infections, although the incidence of symptomatic infections in the older age classes does increase. The impact of the different assumptions used in the model was in general limited. **CONCLUSIONS:** We conclude that over a wide range of assumptions, an additional booster dose can reduce the incidence of pertussis in the population.

PIN100

WHY DON'T HEALTH PRACTITIONERS PRESCRIBE RATIONALLY IN MALARIA? A QUALITATIVE STUDY FROM PAKISTAN

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OBJECTIVES: To investigate doctors' perceptions towards factors underlying irrational prescribing practices in treatment of malaria in Pakistan. **METHODS:** A qualitative study with snowball sampling technique was used to identify nineteen doctors working at hospitals in Islamabad and Rawalpindi. Semi-structured interviews were conducted with the doctors until the point of saturation was obtained. The interviews, which were audio-taped and transcribed verbatim, were evaluated by thematic content analysis and by other authors' analysis. **RESULTS:** Thematic content analysis identified three major themes and several subthemes: 1) Factors responsible for irrational prescribing practices in treatment of malaria; 2) Lack of implementation of standard malaria treatment guidelines in the country; and 3) Strategies to improve irrational prescribing practices in treatment of malaria. All the doctors agreed on lack of implementation of standard guidelines in treatment of malaria while mixed responses were observed regarding factors influencing rational prescribing. Influence of pharmaceutical industry and unsupervised polytherapy were cited as major determinants for irrational prescribing practices in case of malaria. **CONCLUSIONS:** The findings suggest that the doctors in Pakistan are aware of irrational prescribing practices and its consequences in treatment of malaria but are facing significant barriers in terms of improving the current prescribing practices. There is an urgent need to design strategies such as implementation of standard malaria treatment guidelines, revision of health policies and up gradation of education and training of health players in order to improve the current prescribing practices for antimalarials.

PIN101

NEW INSIGHTS ON THE SPREAD OF INFLUENZA THROUGH AGENT BASED EPIDEMIC MODELING

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OBJECTIVES: Every winter season an influenza epidemic occurs, although strength and duration may vary. In 2006-2007 in Austria presumably 5% of the whole population fell sick while 21% of age 15 and above were vaccinated. The goal was to build an agent based model to understand, model and simulate the progress of influenza epidemics. **METHODS:** The agent based model simulates single persons with an infection state (susceptible, infected with or without symptoms, resistant, vaccinated). Based on the results of a wide European study (POLYMOD, EC-Project SP22-CT-2004-502084) people have contacts in different places like housholds, schools or workplaces. Transmissions are possible upon contacts, then a person is infected for a while until he or she becomes resistant upon recovery. **RESULTS:** The outbreak of the epidemic starts when a few people are initially infected while the rest is susceptible or vaccinated. After some time the epidemic stops due to a larger number of resistant and a smaller number of susceptible people. Since only 5% of the population fall sick the situations at outbreak and at termination of the epidemic are similar and therefore it behaves very sensitive to parameter changes. **CONCLUSIONS:** Some parameter changes in the model can be interpreted as interventions in reality. But usually the influenza does not react sensitive to interventions. For example, an increase of the vaccination rate by 5% prevents an outbreak of the epidemic in the model which is obviously not true. This insight has two consequences: First, the influenza does not just spread and stop by transmission and recovery of people. There must be one or more other impacts modulating outbreaks like predestined people to fall sick or the climate. Second, without knowledge of these impacts it is almost impossible to predict the effect of vaccination strategies exactely.

PIN102

NATIONAL COST SAVINGS FROM THE BRAZILIAN HIV/AIDS ANTIRETROVIRAL UNIVERSAL ACCESS PROGRAM: ANALYSIS VERSUS CANADA AND AUSTRALIA

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OBJECTIVES: In 1996, the Brazilian government implemented a universal access program for anti-retroviral drugs to improve the treatment of HIV/AIDS. A recent study showed $1.78 billion USD savings from the program compared to pricing in the US. This study estimates the drug costs saved in 2010 by the program's implementation compared to pricing in Canada and Australia. **METHODS:** Nationwide drug distribution data and drug prices for the Brazilian government's antiretroviral access program were obtained for 2010 from the Ministry of Health data. Drug prices for each drug were converted to daily dosage costs in US dollars. Comparable government drug prices were obtained for Ontario, Canada and Australia. The Brazilian, Canadian, and Australian unit drug costs were multiplied by the distribution rates in Brazil to calculate and compare the cost of the Brazilian 2010 drug distribution using the Brazilian and Canadian/Australian pricing rates. Any cost

savings to the Brazilian government were also calculated. The savings calculation assumes that the Brazilian government has paid for all of the drugs distributed regardless of patient utilization rates. Sensitivity analysis was conducted on the distribution rates, pricing, and utilization rates. **RESULTS:** The Brazilian government saved $448.1 million USD in and $403.1 million USD 2010 versus Canada and Australia, respectively through its pricing program. The total cost of the drugs distributed was $1.94 billion with the Brazilian pricing. This compares to $2.37billion and $2.41 billion dollars using Canadian and Australian pricing rates, respectively. Sensitivity analysis found the results to be stable. **CONCLUSIONS:** Significant costs savings have been realized by the Brazilian government through its drug pricing program. These costs savings should be included as part of any analysis of the overall impact of the program.

