disease incidence and serotype coverage and health care utilization to compare costs and clinical impact of PCV-13 versus PCV-10 on IPD, pneumonia and adenoid 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: 0-2 years, 2-4 years, 5-17 years, 18-34 years, 35-49 years, 50-64 years, >65 years. Only one cohort was vaccinated with PCV10 and adenoid pneumonia and outpatient 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 prior vaccine coverage. Effectiveness for PCV-10 was extrapolated from the health care system perspective in the 10-year horizon, as compared to PCV-10 vaccination. CONCLUSIONS: PCV-13 vaccination program provided economic benefit in China. Limitations included over all PD prevention and cost-effectiveness compared with PCV-10 vaccination.

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

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OBJECTIVES: Despite routine vaccination, pertussis remains an important public health problem with an increase in annual incidences worldwide in recent years. Too young to be protected by vaccination, infants are 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 programme to the childhood 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 New Zealand birth cohort) and their mothers were modelled through their mother's lifetime. 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 high, low 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 92.57/QALY. 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 vaccination schedule 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.

PIN22 THE COST-EFFECTIVENESS ANALYSIS OF TWO PEGYLATED INTERFERON ALFA TREATMENT FOR CHRONIC HCV INFECTION IN CHINA

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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) and ribavirin (RBV) is a major barrier to access for patients. A newly developed domestic low-price PEG-IFN (PEGinterferonalpha-2b (40kD, Y shape) is expected to benefit the patients greatly with an equally effective treatment at substantially lower cost. This study provides evidence 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. 246 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 85.4% (95% CI = 78.3-90.9) and 45% (p = 0.0018) 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 < 0.05). 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 indicted a great possibility that PEG-IFNα-2b (40kD, Y shape) treatment is a cost-saving therapy.

PIN24 COST-EFFECTIVENESS OF POSACONAZOLE VERSUS FLUCONAZOLE OR ITRACONAZOLE IN THE PROPHYLAXIS OF INVASIVE FUNGAL INFECTIONS AMONG NEUTROPENIC PATIENTS IN INDONESIA

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OBJECTIVES: This study evaluated cost-effectiveness of posaconazole versus flucconazole or itraconazole in the prophylaxis 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 through a 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 was estimated by 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. RESULTS: Compared with flucconazole/itraconazole, posaconazole was associated with fewer IFI 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 0.149 and 0.07 in terms of discounted LYS for Scenario I and II, respectively. The probabilistic sensitivity analyses showed that there were 95.9% and 96.4% probabilities that posaconazole is cost-effective relative to flucconazole/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 substantially diminish for the economic burden of IFI.

PIN25 THE COST-EFFECTIVENESS OF COMBINED VECTOR-CONTROL AND VACCINATION STRATEGIES ON PREVENTION OF DENGUE FEVER: A DYNAMIC MODEL-BASED ANALYSIS

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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 underestimated impact in terms of disease burden and cost 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 (Kotler 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 such as the cost of productivity. The model takes into account the impact of vaccination and vector-control interventions on disability-adjusted life-years (DALYs) lost. RESULTS: We found vaccination to be a cost-effective single intervention, both with imperfect efficacy (30% 25%) as well as with higher optimisation (70% 35%). Cost-effectiveness ratios for vector-control strategies ranged from being cost-effective and even saving cost to 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.

PIN26 COST-EFFECTIVENESS OF HEPATITIS A VACCINATION IN INDONESIA

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OBJECTIVES: This study aims to assess the cost-effectiveness of hepatitis A vacci- nation 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 and annually thereafter. Monte Carlo simulations were used to examine the economic uncertainty of the results. 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) of US$3,194 and US$3,557 for the two dose and one dose schedules, respectively. Considering the 2012 gross-domestic-product (GDP) per capita in Indonesia of US$ 3,557, the results indicate that hepatitis A vaccination would be a cost-effective intervention, both for the two-dose and one-dose 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 intervention, with many one-dose vaccine schedules. 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.
How can a multilevel promotion of breastfeeding reduce the required budget for rotavirus vaccination in Indonesia?

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Objectives: Breastfeeding should be considered to give protection against rotavirus infection since it contains anti-rotavirus maternal antibodies and other non-specific inhibitors. Multilevel promotion of breastfeeding is a complex intervention that modifies behavioral determinants through 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 a 5-year age-structured cohort model for the 2013 Indonesia birth cohort. We compared two situations: (i) baseline, reflecting the current situation for the population of under-5-year-olds, and (ii) the situation when multilevel promotion of breastfeeding was undertaken. We conducted 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.

Cost-utility analysis of 10- and 13-valent pneumococcal conjugate vaccines in the Philippines

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Objectives: The objective of this study is to evaluate the costs-effectiveness of introducing pneumococcal conjugate vaccine (PCV) through a vaccination 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 compare 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: In the base scenario, vaccination with PCV13 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 5,545 for PCV13 would make vaccination cost-effective, 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.

Cost-utility analysis of optimal dosing of oseltamivir under pandemic influenza using a novel approach: linking health economics and transmission dynamic models

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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 appropriate placebo treatment, three levels of pandemic severity (25, 50, 75%) and using a strain with comparable virulence to typical seasonal-influenza. Model parameters such as probabilities, costs (2013 USD), length of stay, and utilities were derived from the literature. Results: The HE model was run 20 times, each time 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 calculated. Cost and length of stay were considered in the analyses. Results: Under low virulence and low transmissibility scenarios, in comparison with no treatment, the use of 75 mg BID oseltamivir showed cost-saving of USD 21-33 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 patient 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 and Patient Preferences

Meta-analysis of Xuebijing joint ultrasound treating sepsis

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Objectives: To compare the efficacy of Xuebijing injection and ultrasound injection for the treatment of inflammation and sepsis by evaluating plasma tumor necrosis factor (TNF-α), interleukin-6, procalcitonin (PCT), the average length of stay and the average duration of mechanical ventilation. Methods: Literature searches were undertaken. In the HE model, an infected patient was either treated or not from published studies. In the HE model, an infected patient was either treated or not. Results: 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 5,545 for PCV13 would make vaccination cost-effective, 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.