

and students (18.3%). The majority (83.2%) were treated with podophyllin paints. At 6 months, 55.0% were cured, 25.2% still had ongoing genital warts, 5.7% had a recurrence, 12.2% were lost to follow-up and 1.5% was discontinued. The median direct medical costs were 998 (range 130–4060) Thai Baht. All patients were treated as out-patient cases and 71.7% came to hospital without work absenteeism. After having genital warts lesion, work productivity was reduced to 83.0% (17.3) and daily activity was also declined to 82.4% (14.4) from baseline. **CONCLUSIONS:** Anogenital warts are common STI and tend to be recalcitrant to treatment. They also lead to the reduction on work productivity and daily activity.

PIN14

PUBLIC HEALTH AND ECONOMIC IMPACT OF ROTAVIRUS VACCINATION IN KOREA

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OBJECTIVES: In Korea, rotavirus gastroenteritis rarely causes mortality, but it causes significant morbidity among young children. The objective of this study was to estimate the public health burden and the potential impact of universal vaccination with a three-dose pentavalent rotavirus vaccine in Korea. **METHODS:** A Markov cohort simulation model was developed to project the expected clinical burden of rotavirus gastroenteritis and the potential impact of universal vaccination (vs. no vaccination) if all children are given a three-dose pentavalent rotavirus vaccine for the 2007 birth cohort of 493,189 Korean infants during the first 5 years of life. Vaccine efficacy for preventing rotavirus and the associated use of health-care resources was based on the Rotavirus Efficacy and Safety Trial (REST) results. Data on rotavirus related health-care resource utilization were based on published sources. Data on the cost of treating rotavirus diarrhea were extracted from a hospital cost survey and the National Health Insurance claims data. One-way sensitivity analysis was conducted by varying the health-care resource utilization and the discount rate from 3% to 7%. **RESULTS:** The three-dose rotavirus vaccination program would result in the prevention of 181,238 symptomatic cases (reduction rate: 63.2%), 27,200 hospital admissions (90.8%), 7602 emergency department visits (86.5%), and 538,399 outpatient visits (76.7%) during the 5 years after birth if all children are vaccinated. The break even price of vaccination was estimated to be between KW 50,454 and 61,667 per dose. **CONCLUSIONS:** Implementing a three-dose universal rotavirus vaccination strategy would likely result in a substantial reduction in rotavirus related health-care resource utilization in Korea. These results may be useful for evaluating rotavirus vaccination programs in Korea.

PIN15

COST-EFFECTIVENESS ANALYSIS OF 1-YEAR PEGINTERFERON ALFA-2A VERSUS 3 YEARS ENTECAVIR FOR THE TREATMENT OF HBEAG-POSITIVE CHRONIC HEPATITIS B IN CHINA

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OBJECTIVES: The objective of the study was to evaluate the cost-effectiveness of 1-year peginterferon alfa-2a compared to 3 years entecavir for the treatment of HBeAg-positive chronic hepatitis B in China. **METHODS:** A Markov health-state model was designed to evaluate the direct medical costs and outcomes (life-years and QALYs gained) of treating HBeAg-positive chronic hepatitis B in China. The model included 10 health states—Chronic hepatitis B (CHB), HBeAg seroconversion, HBeAg loss, CHB with resistance, Compensated cirrhosis, Decompensated cirrhosis, Hepatocellular carcinoma, Liver transplant, Post-liver transplant and death. The model incorporates a maximum analysis time horizon of 80 years with yearly cycles. The clinical and quality of life data were obtained from published literature and re-confirmed based on a questionnaire survey from a clinical expert panel of 20 hepatitis B specialists. From the perspective of China's health insurance system, cost data was calculated based on the published literature about economic burden of chronic hepatitis B. A discounting rate at 3% was used to discount medical costs happened at different years. A univariate sensitivity analysis was performed to understand the key drivers and general sensitivity of the model. **RESULTS:** The model results showed that the utilization of 1-year peginterferon alfa-2a treatment for HBeAg-positive CHB can prolong 0.885 QALYs, compared to the 3 years entecavir treatment. The total cost per patient treated with peginterferon alfa-2a was CNY 151,770 (US\$ 22,221), and CNY 129,239 (US\$ 18,922) for patient treated with entecavir. The discounted incremental cost per QALY gained for peginterferon alfa-2a was CNY 25,452 (US\$ 3,727). **CONCLUSIONS:** The results of the model suggest that 1 year peginterferon alfa-2a improves health outcomes in a cost-effective manner compared with 3 years entecavir in the treatment of HBeAg-positive chronic hepatitis B in China.

