G[5], Viscoli C[6], Cassola G[1], Di biago A[6]
[1]EO Ospedali Galliera, Genoa, Italy, [2]ASL-5 Spezzina, La Spezia, Italy, [3]ASL-1 Imperiese, Sanremo, Italy, [4]Genoa University, genoa, Italy, [5]ASl-1 Imperiese, Sanremo, Italy, [6]Genoa University, Genoa, Italy

**OBJECTIVES:** Chronic HCV is a leading cause of hospitalization and death in populations coinfected with HIV in Italy. Sofosbuvir (SOF) is a pan-genotypic drug, which can be used alone or combined with other agents (e.g.Simeprevir,Daclatasvir, Ledipasvir) as oral treatment for HCV, with different price levels. We performed

a 5 year-horizon budget impact analysis of SOF-based regimens for the management of HIV/HCV-coinfected patients **METHODS:** This prospective study involved 4 Italian Infectious Diseases Departments in the Liguria Region. A total of 1.005 coinfected patients (30% cirrhotics) in any stage of their hepatic disease stages was considered (F0-F4, cirrhosis,transplanted,HCC). Disease stage costs per patient were collected, taking into account the rate of expected disease progression in absence of treatment and the rate of Sustained Virological Response (SVR)with SOF-based regimens. The success rate for SOF-based Regimens was estimated based on literature data, whilst the liver disease progression in a such short period was evaluted according to expert opinion. Drugs prices used in the calculation were those paid by the Italian Health Service. Two scenarios were compared: "no treatment" versus b) SOF-based treatment. Data were analyzed from the Regional Health Service standpoint **RESULTS:** Over the next 5 years, the total expense in a "no treatment" scenario (base case) should approximate 54 M Euros. Assuming an SVR success rate of 90%, average SOF-based regimens price higher than € 50.000 costs more than € 55 millions, resulting not convenient. At the average price of 15.000 € per patient, the total expense in the SOF-based scenario should approach 20 MEuros , i.e. more than 60% lower than in the "no-treatment" scenario. **CONCLUSIONS:** The results suggest that at the average price of € 15.000 per patient over the next 5 years, the use of SOF should allow saving half of the economic resources needed to manage the HIV/HCV disease population.

## PIN24
### A DYNAMIC MODEL TO ESTIMATE THE BUDGET IMPACT OF A NEUMOCOCCAL VACCINATION PROGRAM IN SPAIN

Varona JL[1], Lorente MR[1], Antoñanzas F[1], Rejas J[2]
[1]Universidad de La Rioja, Logroño, Spain, [2]Pfizer, Alcobendas, Spain

**OBJECTIVES:** The purpose of this study is to estimate the 5-year budget impact of a pneumococcal vaccination program of population aged 65-year-old in Spain. **METHODS:** A dynamic model based on differential equations was built for the conceptualization of the disease and the parameters were populated with the vaccine efficacy data coming from the CAPITA clinical trial of the 13-valent pneumococcal conjugate vaccine (PCV13). If S stands for susceptible, I for infective, V shows the number of individuals who are effectively vaccinated at each time and t is the time variable and the parameters beta and gamma show the transmission and natural recovery coefficients respectively, the differential equation of the model is: $dS(t)/dt=-\beta^*I(t)^*S(t)+\gamma^*I(t)-V(t)$ and $dI(t)/dt=+\beta^*I(t)^*S(t)-\gamma^*I(t)$. Program duration was fixed to 5 years, and every year the 65-year cohort would be vaccinated (coverage of 49.3%). Economic parameters included hospital costs of treating pneumonias, meningitis, bacteremia, and empyema as well as the outpatient costs of treating pneumonia in the community (41.5% of the cases). Costs sources were official databases for hospitalizations and vaccine, and a local study for outpatient costs of pneumonia. Mortality rates related to pneumococcal infections reported in the UK are applied to the Spanish case. **RESULTS:** In 5 years-period with a 65 year old cohort of 513,000 people, the vaccination program is expected to avoid about 35,700 cases of pneumococcal disease (the majority of them otherwise causing pneumonia), and about 1,419 related deaths. Vaccination costs of 59.5 million euros would be completely offset by medical cost reduction of 124 million euros, yielding to a net saving of 64.5 million euros. **CONCLUSIONS:** PCV13 vaccination targeting the cohort of 65 year-old Spanish adults is expected to result in net savings for the health care system in addition to significant cases of pneumonia avoided and related health improvements for the patients.

