placebo group (difference in cost $4247.36 USD). Incremental CER was $20,360.90 USD for one patient with viral load <50 copies/ml ($16,462.65–41,640.81 USD in sensitivity analysis). Cost of one patient with achieved viral load <50 copies/ml was lower for ETR group. CONCLUSIONS: According to the model ETR seems to be much more effective than placebo with affordable CER incremental ratio. Evaluation of ETR treatment cost-effectiveness in common practice in Russian health care is needed.

A435

COST-EFFECTIVENESS ANALYSIS OF VACCINATION AGAINST ROTAVIRUS WITH RIX4414 IN FRANCE

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OBJECTIVES: It is estimated that annually 300,000 cases of rotavirus-induced gastroenteritis (RVGE) occur in children aged up to 5 years in France. RIX4414 (Rotarix™ GlaxoSmithKline), a two-dose oral vaccine against rotavirus infection, has been shown to be highly effective against severe RVGE. A recent study (Melliez et al, Vaccine 2008) concluded that rotavirus vaccination was not cost-effective according to French Public Health context. We evaluated the cost-effectiveness of general vaccination against rotavirus using Rotarix™ in France using an updated model. We investigated the differences in modelling approaches and resultant cost-effectiveness conclusions. METHODS: A Markov model simulated RVGE events and the associated outcomes and costs in a birth cohort of children in France (n = 750,000), adjusting for age distribution and seasonality of infection. Costs and outcomes were estimated from a limited societal perspective (without indirect costs). The primary outcome measure was the incremental cost per quality-adjusted life year (QALY). RESULTS: Vaccination with Rotarix™ incurred an incremental cost of €44,583/QALY at a public price of €57 per vaccine dose. Univariate sensitivity analyses showed that the results were largely influenced by the discount rate for benefits, nosocomial rotavirus infection burden, hospital costs, and vaccine efficacy and cost. The acceptability curve indicated that 60% of the results were under the threshold of €50,000/QALY. Comparing these results with those of Melliez et al, the apparent discrepancy can be largely explained by differences in model structure and data input values including: different at-risk period and time horizon; different vaccine efficacy; different unit cost data; different disease duration and disutility values. CONCLUSIONS: These results demonstrate that a generalized vaccination strategy with Rotarix™ would be cost-effective in France from a societal perspective without including indirect costs; however there is a need for agreed standards to improve comparability of results from different studies.

A436

COST-EFFECTIVENESS ANALYSIS OF 7-VALENT PNEUMOCOCCAL CONJUGATE VACCINE IN TAIWAN: TRANSMISSION DYNAMIC MODEL-BASED EVALUATIONS

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OBJECTIVES: The aim of this study is to evaluate the long-term economic cost-effectiveness and clinical impact of universal infant vaccination of 7-valent pneumococcal conjugate vaccine (PCV7) in Taiwan by using a dynamic SIR model. METHODS: Recently, there are lots of interests surrounding the cost-effectiveness of PCV7 against pneumococcal diseases. Particularly, the quantification of the herd-immunity effects caused by this vaccine has been widely discussed. A cohort model in our previous study indicated that the universal PCV7 vaccination in Taiwan is a cost-effective intervention with an incremental cost per life year gained of NT$34,928 (US$11,227), preventing thousands of IPD cases over a 10-year horizon. However, this model cannot dynamically capture age-dependent force of infection associated with the effects of different contact patterns on pre- and post-vaccination. Hence, the herd-immunity externalities cannot be correctly estimated, which would bias our findings. To reassess the cost-effectiveness of this vaccine, we incorporated a dynamic realistic age-structured Susceptible-Infected-Recovered (SIR) model that can account for both the direct and indirect (i.e. herd-immunity effects) benefits of vaccination. All pre-vaccination parameters such as age-specific disease incidence, mortality, seroprevalence data, and cost associated with the treatment of pneumococcal diseases were obtained from the National Health Insurance (NHI) Database and published literature where available. A societal perspective and a health care payer’s perspective were adopted. Various vaccine strategies including hypothetical scenarios were investigated. One-way and multi-way sensitivity analyses were also performed to evaluate model robustness. RESULTS: Our model suggests that universal PCV7 vaccination has a considerable impact on the reductions of the morbidity and incidence related to pneumococcal diseases where the herd-immunity effects are more precisely quantified using dynamic SIR model. CONCLUSIONS: A universal infant vaccination with PCV7 is a cost-effective intervention from a dynamic perspective and its continuous vaccination in Taiwan is greatly encouraged.

