OBJECTIVES: To document the proportion of national healthcare expenditures that is devoted to vaccines across Western Europe and its evolution over the past years. **METHODS:** Seven countries were selected: the 5 biggest countries in terms of population accounting for ≈317 million inhabitants in 2015 (Germany, England, France, Italy, and Spain) and 2 smaller countries from northern and southern Europe: Sweden and Portugal. This panel of countries constitutes a good mix of vaccine procurement modalities (centralized/decentralized, tender/reimbursement) across Western Europe. Data search was performed on both OECD online databases and national official sources for healthcare and vaccine expenditures from 2008 (2006 for England) until the most recent year available (usually 2012/2013). **RESULTS:** Healthcare expenditures have increased in all countries but Spain. Increases ranged from +3%/year in France to+6%/year in England. In the meantime, despite heterogeneous availability, vaccine spending diminished markedly in Germany (9%/year from 2008 to 2013), Spain (-7%/year from 2008 to 2012) and France (-4%/year from 2008 to 2013). Only Sweden (SEK 1.72 Bn in 2013, +6%/year from 2011 to 2013) and England (£0.40 Bn in 2010/11, +14%/year from 2006/07 to 2010/11) have increased their spending on vaccines. The proportion of healthcare expenditures allocated to vaccines ranged from 0.45% in Germany (€ 0.82/182.7 Bn in 2013) down to 0.25% in Spain (€ 0.17/ 68.6 Bn in 2012) and France (€ 0.63/248 Bn in 2013). When available, OECD data showed similar proportions and evolution patterns in most cases. **CONCLUSIONS:** Vaccination involves low levels of healthcare investments in Europe (<0.5%) compared to the far-reaching public health benefits it procures. We evidenced a net trend towards a decrease over the past years, except for Sweden and England. In the ever-constraint budgetary context, vaccination budgets shall be preserved or even increased to sustain life-course approach of immunization at sufficient coverage rates.

PIN109

RELIABILITY OF MANUFACTURERS' BUDGET IMPACT ESTIMATES FOR CHRONIC HCV GT1 DRUGS IN POLAND

Iwanczuk T[1], Zawodnik S[1], Tatara T[1], Sliwczynski A[2], Brzozowska M[2]
[1]Agency for Health Technology Assessment and Tariff System in Poland (AOTMiT), Warsaw, Poland, [2]Medical University of Lodz, Lodz, Poland

OBJECTIVES: To compare the total value of payer's expenditures on Victrelis (boceprevir) and Incivo (telaprevir) in patients with chronic HCV GT1 estimated in the manufacturers' Budget Impact Analyses (BIAs) submitted with the reimbursement applications to AOTMiT and actual expenditures of the National Health Fund (NHF). **METHODS:** Annual public payer's expenditures estimated in manufacturers' BIAs for Victrelis and Incivo and actual expenditures reported by the NHF were compared. RSSs were not taken into account. Analysed drugs were chosen on the basis of the same indication and financing through the same therapeutic programme in Poland. Actual expenditures and population size were taken from the financial reports of the NHF for the first and second year (actual data on 9 months for expenditures and 11 months for population size were extrapolated to one year) of reimbursement for each drug. **RESULTS:** For drugs Victrelis and Incivo in patients with chronic HCV genotype 1 infections, the sum of total expenditures estimated in BIAs submitted with the reimbursement applications was 145,38 million PLN in the first year and 164,49 million PLN in the second year, and they were higher than the actual expenditures reported by the NHF: 77,48 million PLN and 120,72 million PLN, respectively. The expenditures estimated in BIAs were overestimated by 88% in the first year of reimbursement and 36% in the second year of reimbursement. Population size estimated in BIAs in comparison to its actual size from the NHF reports was overestimated by 53% in the first year and 38% in the second year of reimbursement. **CONCLUSIONS:** In the case of drugs chosen for this analysis, total payer's expenditures estimated in BIAs submitted with the reimbursement applications were overestimated in comparison to the real life expenditures of the NHF in Poland.