PIN103

A COMPARISON OF INVESTMENTS FOR DIFFERENT PREVENTION PROGRAMS: RESPIRATORY SYNCYTIAL VIRUS PROPHYLAXIS VERSUS HUMAN PAPILLOMA VACCINE

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OBJECTIVES: Childhood prevention programs are important and imperative public health initiatives. However, prevention programs are often associated with considerable investments. This budget impact analysis was undertaken to position the Italian investment for a program to prevent respiratory syncytial virus (RSV) consequences in high-risk infants using palivizumab. This prevention program is compared to an existing immunization program in the Lombardy region of Italy: Human Papillomavirus Vaccine [Types 6, 11, 16, 18] (HPV), considered standard of care. **METHODS:** Two budget impact models were developed to assess the impact of two different programs on Regional Health Service (RHS) expenditure: the budget impact of RSV prophylaxis program was compared with a non-prophylaxis program, while the budget impact of HPV active prophylaxis was compared with a non-prophylaxis approach. Only direct costs based on disease prevalence, and program efficacy were included. The model includes RSV prophylaxis administration costs, RSV-related resource consumption (visits, long term sequelae) and RSV hospitalization over one year; for HPV prevention program, one year prophylaxis was assessed against 5 years disease costs due to the low incidence of HPV related disease in 1 year. Eligible subjects were preterm and high-risk infants (as established by national guidelines) for RVS program and all 12-year-old girls cohort for HPV program. **RESULTS:** RSV prophylaxis expenditure was estimated at €11,577,776 in the prophylaxis program arm versus €5,206,534 in the 'without prophylaxis program' arm, while for HPV prevention program, vaccination program expenditure (including vaccine cost) would be 13,068,025€ vs. 356,385€ in no-vaccine arm. The net budgetary impact was calculated at €6.4 million for RSV vs. €12.7 million for HPV vaccination. **CONCLUSIONS:** Considering the RHS perspective, the budget impact of palivizumab had lower program costs and higher disease cost offsets vs. HPV vaccination program, positioning its economic value well within the parameters of cost-effective childhood prevention programs.

PIN104

PRO'S IN EVALUATING RESOURCE UTILISATION AND ABSENTEEISM IN PEOPLE RECEIVING INFLUENZA VACCINATION

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OBJECTIVES: To investigate whether patient reported outcomes could detect differences between H1N1 and seasonal influenza vaccinations on resource utilisation and time off work over a 26 week follow up period. **METHODS:** In this evaluation, PROBE methodology consisting of a web-based system supplemented by telephone reporting was used to collect naturalistic data from people who had received an influenza vaccination during 2009-2010 season. People were recruited through media advertising and awareness campaigns in public places and work (West of Scotland). Data collection on day of immunisation, after 3 days, 8 days, 6 weeks, 12 weeks and 26 weeks. Data included baseline demographics, any side effects following vaccination including the duration/ resource use and time off work. **RESULTS:** A total of 1103 vaccine recipients participated in the evaluation. Overall, 42% of respondents reported experiencing any side effect after vaccination (excluding pain/discomfort at site of injection) with more people reporting a side effect with H1N1 vaccination (45% versus 26% seasonal flu vaccine versus 42% receiving both vaccines p=0.001). However, there was no significant difference in health service utilisation between the groups – 5.2% H1N1, 2.3% Seasonal, 5.5% both vaccines p=0.468. 4 (0.6%) people in the H1N1 only group received hospital treatment, 1 (0.8%) in the seasonal only group and 2 (0.9%) receiving both vaccines. Time off work (absenteeism), in relation to flu like symptoms, also showed no significant difference between the groups – 1.7% H1N1, 1.9% Seasonal, 3.4% both vaccines p=0.486. **CONCLUSIONS:** This evaluation shows that the PROBE methodology quickly and simply captured patient reported outcome information on resource utilisation and absenteeism in a vaccinated population. People receiving the H1N1 vaccination alone were more likely to experience side effects than seasonal influenza vaccination alone but this did not lead to a significant increase in resource utilisation or time off work.

