disease incidence and serotype coverage and health care utilization to compare costs and clinical impact of PCV-13 versus PCV-10 on IPD, inpatient and outpatient pneumonia, and AOM , among vaccinated children (direct effect) and the entire population with indirect(herd effects). Patients were entered in the model by age groups: ages 0-<2 years, 2-4 years, 5-17 years, 18-34 years, 35-49 years, 50-64 years, 65+ years. Only 0-2 year cohort was vaccinated. The local epidemiology and cost data were used to achieve national specificity. Direct/Indirect effectiveness of PCV-13 and PCV-10 were calculated based on PCV-7 efficacy data, using assumptions regarding serotype coverage and PCV-10 and PCV-13 protection against additional serotypes. **RESULTS:** In the analysis, PCV-13 vaccination has caused significant decline in all PD cases. It was estimated to prevent 19,918 cases of IPD, 3,796,657 cases of pneumonia, and 53,310,807 cases of AOM in 10-year cohort. Also the incremental cost per LYG was estimated at 10,043,048 won for the PCV-13 vaccination from the health care system perspective in the 10-year horizon, as compared to PCV-10 vaccination. **CONCLUSIONS:** PCV-13 vaccination program provided economic and clinical impact on overall PD prevention and cost-effective compared with PCV-10 vaccination.

PIN20
COST-EFFECTIVENESS OF MATERNAL IMMUNISATION FOR PERTUSSIS IN NEW ZEALAND

Poirrier JE[1], Mungall B[2], Lee IH[3], Terlinden A[4], Curran D[1]
[1]GlaxoSmithKline Vaccines, Wavre, Belgium, [2]GlaxoSmithKline, Auckland, New Zealand, [3]GlaxoSmithKline Vaccines, Singapore, [4]Navigha, Tervuren, Belgium

OBJECTIVES: Despite routine vaccination, pertussis remains an important public health problem with an increase in annual incidences worldwide in recent years. Since infants too young to be protected by vaccination remain at risk of severe pertussis-related morbidity, New Zealand Authorities recommended and funded maternal immunisation against pertussis in 2013. In this study, we evaluated the cost-effectiveness of adding a maternal immunisation program to routine vaccination prior to 2013 in New Zealand. **METHODS:** A decision-tree model was adapted from the literature. A cohort of infants below 1 year of age (corresponding to the birth cohort in New Zealand) and a cohort with their mothers are followed. Data on pertussis morbidity and costs were gathered for infants and their mothers. Health benefits (in quality-adjusted life-years [QALYs]) and costs were estimated. Incremental cost-effectiveness ratio was calculated from a payer's perspective. The robustness of results was determined through scenario analysis (years of low, high and average incidence) and sensitivity analysis. **RESULTS:** In the base-case analysis (average incidence 2009-2012, 20% coverage, 1:100 underreporting), maternal immunisation was found to reduce the incidence of pertussis among infants (62 infant cases prevented) and was estimated to have a cost-effectiveness ratio of NZD 527.17/QALY from a payer's perspective. During a high incidence year maternal immunisation was dominant. During a low incidence year maternal immunisation was estimated to have a cost-effectiveness ratio below NZD 32,577.42/QALY. In the scenario analysis, the cost-effectiveness of maternal immunisation remained below that ratio and even dominant in most cases. **CONCLUSIONS:** This study estimated that the addition of maternal immunisation to the New Zealand national immunisation program was a cost-effective or even cost-saving decision. DISCLAIMER: This is a cost-effectiveness study only. There is currently no pertussis immunisation indication/label for pregnancy in New Zealand and any immunisation should be consistent with local product labelling.