PIN110

THE COST OF VACCINATION THROUGHOUT LIFE: A PAN-EUROPEAN PERSPECTIVE

Cornier M[1], Ethgen O[2], Baron-Papillon F[1]
[1]Sanofi Pasteur MSD, Lyon, France, [2]University of Liege, Liege, Belgium

OBJECTIVES: To assess the costs of vaccination throughout life for a fully immunized Western European citizen. **METHODS:** Vaccines recommended in the most recent National Vaccination Calendar (NVC) for Germany, England, France, Italy, Spain, Sweden and Portugal were used differentiating men from women and healthy individuals from those suffering from underlying condition(s) who require specific additional vaccinations. Unit vaccine costs and administration fees were retrieved from national official sources. The number of visits was adjusted for possible co-administrations to better reflect local vaccination practices. All costs were calculated from the national healthcare perspective. In sensitivity analyses, vaccine costs were varied within a +/-30% range to account for possible price variations due to competition, market type, size and vaccines lifecycle. Administration fees were increased by 30% hypothesizing that medical fees are unlikely to decline over time. **RESULTS:** Vaccinating an individual against up to 19 diseases throughout his entire life and in full compliance with NVC would range from €350 to €2,400 (vaccines costs only) and from €450 to €3,400 when administration costs are considered. Lowest range corresponds to healthy man in Sweden and highest range to woman with underlying conditions in England. Vaccination costs were variable among countries due to heterogeneous NVCs and vaccination organization. In all countries but France, adults (18-64y) and elderly (≥65) accounted for the lowest vaccines costs compared to pediatric (0-24m) and children/adolescents (2-17y). In comparison, other mass secondary prevention may be at least 3 times more costly. **CONCLUSIONS:** Vaccination requires a relatively low amount of money per individual knowing that some missed opportunities remain in senior vaccinations. A life-course approach of vaccination should be considered as a smart investment providing substantial benefit falling actually well beyond individual health and protecting the whole population and economy against potentially troublesome and resource intensive outbreaks of infectious diseases.

PIN111

WILLINGNESS TO PAY FOR INNOVATIVE DRUGS: ANTI-HCV TREATMENT FROM THE ITALIAN NATIONAL HEALTH SYSTEM PERSPECTIVE

Mennini FS[1], Marcellusi A[2], Viti R[1], Andreoni M[2]
[1]Faculty of Economics, Centre for Economic and International Studies (CEIS)-Economic Evaluation and HTA (EEHTA), University of Rome, Rome, Italy, [2]University of Rome, Rome, Italy

OBJECTIVES: A new scenario of therapy for HCV infection is being established with the approval. The aim of this study is to evaluate the long-term health outcomes and the willingness to pay of new anti-HCV treatment from the Italian societal perspective. **METHODS:** A multistate model was developed to estimate the HCV-infection process in a theoretical cohort. The Markov process considered 12 health states (F0, F1, F2, F3, Compensated cirrhosis (F4), SVR, decompensated cirrhosis, HCC, Transplantation (1 year), Transplantation (years later), HCV-related death and death from other causes) and 42 transition probabilities. The model was informed with available data published in national and international literature. Effectiveness of new treatment strategies was estimated from literature review. Cumulative cases of HCV-related diseases, direct and indirect medical costs, avoided by the increased effectiveness of new treatments, were estimated. **RESULTS:** The cohort of subjects with chronic HCV in 2013 amounts to 267.190 subjects, of these about 17,600 patients F3-F4 are treated with drug therapy. Cumulative cases of HCV-related diseases who succeed in preventing by the increased effectiveness of new treatments amounted to 47.433 after 7 years, 156.507 after 17 years, 256.942 after 27 years. The direct net medical costs, after the cost of the drug, amounted to € 18,13, € 72,33 and € 143,24 millions after 7, 17 and 27 years respectively, and € 166,51, € 950,3 and € 551,53 attributable to indirect costs avoided, for the same time horizons. Furthermore, it was estimated that each patient treated with new drugs achieves a reduction of expenditure of about € 12,000 in terms of direct costs, and € 4,000 in terms of indirect costs. **CONCLUSIONS:** In conclusion, an important share of the cost per treated patient can be compensated by the reduction of direct and indirect costs guaranteed by the effectiveness of new treatments.