PIN16

COMPARATIVE CRITICAL REVIEW OF COST-EFFECTIVENESS TOOLS OF PNEUMOCOCCAL CONJUGATE VACCINE (PCV)

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OBJECTIVES: Several decision support tools have been developed to aid policy decision-making regarding the adoption of pneumococcal conjugate vaccine (PCV)

into national immunization programs. Lacking critical evaluation of the tools causes decision-makers difficulties in understanding and feeling ownership of information resulting from the tools, particularly in resource poor countries where technical capacity is lacking. This study aims to critically compare decision-making tools and their cost-effectiveness (CE) findings, and to identify influential parameters in the models. The overall objective is to provide decision makers with a menu of CE tools and their characteristics for their optimal use rather than to recommend a single model. **METHODS:** The WHO requested access to publicly available CE tools for PCV from both public and private provenance. All tools were assessed according to WHO's economic evaluation guideline. All key attributes and characteristics were compared. A series of sensitivity analyses were performed to determine the major drivers of the models. The results were compared using a standardized set of input parameters. **RESULTS:** Three CE tools, including PAHO ProVac's TriVac, PneumoADIP and GSK's SUPREMES tools, were provided. They all compared the adoption of PCV into national immunization program with no immunization. The models differed in terms of attributes, structure, and data requirement, but captured similar range of diseases. Herd effect was estimated using different approaches. The main driving parameters were vaccine efficacy against pneumococcal pneumonia, vaccine price and coverage, serotype coverage and disease burden. With a standardized set of input parameters, TriVac and PneumoADIP provided similar findings including incremental costs, outcome and incremental cost-effectiveness ratio. **CONCLUSIONS:** Models differed in terms of model structure and key assumptions. Vaccine price and efficacy were the most influential parameters. Understanding differences and similarities of CE tools could provide policymakers more efficient use for aiding their decision-making process.

PIN17

COST-EFFECTIVENESS ANALYSIS OF THE NEW PCV-13 VACCINE WHEN COMPARED TO NO VACCINATION FROM A PUBLIC HEALTH-CARE SYSTEM PERSPECTIVE IN HONG KONG

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OBJECTIVES: Cost-effectiveness studies using local health data have supported the long-term health and economic benefits of the 7-valent pneumococcal conjugate vaccine (PCV-7) due to herd immunity, which also led to its inclusion in the routine immunization program for infants in Hong Kong in September 2009. The aim of the present study is to assess the clinical and economic impacts of the new PCV-13 vaccine on the whole population of Hong Kong compared to no vaccination. **METHODS:** A decision analytical model modified from the recent Prevenar 13^o Economic Impact (PREVENT) Model (RTI Health Solution^o) was used for the analysis of the outcomes of vaccination. The whole population of Hong Kong of around 7 million was analyzed with infants ≤2 either vaccinated or not vaccinated with PCV-13. Population data, incidence rates, serotype coverage, disease sequelae, mortality rates, vaccine effectiveness, duration of protection, herd effects, utilities, cost of vaccination, and other direct costs were adopted from local published studies, previous economic assessments of PCV-7/PCV-13 and local government sources to populate the model. Data were adopted from overseas published studies if local data was not available. Sensitivity analyses were performed to check the robustness of the results. The time horizon was one year and the study was performed from a public health-care organization perspective. **RESULTS:** Over 1 year, our analysis shows for a four-dose regimen of PCV-13: a gain of 17 quality-adjusted-life-years (QALY), an avoidance of 1281 related illnesses and two deaths. Cost/life-year gained was US-145,014 and cost/QALY was -US161,127. **CONCLUSIONS:** Based on the WHO recommended international thresholds for cost-effectiveness, with GDP per capita of Hong Kong being US29,902 in 2009, our study results suggest PCV-13 vaccination is very cost-effective in providing protection to the people of Hong Kong from the perspective of a public health-care organization.

PIN18

COST-EFFECTIVENESS ANALYSIS OF UNIVERSAL NEWBORN VACCINATION AGAINST HEPATITIS B VIRUS IN VIETNAM

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OBJECTIVES: To perform a cost-effectiveness analysis of universal newborn vaccination against hepatitis B virus (HBV) and to identify the affordability of the program in Viet Nam, a highly endemic country of HBV infection. **METHODS:** Marginal cost of every life-year and quality-adjusted life-year (QALY) gained with universal newborn vaccination against HBV was calculated using a Markov model. Two types of analyses (including and excluding expenditure on the treatment of chronic hepatitis B and its complications) were performed. We conducted one-way sensitivity analyses to confirm the robustness of the results. We used Monte Carlo simulations to examine the affordability of the vaccination program from payer's perspective to derive an affordability curve for the program. **RESULTS:** In the base-case scenario, universal newborn vaccination against HBV reduced the carrier rate by 72%, and increase number of life-years and QALY gained of a 2008 birth cohort by 1.8 years (71.21 years vs. 69.41 years) and 2.26 years (71.03 years vs. 68.77 years), respectively. Marginal cost per life-year and per QALY gained were US\$ 18.82 and US\$ 13.16, much lower than the annual GDP per capita of around US\$1024). The probability of the vaccination program to be both cost-effective and affordable is 60% at an annual program cost of US\$253,000 (from the payer's perspective), where the threshold cost-effective value is US\$ 13.16 per QALY gained. **CONCLUSIONS:** Universal newborn vaccination

against HBV is highly cost-effective in Viet Nam. As a low-income, endemic country where funds are limited and economic results of vaccination are uncertain, affordability options allow decision-makers to make proper health investment in vaccination strategies against HBV. In the long run, adolescents should also be universally vaccinated against HBV.