PIN21
THE COST-EFFECTIVENESS ANALYSIS OF TWO PEGYLATED INTERFERON ALFA TREATMENT FOR CHRONIC HCV INFECTION IN CHINA

Liu G[1], Wei L[2], Xu F[3], Xu Q[3], You X[3]
[1]Guanghua School of Management, Peking University, Beijing, China, [2]Peking University People's Hospital, Beijing, China, [3]PKU China Center for Health Economic Research, Beijing, China

OBJECTIVES: Hepatitis C virus (HCV) is currently affecting more than 43 million persons in China, but the high cost of the standard drug therapy with pegylated interferon (PEG-IFN) inhibits many HCV infected patients to obtain appropriate treatment. A newly developed domestic low-price PEG-IFN (Peginterferonalfα-2b (40kD, Y shape) is expected to benefit the patients greatly with an equally effective treatment at substantially lower cost. This study provides the first scientific analysis to report the cost-effectiveness of this new drug treatment which is expected to be soon available for HCV infected patients in China. **METHODS:** Data was obtained from a multicenter, open and randomized, effective drug controlled phase 3 clinical trial. 242 eligible patients were randomized into the treatment group (PEG-IFNα-2b (40kD, Y shape) combined with RBV) and the control group (PEG-IFNα-2a combined with RBV). The effectiveness measure was sustained viral response (SVR). Costs, which were measured by direct medical costs, were obtained from medical records. An incremental cost-effectiveness ratio was calculated and probabilistic sensitivity analysis was conducted based on bootstrapping method. **RESULTS:** The SVR rate of PEG-IFNα-2b(40kD, Y shape) cohort and PEG-IFNα-2a cohort were 85.44% and 79.52% (p=0.2419) respectively. In the meantime, patients receiving PEG-IFNα-2b(40kD, Y shape) incurred significantly less costs compared to the PEG-IFNα-2a treated control group (CNY 29930.74 vs. 36743.90, P<0.01). **CONCLUSIONS:** Compared to PEG-IFNα-2a treatment, PEG-IFNα-2b (40kD, Y shape) treatment is equally effective at substantially lower costs. Sensitivity analysis conducted with bootstrapping method indicts a great possibility that PEG-IFNα-2b (40kD, Y shape) treatment is a cost-saving therapy.

PIN22
COST-EFFECTIVENESS OF POSACONAZOLE VERSUS FLUCONAZOLE OR ITRACONAZOLE IN THE PROPHYLAXIS OF INVASIVE FUNGAL INFECTIONS AMONG NEUTROPENIC PATIENTS IN THAILAND

Junjarunee S[1], Numuang K[2], Lerdlitruangsin S[3], Itzler R[4]
[1]Faculty of Medicine, Ramathibodi Hospital, Mahidol University., Bangkok, Thailand, [2]formerly of MSD (Thailand) Ltd., Bangkok, Thailand, [3]MSD (Thailand) Ltd., Bangkok, Thailand, [4]formerly of Merck Sharp & Dohme Corp, North Wales, PA, USA

OBJECTIVES: This study evaluated cost-effectiveness of posaconazole versus standard azole therapy (SAT; fluconazole or itraconazole) for prevention of invasive fungal infection (IFI) in neutropenic patients from the Thai health care system perspective. **METHODS:** A decision-analytic model was developed based on data from clinical trials. The surviving patients in the decision tree were extrapolated to a lifetime horizon using Markov model in which mortality risk was specific to underlying disease. The rates of IFI, IFI-related mortality, overall mortality and treatment duration were obtained from published literature. The probability of IFI-related death of posaconazole was assumed to be equal to SAT for Scenario I (45%), and was lower than SAT for Scenario II (36% vs. 48%) as obtained from clinical trial. Data of IFI-related costs and health care resource utilization were obtained from local studies and expert opinion. Drug prices were those published by Ministry of Public Health. All costs were expressed in THB 2013 values. Future costs and outcomes were discounted at 3%. The model outcomes included costs, IFI avoided, life years saved (LYS) and incremental cost-effectiveness ratio (ICER) of posaconazole versus SAT. **RESULTS:** In comparison with fluconazole/itraconazole, posaconazole was associated with fewer IFIs per patient (0.05 vs. 0.11) during 100-day follow-up. Over a lifetime horizon, prophylaxis with posaconazole resulted in lower discounted costs and a benefit of 0.06 and 0.07 in terms of discounted LYS for Scenario I and II, respectively. The probabilistic sensitivity analyses showed that there are 95.9% and 96.4% probabilities that posaconazole is cost-effective relative to fluconazole/itraconazole at the recommended threshold of 160,000 THB/LYS for such comparisons. **CONCLUSIONS:** This analysis suggested that posaconazole is the dominant treatment strategy (more effective and less costly) for the prevention of IFI in patients with prolonged neutropenia in Thailand. Posaconazole prophylaxis may substantial diminish for the economic burden of IFI.