PIN112

ARE VACCINES GETTING A FAIR DEAL? HEALTH TECHNOLOGY ASSESSMENT OF VACCINES ACROSS EUROPE

Wei C, Jarrett J, Ovcinnikova O, Bending MW,
Mapi, London, UK

OBJECTIVES: While the practice of Health Technology Assessment (HTA) has been well established there is wide variation in the processes by which public reimbursement decisions for vaccines are made in comparison to medicines and devices. The objective of this study was to compare the assessments of vaccines across Europe (UK, France, Germany, Italy, Spain), and to critically appraise the systems using the key principles for the conduct of HTA (Drummond et al, 2008). **METHODS:** A systematic review of economic modeling of vaccines, supplemented by a targeted review of key stakeholder websites across Europe for previous assessments of vaccines was conducted. A search of Medline, Embase, Econlit and NHSEED was conducted and abstracts were reviewed by two independent reviewers against pre-specified criteria for inclusion. Data from relevant articles was extracted and quality assessed. Country HTA websites were hand-searched. The evidence was synthesised to provide an overview of the strengths and weaknesses of the appraisal processes in each of the European countries. **RESULTS:** The review highlighted the inherent difficulties in health economic modeling using standard HTA processes as the long-term impact of vaccines is unknown, leading to wide variation in assumptions and methods of extrapolation. The literature identified highlighted the inherent uncertainty surrounding the long-term impact of vaccines, which directly impacts the cost-effectiveness. The review also highlighted the importance of budget impact of vaccines when making a decision. When compared to the key principles of HTA, all countries failed to meet all of the criteria. **CONCLUSIONS:** The economic evaluations identified indicated that the cost-effectiveness of a vaccine was heavily dependent on the assumptions surrounding uptake and carriage. The review indicated that HTA decisions on vaccines are driven by cost-effectiveness and budget impact, which may lead to underestimating the potential clinical and public health benefits.

PIN113

NATIONAL SURVEY OF BEHAVIOR, ATTITUDES AND PRACTICE OF GENERAL PRACTITIONERS AND VARIOUS SPECIALISTS CONCERNING ANTIMICROBIAL USE AND RESISTANCE IN RESPIRATORY TRACT INFECTIONS

Babela R[1], Slezakova Z[2], Szydlowski S[3]
[1]St. Elizabeth University of Health and Social Work, BRATISLAVA, Slovak Republic, [2]Educational Section, Ministry of Health, BRATISLAVA, Slovak Republic, [3]University of Scranton, Scranton, PA, USA

OBJECTIVES: We performed national survey of behavior, attitudes and practice of general practitioners (GP) and specialists (pediatricians, ENT, pulmonologists) at the field of antimicrobial (ATB) use for respiratory tract infections. **METHODS:** A 34-item iPad iOS survey was performed personally with each GP and specialist during 7 months period. **RESULTS:** The survey was completed by 357 GPs and specialists (61,9% and 38,1%, respectively). GPs and specialists were situated mostly in areas with population higher than 5000 people (49,3% and 48,5%), but GPs served significantly more often in area with population less than 5000 people compared to specialists (P<0,001, CI 0,13 – 0,60). There was significantly higher number of GPs with practice shorter than 5 years compared to specialists (P<0,01, CI 0,02-0,64). GPs used their own clinical experience in prescribing ATB more often compare to specialists (61,1% vs 43,4%, P<0,01, CI 0,31-0,77) and specialist used more often ATB susceptibility reports compared to GPs (18,4% vs 8,1%, P<0,01, CI 1,27-5,10), which also corresponds with frequency of checking susceptibility reports on monthly basis

in specialists compared to GPs (23,5% vs 14,0% respectively, P<0,04, CI 1,05-3,38). On contrary, more specialists chose to never discuss antibiotic treatment with patients compared to GPs (19,1% vs 7,2%, P<0,001, CI 1,46-6,2) and there were more GPs that always discussed antibiotic treatment with patients compared to specialists (15,8% vs 5,9%, P<0,01, CI 0,14-0,78). Patients' co-payment seems to be more sensitive issue for GPs compared to specialists since 29% of GPs considered co-payment all the time or most of the time when choosing ATB compared to specialists (18,4%, P=NS). **CONCLUSIONS:** This survey revealed that both GPs and specialists are aware of the importance of antimicrobial resistance and demonstrated differences between specialties with respect to antimicrobial use and knowledge. Antimicrobial education is needed but may be more effective if it is tailored to specific specialties.