PIN105

FINANCIAL SUPPORT FOR HIV/AIDS PREVENTION, CARE AND TREATMENT IN THAILAND

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OBJECTIVES: To describe the key financial resources allocation supporting the HIV/AIDS prevention, treatment, and social support programs in Thailand and to identify facilitators and barriers in financial management and monitoring system. **METHODS:** Based on a comprehensive review of financial reports from various sources such as UNGASS, NASA and NAMC reports, we explored the key financial resources that support the HIV/AIDS prevention, treatment, and social support programs in Thailand. In addition, we conducted in-depth interviews with different key informants responsible for the activities in response to the national policy on HIV/AIDS in provincial and district levels including domestic and international donors to assess the financial management, coordination and monitoring system. **RESULTS:** The total expenditure on HIV/AIDS in fiscal years 2007, 2008 and 2009 were 204, 210, and 218 million US$, respectively. The national HIV/AIDS spending was amount to 2.7% (2007) and 1.9% (2008 and 2009) of the total health expenditure. Domestic funding accounted for 83%, 85% and 93% of the HIV/AIDS programs in 2007, 2008 and 2009. Much of those spending emphasized on care and treatment while prevention budgeted for 14.1%, 21.7%, and 13.7%. The majority of treatment financing came from public health insurance schemes, but most preventive programs were from GFATM and other international sources. Effective system development in program management, monitoring and evaluation are still lacking among practitioners. **CONCLUSIONS:** Thailand has shown its potential to be self-reliant in combating HIV/AIDS. Nevertheless, care and treatment expenditures overshadow prevention, and most of the preventive programs are from international sources. Thus, the dominance of entitlement programs in funding for HIV/AIDS treatment challenges policy makers to monitor the extent and quality of HIV/AIDS care. For future savings in the cost of treatment and care, investing in prevention programs is essential, especially due to the declining support from international funds.

PIN106
HIV SCREENING PROGRAMME IN COMMUNITY PHARMACIES OF THE BASQUE COUNTRY

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OBJECTIVES: One in four HIV infected patients is unaware of his condition, and implies a threefold increase in the risk of HIV transmission. To describe the outcomes, users' socio-demographic characteristics and test acceptance of a new rapid HIV antibody screening test programme offered at Basque community pharmacies. **METHODS:** Cross-sectional study based on the answers given by the users of the rapid HIV antibody screening test, to a questionnaire. The programme was performed in 20 community pharmacies. Data shown come from a random sample of the 3514 tests carried out in the first year of the programme. Data gathered include test outcomes, users' socio-demographic information, their HIV risk profile, the reasons for asking for the test, and why they chose community pharmacies to have the HIV test. Statistical analyses included exact tests. **RESULTS:** There were 806 valid questionnaires, the mean age of test users was 36.2 years (SD: 11.0; range: 16-82; 71% men). 7 HIV test outcome were positive (0.85%; 95%CI: 0.34 to 1.75), 5 out of them were men. Only 10% of test users came from another country. Users' risk behaviour was predominantly heterosexual and 1 in 5 users asked for the test in the following three months after the exposure to the risk factor, when the test is not still accurate. More than half of the users hadn't had a previous HIV test. The reasons for choosing this kind of HIV test were mainly its quickness (just 15 minutes), and the convenience and rapid access to a community pharmacy service. The cost of each test for the Basque Government in 2010 was 18.15€ (1887.57€ to detect a positive one). **CONCLUSIONS:** This new rapid HIV antibody screening test in community pharmacies can supplement other HIV screening programs running as the user profile partially differs from them.

PIN107
TOBRAMYCIN INHALED SOLUTION UTILIZATION BY CYSTIC FIBROSIS PATIENTS: AN ANALYSIS WITH THE RAMQ DATABASE

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OBJECTIVES: Tobramycin inhaled solution (TIS) has been shown to preserve lung function in cystic fibrosis (CF) patients chronically infected with Pseudomonas aeruginosa. To minimize the emergence of aminoglycoside resistant P. aeruginosa strains, a chronic intermittent treatment of 28 days on and 28 days off TIS is recommended. The objective of this study was to assess TIS utilization modalities in CF patients. **METHODS:** Patients covered by the provincial public drug reimbursement program who had used TIS (Tobi™) on at least one occasion during the period from January 1, 2007 to December 31, 2008 were selected. To be included in the study they needed to be cover by the drug program for at least one year after the initiation of TIS. Patient's characteristics and drug utilization patterns were analyzed. For each patient, the number of 28 days periods for which they received TIS was estimated **RESULTS:** There were a total of 72 patients who have use TIS during the study period and were covered by the drug plan for at least one year after the initiation of TIS. The average age of TIS users was 25.6 years, with a similar proportion of males (51.4%) and females (48.6%). A large proportion of these patients (40,3%) had diabetes. In the first year following the initiation of TIS, different patterns of utilization were observed: For 15.3% of these patients, TIS was use as a continuous treatment (42 weeks or more of treatment), 41.7% received 4 cycles or more, 22.2% received 2 or 3 cycles and 20.8% received only 1 cycle of TIS during the year. **CONCLUSIONS:** In this sample, the utilization of TIS in CF patients was sub-optimal. TIS was used as recommended, as a chronic intermittent treatment by less than half of the study population.