## PIN25
### BUDGET IMPACT ANALYSIS OF THE USE OF DACLATASVIR FOR THE TREATMENT OF HEPATITIS C VIRUS (HCV) GENOTYPES 3, IN THE ITALIAN SETTING

Restelli U[1], Bonfanti M[1], Alberti A[2], Lazzarin A[3], Nappi C[4], Croce D[1]
[1]LIUC University, Castellanza, Italy, [2]Università degli studi di Padova, Padova, Italy, [3]University Vita-Salute San Raffaele, Milan, Italy, [4]Bristol Myers Squibb S.r.l., Rome, Italy

**OBJECTIVES:** New HCV antiviral treatments showed higher effectiveness (sustained virologic response - SVR) compared with that of available drugs. Due to the high cost of such treatments and in absence of scientific evidence on their economic impact on the Italian National Health Service (NHS), it is crucial to investigate the sustainability of their use in the Italian setting. The study aimed at evaluating the budget impact on the Italian NHS of the use of Daclatasvir for HCV treatment. **METHODS:** An analytical decision model was implemented with a five year time horizon. Two scenarios were structured considering the market shares of HCV treatments (expert opinion) with or without the use of Daclatasvir. The target population (HCV genotype 3 infected patients) was estimated based on literature data. Patients enter the model in fibrosis stage 3 and 4 and may evolve in an SVR state (based on effectiveness data), decompensated cirrhosis, HCC, liver transplant or death. The costs considered in the analysis were those of antiviral treatment, adverse events management and health state costs. **RESULTS:** The use of Daclatasvir, in comparison with the scenario without Daclatasvir, would lead to an increase of costs for the Italian NHS of 21.31 million euros in year 1, 21.33 million euros in year 2, 23.36 million euros in year 3, 23.26 million euros in year 4 and 17.20 million euros in year 5. **CONCLUSIONS:** Daclatasvir would lead to an increase of healthcare costs for the treatment of genotype 3 HCV infected patients in the first three years, followed by a reduction of the cost's increase in years 4 and 5 (-0.44% in year 4 compared with year 3, and -26.0% in year 5 compared with year 4), thanks to the management of better health conditions, due to the higher effectiveness of Daclatasvir based therapies than the comparators.

## PIN26
### COST IMPACT OF THE DELAY OF BROAD-SPECTRUM ANTIMICROBIAL AGENTS DE-ESCLATION ON SURGICAL WARDS

Aseeri M, Youssif E, Khoshhal S
King Abdul Aziz Medical City, Jeddah, Saudi Arabia

**OBJECTIVES:** To measure the cost impact of the delay of broad spectrum antibiotics de-escalation on surgical wards at a tertiary care center in Jeddah, Saudi

Arabia **METHODS:** Retrospective cohort study for patients admitted to surgical wards at a tertiary care center in Jeddah, Saudi Arabia over 3 months. Three broad spectrum antibiotics were targeted; piperacillin/tazobactam, imipenem, and meropenem. De-escalation delay was measured in days from the time of getting the culture identification and susceptibility until narrowing the antimicrobial therapy to target the identified organism. The cost impact was measured by multiplying the period that patients were on broad spectrum antibiotics after the final identification and susceptibility of microorganism by the cost of broad-spectrum antibiotics per day. **RESULTS:** One hundred sixty-three patients received broad spectrum antibiotics over 3 months on surgical wards at our institution. Sixty four out 163 patient (39.2%) had identified organism and susceptibility for other antibiotics. Thirty one patients (48.4%) had de-escalation of antimicrobial therapy within 24 hrs of culture identification and susceptibility result. Thirty three patients (51.6%) had a delay in their broad spectrum antibiotics therapy de-escalation despite getting the culture identification and susceptibility. The total delay of broad spectrum antibiotics and cost impact were as follow: piperacillin/tazobactam 267 days (3,920 USD); imipenem 5 days (230 USD); meropenem 110 days (9,925 USD). **CONCLUSIONS:** the delay of broad spectrum antibiotics de-escalation on surgical wards at our hospital has resulted in a cost impact of 14,075 USD over 3 months period. Pharmacy intervention program on surgical wards to enforce the de-escalation process is needed.