PIN114
IDENTIFYING RESEARCH GAPS IN ANTIMICROBIAL RESISTANCE (AMR): LITERATURE REVIEW, POTENTIAL RESEARCH QUESTIONS AND STUDY DESIGNS
Silveira DS, Leite BF, Alves Md,
Brazilian Ministry of Health, Brasília, Brazil
OBJECTIVES: Generate research questions through studies published and financed by government or public research intuitions is an important tool in management of the public health system. While there are a growing number of papers, guidelines and funding in research, there are specific needs for different countries that need answers. Thus, researching gaps within the needs of each country contributes to optimization of public spending and guidance for promoting effective research. **METHODS:** We conducted a search in the Brazilian database "Pesquisa Saúde" as in the international databases Pubmed Health; Cochrane Library and Prospero. For the international databases, we used the terms: " Drug Resistance, Microbial", "Antimicrobial Drug Resistances" and "Resistance, Antibiotic" with meta-analyzes within 10 years cutouts. **RESULTS:** A total of 212 trials were identified. Those trials were scored as 1 for the most important and 2 for least significant, according to local priorities. We obtained 107 studies with a score 1. These studies were carefully analyzed to guide which unanswered questions should develop in new researches. **CONCLUSIONS:** Clinical and epidemiological characterization of gaps has been identified on mortality and morbidity, related with antimicrobial prescribing patterns. We also identified gaps in prevention and control of prescription practices, colonization time in patients and detection of Mycobacterium tuberculosis strains. About economic impact and cost of RAM for the health system we identified gaps in hospital infections. The gaps identified will subside the financing of new studies by DECIT / MS in order to contribute to the national plan for prevention and combating RAM which is part of the WHO global plan.

PIN115
ANALYSIS OF HIV – INFECTION IN KAZAKHSTAN
Mauyenova D[1], Karp L[1], Turgambayeva A[1], Kulov D[2], Zhakipbekova V[2], Rakhimzhanova F[3]
[1]*Astana Medical University, Astana, Kazakhstan,* [2]*Karaganda State Medical University, Karaganda, Kazakhstan,* [3]*Semey Medical University, Semey, Kazakhstan*
OBJECTIVES: This article describes the epidemiological features of spread of HIV infection in the Republic of Kazakhstan. We have examined gender-specific of HIV-infection in the Republic of Kazakhstan. As of December 31, 2013, 19 905 cases of HIV- infection have been registered in the country, 1933 persons of which were tested positive for AIDS, 1431 persons died. **METHODS:** All the cases of HIV- transmission in Kazakhstan for 26 years (1987-2013) have been analyzed. Statistical data was processed by means of BIOSTAT program. Extensive, crude, age indexes were calculated based on the general methods of health statistics **RESULTS:** The prevalence of HIV in Kazakhstan is 86,5 out of 100 thousand people (0,090/0000), while the age group is people from 15 years old and older- 0,140/0000. Unequal distribution of the cases of HIV-infection on the territory of Kazakhstan is being observed. Accroding to the cumulative figures (1987 – 2013), 60,9% of HIV-positive people got an infection parentally (during the intravenous injection of narcotic substances), while the ratio of the persons with sexually transmitted infection is 34%. In 2013, the sexual transmision (heterosexual) of HIV-infection constitued 59,8%, while parental transmission made 33,5%. The highest ratio among the registered cases falls within the age group of 20 to 39 years old, i.e. 70,7%. Over the past years, the proportion of women in the disease detection structure is 44,1% (in 2011 - 39,6%; in 2012- 41,9%), the proportion of men among the detected cases is decreasing - 55,9% (in 2011 - 60,4%; in 2012 - 58,1%). **CONCLUSIONS:** Epidemiological analysis shows that the number of HIV-positive is increasing, the largest part of them are young people at the age of 20 to 39 years old. The ratio of HIV-positive women has increased, the infection transmission route has changed- the heterosexual transmission is taking the leading position.