PIN19

PHONED PILL REMINDER AND SELF-ADMINISTERED TREATMENT FOR TUBERCULOSIS CONTROL IN THAILAND: COST-EFFECTIVENESS

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OBJECTIVES: To assess the cost-effectiveness of mobile phone "contact-reminder" compared to self-administered treatment (SAT) to control tuberculosis (TB) in Thailand. **METHODS:** Cost-effectiveness analysis was undertaken using a decision tree model, which included three stages of treatment; initial treatment, re-treatment, and multi-drug resistant TB treatment. Costs (2005 international dollars: \$) were calculated based on treatment periods and treatment outcomes. Health outcomes were estimated over the lifetime of smear-positive pulmonary TB patients in disability-adjusted life-years (DALYs). Both costs and health outcomes were discounted 3% annually. Mobile phone reminders are a relatively new TB treatment strategy. A pilot study reported a mortality rate far higher than observed using other strategies, but there were reasons to suspect this was influenced by the high age and comorbidities of the trial sample. We undertook a sensitivity analysis using mortality rates observed during other treatment strategies, to indicate if mobile phone reminders could be cost-effective in Thailand. **RESULTS:** Sensitivity analysis showed lowering the mortality rate to values observed in trials of other treatment strategies made the mobile phone reminder intervention more cost-effective than SAT, as a result of an increase in the DALYs averted. Using the highest (8%) and the lowest (3%) death rates from the other TB control strategies, the probability that the mobile phone intervention was more cost-effective than SAT was 98% and 100%, respectively. **CONCLUSIONS:** If further trials show the mortality rate using a mobile phone reminder system to be similar to that observed under other treatment strategies, this strategy would be more cost-effective than SAT. A bigger study with control group and proper age distribution is needed to examine the true merits of mobile phone intervention.

PIN20

A MODELED ECONOMIC EVALUATION OF RALTEGRAVIR COMPARED TO STANDARD PRACTICE IN AUSTRALIA FOR TREATMENT NAÏVE PATIENTS WITH HIV

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OBJECTIVES: To assess the comparative costs and outcomes of HIV treatment algorithms with and without the use of raltegravir for treatment naïve patients. **METHODS:** A cost-utility analysis was constructed using a Markov model to assess the incremental cost per QALY gained of a HIV treatment algorithm which included raltegravir as a first line treatment compared to standard practice in Australia. Comparator treatment algorithms were constructed for patients initiating treatment with a non-nucleoside reverse transcriptase inhibitor (NNRTI) containing regimen and patients initiating treatment with a protease-inhibitor (PI) containing regimen. The economic model was a Markov cohort model with the cohort transited through five health states which reflect four lines of the treatment in each algorithm and death. The modeled population cycled through the treatment algorithm upon loss of virologic response and at each cycle are at risk of adverse events, AIDS events and death based on the treatment regimen received, viral load and CD4 count. The efficacy and safety of each treatment at each line of the algorithm was based on randomized clinical trial data and a mixed treatment comparison. Costs were calculated from the perspective of the Australian health-care system. The economic model was a lifetime model. **RESULTS:** The raltegravir algorithm was more costly than the NNRTI algorithm (A\$4487 per patient) but less costly than the PI algorithm (A\$18,383 per patient). The raltegravir algorithm had greater QALYs than both the comparator algorithms (0.17 and 0.22 per patient compared to the NNRTI and PI algorithms respectively). The incremental cost per QALY of the raltegravir algorithm compared to the NNRTI regimen was A\$26,896 which is considered within an acceptable threshold in Australia. The raltegravir algorithm dominated the PI algorithm (lower costs and greater QALYs). **CONCLUSIONS:** Raltegravir for treatment naïve patients is an effective and cost-effective intervention relative to current practice in Australia.