PIN23
THE COST-EFFECTIVENESS OF COMBINED VECTOR-CONTROL AND VACCINATION STRATEGIES ON PREVENTION OF DENGUE FEVER: A DYNAMIC MODEL-BASED ANALYSIS

Knerer G, Currie C, Brailsford S
University of Southampton, Southampton, UK

OBJECTIVES: Dengue fever is a vector-borne disease prevalent in tropical and subtropical regions. It is an important public health problem with a considerable and often under-valued disease burden in terms of frequency, cost and quality-of-life. Previous analyses have documented the cost-effectiveness of vaccination as well as a range of vector-control interventions. However, such analyses do not evaluate the cost-effectiveness of combined vaccination and vector control interventions. We seek to demonstrate the public health and economic value of interventions compared with the next best alternative embracing both vaccination as well as vector-control interventions. **METHODS:** Using a previously published dynamic compartmental model (Knerer 2013) able to consider dengue fever transmission, we assessed the impact of different vector-control, vaccination and mixed strategies. We then combined the results with economic data to estimate the relative cost-effectiveness of dengue vector-control and vaccination strategies in different age-groups in Thailand. We estimated the expected costs and outcomes of individuals with dengue fever (vaccinated or not). Costs included direct medical costs such as the costs of vaccination, costs of hospitalisation, as well as the indirect costs of lost productivity. The health burden of dengue fever was assessed in relation to disability-adjusted life-years (DALYs) lost. **RESULTS:** We found vaccination to be a cost-effective single intervention, both with imperfect efficacy (30.2%) as well as under more optimistic scenarios (70%). Cost-effectiveness ratios for vector-control strategies ranged from being cost-effective and even cost saving to cost ineffective with incremental cost-effectiveness ratios in excess of WHO guidelines. In combination, control interventions and vaccination exhibited a marked impact on dengue fever transmission and proved to be a cost-effective strategy as well as delivering the potential for cost-savings. **CONCLUSIONS:** By providing a high level of disease control, the implementation of a vaccination program in combination with vector-control strategies appears to be cost-effective and often cost-saving.

PIN24
COST-EFFECTIVENESS OF HEPATITIS A VACCINATION IN INDONESIA

Suwantika AA[1], Beutels P[2], Postma MJ[1]
[1]University of Groningen, Groningen, The Netherlands, [2]University of Antwerp, Antwerp, Belgium

OBJECTIVES: This study aims to assess the cost-effectiveness of hepatitis A vaccination in Indonesia, including an explicit comparison between one-dose and two-dose vaccines. **METHODS:** An age-structured cohort model based on a decision tree was developed for the 2012 Indonesia birth cohort. Using the model, we made a comparison on the use of two-dose and one-dose vaccines. The model involves a 70-year time horizon with 1-month cycles for children less than 2 years old and annually thereafter. Monte Carlo simulations were used to examine the economic acceptability and affordability of the hepatitis A vaccination. **RESULTS:** With the vaccine price of US$ 4.49 per dose, the implementation of the hepatitis A vaccine from the societal perspective would yield incremental-cost-effectiveness-ratios (ICERs) at US$ 9,194 and US$ 4,577 for the two-dose and one-dose vaccine schedules, respectively. Considering the 2012 gross-domestic-product (GDP) per capita in Indonesia of US$ 3,557, the results indicate that hepatitis A vaccination would be a cost-effective intervention, both for the two-dose and one-dose vaccine schedules. Vaccination would be 100% affordable at budgets of US$ 89,918,000 and US$ 46,778,000 for the implementation of the two-dose and one-dose vaccine schedules, respectively. **CONCLUSIONS:** The implementation of hepatitis A vaccination in Indonesia would be a cost-effective health intervention under the market vaccine prices. Given the budget limitations, the use of a one-dose-vaccine schedule would be more realistic to be applied than a two-dose schedule. The discount rate, vaccine price, vaccine efficacy and mortality rate were the most influential parameters impacting the ICERs.