## PIN27
### CHALLENGES IN ECONOMIC EVALUATION OF ANTIBIOTICS IN HEALTH-CARE ACQUIRED INFECTIONS: A TARGETED REVIEW

Chapman R[1], Kongnakorn T[2]
[1]Evidera, London, UK, [2]Evidera, Bangkok, Thailand

**OBJECTIVES:** Health-care acquired infections (HCAIs) and resulting antibiotic treatments have been raising global concerns. HCAIs represent a substantial economic and humanistic burden with increasing costs, morbidity and mortality. Concerns around antibiotic use include resistance and lack of new products to market. The latter is related to difficulty in gaining approval, potential lack of profitability, complicated market assess, and difficulty in demonstrating value. Methods used for economic evaluations may contribute to the difficulty in assessing antibiotics. Our objective was to review published economic evaluations of antibiotics in HCAIs and to summarize currently used methods and challenges in assessing cost-effectiveness. **METHODS:** We conducted a MEDLINE search for model-based, health economic evaluations of antibiotics in the six most prevalent HCAIs in the UK (respiratory tract, urinary tract, surgical site, clinical sepsis, gastrointestinal and bloodstream infections). Original, English language studies were included. Among others, analysis type, model structure, perspective, time horizon and outcomes were extracted. **RESULTS:** We identified 126 papers, of which 19 met the inclusion criteria. These included 13 cost-effectiveness, four cost-consequence, one cost-minimization and one cost-benefit analyses. Of the models 12 were decision trees/decision models, three cost-calculators, one Markov model and one discrete even simulation. 2 papers did not report sufficient methodology. Time horizons were mainly the length of an infection. Main outcomes were cost-per cure, cost-per patient treated, cost-per QALY and total cost saving. Economic models tend not to account for changes in prevalence of resistance, and additional potential benefits such as preventing transmission of resistance. **CONCLUSIONS:** Most identified economic evaluations were simplistic, using cost-effectiveness approach through a simple decision tree, over short time-horizon, with payer perspective. This limits the flexibility of the evaluations to account for benefits of antibiotics in addressing burden of HCAIs and the current global concerns, contributing to the difficulty of assessing economic benefit of antibiotics.

## PIN28
### A SYSTEMATIC LITERATURE REVIEW OF THE ECONOMIC IMPLICATIONS OF ACUTE BACTERIAL SKIN AND SKIN STRUCTURE INFECTIONS (ABSSSIS)

Degener F[1], Ivanescu C[2], Casamayor M[3], Postma M[1]
[1]University of Groningen, Groningen, The Netherlands, [2]Quintiles Advisory Services, Hoofddorp, The Netherlands, [3]Quintiles, Barcelona, Spain

**OBJECTIVES:** During the years, acute bacterial skin and skin structure infections (ABSSSIs) have seen an increase in incidence in many parts of the western world. Additionally, the treatment of ABSSSIs, generally consisting of surgical debridement or drainage and empiric antibiotics in the hospital, can be further complicated by emerging multi drug resistant bacteria, most notably methicillin-resistant Staphylococcus aureus (MRSA). As the incidence rates increase alongside with rising antibiotic resistance, ABSSSIs are becoming a significant burden for healthcare systems. This study aims to collect evidence on the healthcare resource utilization of ABSSSI and the economic implications of different treatment modalities for the management of these diseases. **METHODS:** A systematic literature search in MEDLINE, Cochane and ISPOR abstract databases with predefined inclusion criteria and subsequent quality assessment was performed. **RESULTS:** The search identified 1,799 unique publications of which 26 contained relevant economic data on ABSSSIs treatment and were therefore included in this manuscript. There were six healthcare resource utilization studies, 11 cost analyses, three cost-minimization and six cost-effectiveness analyses, of which only a single study reported quality adjusted life years. Vancomycin was evaluated in most studies (21), followed by linezolid (15), daptomycin (8) and others (7). **CONCLUSIONS:** This review provides an in-depth overview of the economic implications of current ABSSSI management. Major cost drivers of ABSSSI treatment were length of hospital stay and the overall cost associated with frequent intravenous antibiotics administration. While most studies (20) applied a hospital perspective, there was a substantial disparity on the specific costs in- or excluded in the analysis, and on the unit prices. This led to significant variations of the final cost outcomes. Notably, over 10-fold differences were found. The overall quality and comparability of the literature reviewed was sub-optimal, elevating the need for more high-quality and reproducible economic evaluations in the area of ABSSSIs.