Infection – Research On Methods

PIN108
SUSTAINED VIROLOGICAL RESPONSE AS PATIENT-RELEVANT ENDPOINT IN HEPATITIS C?

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OBJECTIVES: Chronic infection with Hepatitis C virus is causing advanced liver disease in a large proportion of patients. Standard treatment is antiviral therapy with the goal of a sustained virological response (SVR). The objective of the study is to validate SVR in the chronic infection Hepatitis C as patient relevant endpoint as defined by German code of social law. **METHODS:** Systematic literature searches were conducted in order to find relevant methods for the validation of surrogate endpoints in general and to find studies with appropriate data to perform the validation of SVR as a surrogate parameter in Hepatitis C. The validation will be realised with the best method according to the data available from the selected studies. **RESULTS:** Five studies were identified as basis for validation (out of 694 papers retrieved and 36 studies selected for further analysis). Due to the lack of long-term studies fulfilling the defined inclusion criteria, no differentiation between antiviral treatment schemes and different stages of the disease were possible. Methods of Prentice were identified as applicable for validation. With the four Prentice criteria, SVR could be validated as a surrogate endpoint for the endpoints liver cancer and mortality. However, this was not possible with data from all five studies and only partly with different analysis methods (combination) of data. For regression models or meta-analysis, data is not sufficient since individual patient data was not available. For one study further analysis (proportion of treatment effect) could be performed. **CONCLUSIONS:** When focussing on statistical methods current data allows for a very limited validation of SVR as a patient-relevant endpoint for treatment of Hepatitis C, only. There is a lack of long-term data (going beyond 5 years of follow up), especially for individual data of treated and untreated patients, likely due to the slow-evolving character of Hepatitis C.

PIN109
MODELLING THE POLICY OF MANAGING SEASONAL INFLUENZA IN THE UK

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OBJECTIVES: Seasonal influenza policy in the UK is directed to the elderly and selected high-risk groups. The department of Health Policy suggests that these individuals should be vaccinated every year to avoid possible costly or life-threatening complicationsTo define a cost-effectiveness modelling approach and structure that reflects the season-to-season impact of influenza on the entire UK population, and the consequences of policy **METHODS:** A structured, literature review and analysis of seasonal influenza models **RESULTS:** Fifty-four references were reviewed, 32 were assessed. The vast majority of models are decision trees, considering one influenza season; however, if unit of outcome was life years or QALYs, impact of influenza mortality was incorporated as average life-expectancy foregone. Nine models considered healthy and at-risk paediatric populations, six were UK models of which three papers considered treatment only and the remaining considered treatment and prevention. Ten models reviewed healthy working adult populations only, two were UK models, one considering prevention, the other treatment. Sixteen other models reviewed adult populations (healthy and/or at-risk adults, excluding healthy working adults), nine were UK models. Eleven papers considered treatment only, two considered prevention only and the remaining considered treatment and prevention. Twenty-one models evaluated the elderly, including residential populations. Nine were UK papers; five considered treatment only and four considered treatment and prevention. **CONCLUSIONS:** No study assessed the cost-effectiveness in the entire population, only sub-group analyses have been performed. None of the studies considered the impact of policy options over multiple consecutive flu seasons during a lifelong time horizon, and – as a consequence – were not able to incorporate accumulated (Quality Adjusted) Life Years gained for various age groups. Our suggested approach is a one-year cycle length, life-time, multi-cohort, Markov model from the perspective of the NHS, with cohorts starting in different age groups and accounting for at-risk populations.

PIN110
DEVELOPMENT OF A LARGE SAFETY DATABASE USING STUDIES CONDUCTED DURING THE CLINICAL DEVELOPMENT AND POST-MARKETING OF A VIROSOMAL ALUMINIUM-FREE HEPATITIS A VACCINE

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OBJECTIVES: Development of a unique database using data from studies conducted during the vaccine development and its post-marketing to evaluate the safety profile of a virosomal aluminium-free hepatitis A vaccine in a large population. **METHODS:** Available data from various studies, retrieved either from paper or electronic files, were evaluated and harmonized in order to be combined in a single database and all adverse events, concomitant diseases and concomitant vaccinations underwent a new coding. **RESULTS:** Initial data were available from 3 distinct sources, totalizing 35 studies: individual and summary data from clinical