PIN25

HOW CAN A MULTILEVEL PROMOTION OF BREASTFEEDING REDUCE THE REQUIRED BUDGET FOR ROTAVIRUS VACCINATION IN INDONESIA?

Zakiyah N, Suwantika AA, Postma MJ
University of Groningen, Groningen, The Netherlands

OBJECTIVES: Breast milk is considered to give protection against rotavirus infection since it contains anti-rotavirus maternal antibodies and other nonspecific inhibitors. Multilevel promotion of breastfeeding is a complex intervention that modifies behavioral determinants through multiple levels of health promotion. This intervention can prolong the duration and increase the prevalence of exclusive breastfeeding. This study aims to investigate the effect of multilevel promotion of breastfeeding on reducing the required budget for rotavirus vaccination in Indonesia. **METHODS:** We developed an age-structured cohort model within a 5-year-time-horizon for the 2013 Indonesia birth cohort. We compared two situations: (i) baseline, reflecting the current situation for the population of under-5-years-old, and (ii) the current situation with an additional multilevel promotion of breastfeeding. We used Monte Carlo simulations to examine the economic acceptability and affordability of the rotavirus vaccination. **RESULTS:** Vaccination coupled with multilevel promotion of breastfeeding could reduce rotavirus-diarrhea by 493,235 cases. At a vaccine price of US$ 5.0 per dose, multilevel promotion of breastfeeding could reduce the required budget for the implementation of three-dose rotavirus vaccination by US$ 50,000, compared to the current absence of specific promotion. **CONCLUSIONS:** Multilevel promotion of breastfeeding could potentially reduce the required budget for rotavirus vaccination. Mortality rate and vaccine price were the most influential parameters on the sensitivity analyses.

PIN26

COST-UTILITY ANALYSIS OF 10- AND 13-VALENT PNEUMOCOCOCCAL CONJUGATE VACCINES IN THE PHILIPPINES

Haasis MA, Ceria JA
Department of Health, Manila, Philippines

OBJECTIVES: The objective of this study is to evaluate the costs-effectiveness of introducing pneumococcal conjugate vaccine as part of the childhood immunization program in the Philippines. **METHODS:** A cost-utility analysis was conducted using a lifetime horizon. A Markov simulation model was used to examine the comparative cost-effectiveness of PCV10 and PCV13 against the current scenario of no vaccination. A health system perspective was employed to explore different funding schemes, which include full or partial vaccination coverage subsidized by the government and self-paid vaccination in the private sector. An annual discount rate of 3.5% for future costs and outcomes was applied. Results were presented as incremental cost-effectiveness ratios (ICERs) per QALY gained. Sensitivity analysis was performed to determine the impact of parameter uncertainty. **RESULTS:** With universal vaccination by the government at a cost per dose of Php 624 for PCV10 and Php700 for PCV13, the ICER for PCV10 and PCV13 were Php 68,086 and Php 67,631 per QALY gained, respectively, compared to no vaccination. Partial vaccination of 25% and 50% of the birth cohort yielded considerably higher ICER values that are still below the country ceiling threshold of Php 170,000 per QALY gained, because of the loss of herd protection. The analysis also found that with a partial vaccination strategy of the government, having at least 10% of the target cohort self-pay a higher market price of Php 2.056 for PCV10 and Php 3,545 for PCV13 would make vaccination cost-ineffective, because of the high out-of-pocket costs. **CONCLUSIONS:** The inclusion of PCV in the national immunization program with either universal or partial coverage would be a cost-effective intervention in the Philippines compared to no vaccination. However, the affordability and sustainability of PCV implementation over the long term should be considered by decision makers.