PIN21

COST-EFFECTIVENESS OF DAPTOMYCIN IN PATIENTS WITH INFECTIVE ENDOCARDITIS AND BACTEREMIA CAUSED BY METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS IN TURKEY

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OBJECTIVES: To assess the cost-effectiveness of daptomycin versus glycopeptides (vancomycin and teicoplanin), the most widely used alternatives in the treatment of patients with infective endocarditis and bacteremia caused by Methicillin resistant *Staphylococcus Aureus* (MRSA) from the perspective of Turkish health-care system. **METHODS:** The clinical trials with daptomycin were powered to show non-inferiority against vancomycin. The model is based on a cost-minimization analysis, assuming

similar efficacy between daptomycin and glycopeptides. However, median length of inpatient treatment, hence hospital stay differed among therapies in the trial. A decision-analytic model was designed to estimate the use of resources and costs based on treatment duration and patterns. The model time horizon was from the first day of the hospitalization to successful treatment. Resource utilization was collected from literature and complemented with the help physician survey in Turkey. Resource use consisted of drug costs, iv and im administration costs, monitoring and hospitalization costs. Key parameters and assumptions in the model were explored in sensitivity analyses to determine their impact on the model outcome. **RESULTS:** The use of daptomycin as first-line therapy resulted in lower cost per patient despite significant daily drug cost difference between alternatives. Total health-care costs per patient were \$2069 for the daptomycin whereas \$2392 and \$2419 for the vancomycin and teicoplanin arms respectively, resulting in \$323-\$350 savings per person with daptomycin treatment. The main cost driver was drug costs, which was responsible for 66% of the total costs on average. **CONCLUSIONS:** Daptomycin is less costly than both vancomycin and teicoplanin in the treatment of MRSA induced bacteremia and infective endocarditis when used as first-line therapy. The cost-savings with daptomycin in Turkey largely stem from shorter treatment duration with daptomycin due to its highly effective and rapid bactericidal activity.

PIN22

ECONOMIC EVALUATION OF THREE-DRUG ANTIRETROVIRAL REGIMENS FOR THE PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV IN THAILAND

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OBJECTIVES: To assess the value for money of introducing three-drug antiretroviral regimens, namely 1) zidovudine—AZT, lamivudine—3TC, and efavirenz—EFV; or 2) AZT, 3TC, and lopinavir/ritonavir—LPV/r, in comparison to the current protocol, AZT plus single-dose nevirapine—sd-NVP, for the prevention of mother-to-child transmission (PMTCT) of HIV in Thailand. **METHODS:** A decision tree was constructed to predict costs and outcomes using the Thai governmental perspective. The costs consisted of 1) program costs; 2) costs of treatment of premature birth; 3) costs of treatment of pediatric HIV infection; and 4) costs of treatment of drug resistance among mothers. All costs were presented in 2009 Thai baht. The outcome was measured in terms of quality-adjusted life-years (QALYs) gained from infant HIV infection averted. The costs and outcomes were discounted with the rate of 3% as recommended by the national guidelines. **RESULTS:** Introduction of the three-drug antiretroviral regimens yields lower costs and better health outcomes compared to AZT + sd-NVP. Although these three-drug regimens offer higher program costs and health-care costs for premature birth, they significantly save money in regard to pediatric HIV treatment and treatment costs for drug resistance in the mothers. In addition, approximately 1 QALY is averted as a result of using the regimens. Because of the lack of clinical evidence to distinguish the difference in terms of PMTCT efficacy between EFV-based and LPV/r-based regimens, the analysis favors a cheaper EFV-based regimen. Results from univariate uncertainty analysis also support the above conclusion and a tornado diagram presents the relative importance of each model input parameter. **CONCLUSIONS:** The three-drug regimens are cost-saving for PMTCT in Thailand, and findings from this study support a change in the National PMTCT guidelines in the country.

INFECTION – Health Care Use & Policy Studies

PIN23

BELIEFS ABOUT THE USE OF NONPRESCRIBED ANTIBIOTICS AMONG INDONESIAN PEOPLE: A PRELIMINARY STUDY IN YOGYAKARTA CITY INDONESIA

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OBJECTIVES: In Indonesia, legislation mandates a medical prescription for purchase of antibiotics. However, the use of nonprescribed antibiotics is widespread among the population. Therefore, the aim of this study was to elicit common beliefs about the use of antibiotics without prescription among Indonesians in an urban area of Yogyakarta. **METHODS:** Adults (>18 years old) with experience of using nonprescribed antibiotics, including leftovers from previously prescribed medication were interviewed. The questions focused on the advantages, disadvantages, enabling factors and social pressure related to this behavior. Two researchers independently analyzed the qualitative data using thematic analysis. **RESULTS:** A total of 25 face to face interviews has been conducted. Saving money and saving time—as a result of avoiding a medical consultation—were two main advantages of using nonprescribed antibiotics. Moreover, this behavior was reported as preventing the participants from taking too many different types of medicines commonly prescribed by doctors. Despite insurance coverage for the cost of prescribed medicines and medical consultation fees, some participants preferred to purchase nonprescribed antibiotics out-of-pocket because of the perceived advantages mentioned. Availability of antibiotics to be purchased without prescription in pharmacies as well as their accessibility in shops, and previous