PIN116
DO PNEUMOCOCCAL CONJUGATE VACCINES REPRESENT GOOD VALUE FOR MONEY IN A LOWER-MIDDLE INCOME COUNTRY? A COST-UTILITY ANALYSIS IN THE PHILIPPINES
Haasis MA[1], Ceria JA[1], Kulpeng W[2], Teerawattananon Y[2], Alejandria MM[3]
[1]*Department of Health Philippines, Manila, Philippines,* [2]*Ministry of Public Health Thailand, Bangkok, Thailand,* [3]*University of the Philippines Manila, Manila, Philippines*
OBJECTIVES: The objective of this study is to assess the value for money of introducing pneumococcal conjugate vaccines as part of the immunization program in a lower-middle income country, the Philippines, which is not eligible for GAVI support and lower vaccine prices. It also includes the newest clinical evidence evaluating the efficacy of PCV10, which is lacking in other previous studies. **METHODS:** A cost-utility analysis was conducted. A Markov simulation model was constructed to examine the costs and consequences of PCV10 and PCV13 against the current scenario of no PCV vaccination for a lifetime horizon. A health system perspective was employed to explore different funding schemes, which include universal or partial vaccination coverage subsidized by the government. Results were presented as incremental cost-effectiveness ratios (ICERs) in Philippine peso (Php) per QALY gained (1 USD = 44.20 Php). Probabilistic sensitivity analysis was performed to deter-

mine the impact of parameter uncertainty. **RESULTS:** With universal vaccination at a cost per dose of Php 624 for PCV10 and Php 700 for PCV13, both PCVs are cost-effective compared to no vaccination given the ceiling threshold of Php 120,000 per QALY gained, yielding ICERs of Php 68,182 and Php 54,510 for PCV10 and PCV13, respectively. Partial vaccination of 25% of the birth cohort resulted in significantly higher ICER values (Php 112,640 for PCV10 and Php 84,654 for PCV13) due to loss of herd protection. The budget impact analysis reveals that universal vaccination would cost Php 3.87 billion to 4.34 billion per annual, or 1.6 to 1.8 times the budget of the current national vaccination program. **CONCLUSIONS:** The inclusion of PCV in the national immunization program is recommended. PCV13 achieved better value for money compared to PCV10. However, the affordability and sustainability of PCV implementation over the long-term should be considered by decision makers.

PIN117
SCORING AND MEASUREMENT PROPERTIES OF A TOOL TO ASSESS PRIMARY CARE PHYSICIANS' ENGAGEMENT IN AND PERCEIVED BARRIERS TO VACCINATION: THE 'DETERMINANT OF INTENTIONS OF VACCINATION' (DIVA©) QUESTIONNAIRE
Arnould B[1], Arnould P[2], Benmedjahed K[3], Coindard G[4], Denis F[5], Duhot D[2], Gallais J[2], Martinez L[2], Raineri F[2], Seyler D[6], Tugaut B[3], Fofana F[3]
[1]*Patient-Centered Outcomes - Mapi, Lyon, France,* [2]*French society of General Medicine, Issy-les-Moulineaux, France,* [3]*Mapi, Lyon, France,* [4]*University of Paris Sud, Le Kremlin-Bicêtre, France,* [5]*University hospital, Limoges, France,* [6]*International vaccination center, Marseille, France*
OBJECTIVES: Primary care physicians (PCPs) play a key role in France in the prescription and administration of recommended vaccines. Uneven vaccination coverage in vulnerable populations appeals for specific interventions to be designed to address existing barriers faced by targeted groups of PCPs. The 'Determinant of Intentions of VAccination' (DIVA©) questionnaire was developed to assess PCPs' attitudes and beliefs toward vaccination. The objectives of the study were to define the scoring rules and to assess the measurement properties of the DIVA questionnaire. **METHODS:** A cross-sectional study was conducted in France with PCPs to define the scoring of DIVA and to assess its measurement properties. PCPs had to complete the DIVA questionnaire in to any of the six vaccine-preventable diseases (VPD) they were randomly assigned (measles, pertussis, pneumococcus infection, seasonal influenza, HVP infection and tetanus). Internal consistency reliability and known groups validity were assessed. **RESULTS:** DIVA was completed by 1,069 PCPs (mean age 48; 58% male), with very good quality of completion (90% of questionnaires with no missing item). One redundant item was removed from the questionnaire. The final DIVA was composed of 55 items, grouped into six thematic domains covering disease, vaccine, information, organisation, consultation, and PCP experience, and one domain assessing PCP's engagement. The Engagement score showed very good internal consistency reliability across the six VPD (0.80≤Cronbach's alpha<0.90). The Rasch model validated the number, content and modalities of items of the Engagement domain. The six thematic scores showed overall good known groups validity. **CONCLUSIONS:** DIVA is a valid and reliable measure to assess PCPs' engagement toward vaccination, as well as the specific barriers they face in various VPD. DIVA might help to define specific interventions aimed at improving PCPs vaccination activity, and can serve as an outcome measure to assess the impact of such interventions.