PIN27

COST-UTILITY ANALYSIS OF OPTIMAL DOSING OF OSELTAMIVIR UNDER PANDEMIC INFLUENZA USING A NOVEL APPROACH: LINKING HEALTH ECONOMICS AND TRANSMISSION DYNAMIC MODELS

Wu DBC[1], Chaiyakunapruk N[1], Pratoomsoot C[2], Lee KKC[3], Chong HY[1], Nelson RE[4], Smith PF[5], Kirkpatrick C[6], Kamal MA[7], Nieforth K[5], Dall G[5], Toovey S[8], Kong DC[6], Kamauu A[9], Rayner C[5]
[1]Monash University Malaysia, Selangor, Malaysia, [2]Naresuan University, Muang, Thailand, [3]Monash University, Kuala Lumpur, Malaysia, [4]University of Utah, Salt Lake City, UT, USA, [5]d3 Medicine Limited, Parsippany, NJ, USA, [6]Monash University, Parkville, Australia, [7]Hoffmann La-Roche, New York, NY, USA, [8]Pegasus Research, Basel, Switzerland, [9]Anolinx, LLC, Salt Lake City, UT, USA

OBJECTIVES: Some recent pharmacological evaluations support that higher exposures of oseltamivir may further reduce duration of influenza viral shedding and symptoms. This study investigated the economic impact of oseltamivir standard (75 mg BID) and high (150 mg BID) dose treatment and its potential in supporting pandemic influenza planning decisions in the US. **METHODS:** A health economic (HE) decision analytic model was linked to a pharmacokinetic/pharmacodynamics (PK/PD) - transmission dynamic model which simulated the infected population in an influenza outbreak under different scenarios. A cost-utility analysis, under the US societal perspective, was conducted; comparing oseltamivir 150mg versus approved 75mg BID, and no treatment, three levels of uptake (25%, 50%, and 80%), for a strain with comparable virulence to typical seasonal-influenza. Model parameters such as probabilities, costs (2013 USD), lengths of stay, and utilities were derived from published studies. In the HE model, an infected patient was either treated with oseltamivir in the outpatient setting or admitted into the hospital, leading to no complications, pneumonia, sepsis, and acute respiratory distress syndrome. Total costs, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratios (ICERs) were determined over one-year time horizon. Sensitivity analyses were undertaken. **RESULTS:** Under low virulence and low transmissibility scenarios, in comparison with no treatment, the use of 75mg BID oseltamivir showed cost-saving of USD 31-33 million million and 395-452 QALY gained for 25% and 80% uptake, respectively. Compared to no treatment, oseltamivir 150 mg BID saved USD

21-32 million and 418-456 QALY gained for 25% and 80% uptake. The results were sensitive to the proportion of inpatient presentation at ED and utility during influenza. **CONCLUSIONS:** Results clearly demonstrate that both 75 mg BID standard and 150 mg BID high dose oseltamivir therapy are cost saving. The findings corroborate antiviral therapy as being a valuable component of pandemic influenza planning decisions in the US.

INFECTION – Patient-Reported Outcomes & Patient Preference Studies

PIN28

META-ANALYSIS OF XUEBIJING JOINT ULINASTATIN TREATING SEPSIS

Liu G[1], Li Q[2]
[1]Guanghua School of Management, Peking University, Beijing, China, [2]China Pharmaceutical University, Nanjing, China

OBJECTIVES: To compare the efficacy of Xuebijing injection and ulinastatin injection for the treatment of inflammation and sepsis by evaluating plasma tumor necrosis factor (TNF-α), interleukin IL-6, procalcitonin (PCT), the average length of stay and the average duration of mechanical ventilation. **METHODS:** Literatures from January 2004 to August 2013 were retrieved from the online databases such as CNKI, CQVIP and Wanfang Data. The documents and data, selected according to the inclusion and exclusion criteria, were analyzed by RevMan5.0 Meta-analysis software. **RESULTS:** Four randomized controlled clinical trials were included, with 181 patients in the experimental group (Xuebijing +Ulinastatin +based treatment) and 181 patients in the control group (Ulinastatin + basic treatment). Meta-analysis showed that the tumor necrosis factor TNF-a levels [WMD = -5.16,95% CI (-11.07,0.76)] of experimental group and the control group were not statistically different, but the interleukin IL-6 levels[WMD=-57.82,95%CI (-112.12, -3.52)] , the procalcitonin PCT [WMD=-0.53,95%CI (-0.88, -0.19)] levels , the average length of stay [WMD = -3.63,95 % CI (-4.68, -2.58)] and the average duration of mechanical ventilation [WMD = -3.77,95% CI (-4.70, -2.83)] of the experimental group and the control group were statistically different. **CONCLUSIONS:** Current results indicated that the application of Xuebijing injection for the treatment of sepsis provided a lower level of interleukin IL-6 and procalcitonin PCT, a shorter length of stay and duration of mechanical ventilation.