PIN118
MONITORING OF CRITICAL LABORATORY RESULTS TO IMPROVE QUALITY OF PATIENT CARE IN A LARGE URBAN CLINIC IN UGANDA
Musomba R[1], Castelnuovo B[1], Nsumba M[1], Kalule I[1], Rosalind Parkes-Ratanshi P[2]
[1]*Infectious Diseases Institute, College of Health Sciences Makerere University, Kampala, Uganda,* [2]*Infectious Diseases Institute, College of Health Sciences Makerere University.re, Kampala, Uganda*
OBJECTIVES: Follow-up of critical laboratory results can present a challenge in resource limited settings due to high patient volumes, overstretched human resources and no systematic communication from the laboratory. An audit conducted in 2013 in a large outpatient HIV-center revealed that <50% of critical results were acted upon within 24 hours. Our objective is to describe the impact of the new developed guidelines on reducing mortality of patients with critical results. **METHODS:** Results must be immediately communicated by the laboratory to a physician via an "on-call phone"; patients should be contacted and asked to return to the clinic. In addition all critical laboratory results were reviewed and tagged by Quality Management staff. Design: retrospective survey of all files of patients who had in 2014 at least one of the following: Hb <5.5g/dl, creatinine >3.4mg/dl, positive serum Cryptococcus-Antigen (Crag). Clinician's actions were categorized and described. Turnaround time was determined and incidence of mortality between 2013 and 2014 compared. **RESULTS:** During 2014, 5,907 patients had any laboratory test done. Hb <5.5g/dl: 36(0.6%) patients. Action taken: blood transfusion 17/36 (47%), heamatinics14/36(39%) and 2/36(6%) dewormed. Creatinine >3.4mg/dl: 64/3291(1.9%) patients. Action taken: antiretroviral treatment regimen switched 43/64(67%), 2/64(3%) stopped, 12/64(19%) referral to the renal unit. Positive serum-Crag 17/464(3.7%). Action taken: 12/17(71%) started on fluconazole, 5/17(29%) were already on treatment. Turnaround time for Hb and serum crag was <1 day, creatinine 13.3 days. From 2013 and 2014 the mortality decreased in patients with Hb<5.5g/dl from 27.9 to 2.8%, with creatinine>3.4mg/dl from 32.9 to 3.1% and with positive serum-Crag from 36.4 to 23.5%. **CONCLUSIONS:** Critical results monitoring system greatly improves patient turnaround time, and reduces mortality through timely communication and patients follow up. We believe our system could serve as a role model for similar programs in Sub-Saharan Africa to improve quality of care.

PIN119
COST ANALYSIS OF TWO METHODS FOR IMPROVING THE QUALITY OF CARE (QOC) SCORES IN PAEDIATRIC HOSPITAL WARDS DURING WINTER PERIODS
Standaert B[1], Li X[1], Strens D[2], Schecroun N[3], Raes M[4]
[1]*GSK Vaccines, Wavre, Belgium,* [2]*Realidad, Grimbergen, Belgium,* [3]*Keyrus Biopharma c/o GSK Vaccines, Wavre, Belgium,* [4]*Jessa hospital, Hasselt, Belgium*