PIN29

EFFECT OF HEALTH EDUCATION PROGRAM ON KNOWLEDGE, ATTITUDE, PRACTICE AND HEALTH RELATED QUALITY OF LIFE IN HEPATITIS-B PATIENTS

Haq N[1], Hassali MA[2], Shafie AA[2], Saleem F[2], Farooqui M[3], Iqbal Q[1]
[1]University of Balochistan, Quetta, Pakistan, [2]Universiti Sains Malaysia, Penang, Malaysia, [3]Universiti Teknologi MARA, Pulau Pinang, Malaysia

OBJECTIVES: This study was conducted to evaluate the effect of a pharmacist initiated health education programme for improving Hepatitis-B patients' disease state knowledge, attitude, practice and health related quality of life in Quetta city, Pakistan. **METHODS:** The study was conducted as non-clinical randomization control trial. It was divided into four phases: pre-interventional assessment, training of hospital pharmacists, development and implementation of the intervention program and post-interventional analysis. The pre-interventional phase analysed the Hepatitis-B (HB) patients' knowledge, attitude and practice and current status of Health Related Quality of Life (HRQoL). **RESULTS:** Three hundred and ninety HB patients were targeted for the study. The pre-interventional analysis revealed poor knowledge (mean score 8.48 ±2.7 out of 20), negative attitude (mean scores 3.87±1.2 out of 7) and bad practice (mean scores 2.37±1.0 out of 8). The HB patients also had poor Health Related Quality of Life (mean score of 37.22±30.0 out of 100). The post-interventional data were available from 126 patients of interventional group and 151 patients of control group, giving a response rate of 64.6% and 77.4% respectively. No significant association was observed among demographics variables. However, knowledge, attitude and practice, and HRQoL scores were significantly associated (p<0.001) when compared between interventional and control group after the completion of the intervention. There was an increase in mean knowledge score (15.46±2.2), attitude score (5.05±1.1), practice (5.98±1.1) Health Related Quality of Life (48.16±25.2). The inter-group difference among pre- and post- interventional groups reported a significant difference (p<0.001) when knowledge, attitude and practice and HRQoL were compared. **CONCLUSIONS:** The educational intervention significantly increase in the HB patients' knowledge, attitude and practice, and HRQoL. Therefore, the role of pharmacists in patient education must be formalized and acknowledged as an official part of the health care system.

PIN30

ASSESSMENT OF QUALITY OF LIFE IN HUMAN IMMUNODEFIECIENCY VIRUS POSITIVE PATIENTS WITH ADVERSE REACTIONS TO ANTIRETROVIRAL THERAPY IN TERTIARY CARE HOSPITAL

Aluri RKC
Manipal University, MANIPAL, India

OBJECTIVES: The main aims of the study was to estimate the health related quality of life(HRQOL) between Adverse drug reaction (ADR) and Non ADR retroviral patients who are on anti retroviral therapy. **METHODS:** A prospective spontaneous , reporting study was conducted over a period of 6 months by clinical pharmacist. Each reported ADR was assessed for its causality and severity by using Naranjo 's scale and Hartwig et al scale .The management of reported ADRs and the treatment given for ADR are determined. Health related quality of life is assessed by giving a 35 item MOS- HIV Questionnare to each individual retroviral patients who are on Highly active antiretroviral therapy (HAART) for atleast 45 days by calculating the HRQOL score. **RESULTS:** A Total of 46 ADRs (N=100) were identified out of which 30 are males and 16 are females. The assessment by Naranjos scale showed that out of 46 ADRs, 8 ADRs were probable, 35 ADRs were possible and 3 ADRs were unlikely. Severity assessment by hartwig et al scale showed that 32 ADRs come under mild level, 14 ADRs come under moderate level and none come under severe level.The Health related quality of life between ADR patients and Non ADR absent