PIN22

COST-EFFECTIVENESS OF DARUNAVIR/RITONAVIR 600/100MG BID IN TREATMENT-EXPERIENCED, LPV/R-NAÏVE, PI-RESISTANT, HIV-INFECTED ADULTS IN THE UNITED KINGDOM, BELGIUM, ITALY AND SWEDEN

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OBJECTIVES: The Phase III TITAN trial (TMC114-C214) evaluated darunavir/ritonavir (DRV/r) 600/100 mg bid versus lopinavir/ritonavir (LPV/r) 400/100 mg bid in treatment-experienced, LPV/r-naïve, HIV-infected adults. We determined the cost-effectiveness of DRV/r versus LPV/r from the perspective of British, Swedish, Italian and Belgian payers in the TITAN trial subgroup with at least one IAS-USA primary protease inhibitor (PI) mutation at baseline. These patients had less advanced HIV disease and a broader degree of prior PI use/failure (0 < 2) than those in the DRV Phase IIb POWER trials (n ≤ 2). METHODS: An existing Markov model containing 6 CD4+ T-cell count (CD4 count)-defined health states and a “death” state was adapted to the abovementioned countries. Baseline demographics and CD4 count distribution, antiretroviral drug usage, virologic and immunologic response rates and matching transition probabilities were based on TITAN trial data collected in the modelled subgroup during the first 48 weeks of therapy and from published literature. Patients were assumed to switch to a follow-up combination therapy after failure. For each model state, utility
values and mortality rates were obtained from published literature. Costs in each state were obtained from local observational studies and official, local unit costs or from published literature. A lifetime horizon was taken. Discount rates varied according to local guidelines. RESULTS: The base-case incremental cost-utility was €18213 (£13111)/QALY, €7605 (SEK 70379)/QALY, €17592/QALY and €7990/QALY in the UK, Sweden, Italy and Belgium, respectively. Assuming a threshold of €30,000/QALY, DRV/r remained cost-effective over most parameter ranges tested in extensive one-way sensitivity analyses. Probabilistic sensitivity analysis revealed a probability of <67% of an ICER below this threshold in all countries. CONCLUSIONS: From the British, Swedish, Italian and Belgian payer perspective, DRV/r 600/100 mg bid is predicted to be cost-effective versus LPV/r in the management of LPV/r-naïve, PI-resistant, HIV-infected adults with a broad range of prior PI use/failure.

**ECONOMIC AND CLINICAL IMPACT OF IMPLEMENTATION OF AN ACELLULAR PERTUSSIS VACCINE IN CANADA**

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**OBJECTIVES:** Ten years ago, Canada switched from whole cell to acellular pertussis vaccine (AcE) from the whole cell product (WCE) due to superior efficacy and safety, but at an increased cost. We performed a pharmacoeconomic analysis from societal (direct+indirect costs) and Ministry of Health (MoH; direct costs only) perspectives for Canadian children, comparing costs and outcomes before and after the switch.

**METHODS:** An epidemiologic model was constructed to portray the costs and outcomes for a cohort of children born 1991–1996 compared with another cohort born 1999–2004. The years between constituted the transition period. The model extended until children were age 13 (expected coverage period of pediatric immunization for pertussis). Direct costs included vaccines and disease management (pediatric visits, emergency room visits, pediatric ICU and ward stays, antibiotics). Indirect costs included parental time for vaccination and hospital visits. Cost values were applied from standard lists and projected to constant 2005 dollars, with costs form other years discounted at 5%. Literature estimates were used for infection rates, mortality rates, and clinical rates (vaccine success, adverse events). Outcomes examined were pertussis cases avoided and pertussis hospitalizations avoided, both discounted at 5%. Pharmacoeconomic outcomes were the incremental costs per case avoided. Robustness of results was tested with a variety of one-way and multivariate sensitivity analyses.

**RESULTS:** The total MoH was $238 million for WCE and $256 million for AcE; total societal costs were $540 million and $510 million, respectively. Cases decreased from 246,063 with WCE to 106,088 with AcE and hospital admissions from 1038 to 441. The MoH incremental cost/case avoided was $108 ($0.96/child). From the societal perspective, there were cost savings. Sensitivity analyses confirmed that results were robust. CONCLUSIONS: We found that pertussis vaccination with AcE was cost saving from the societal perspective and cost-effective from the Ministry of Health perspective.

**COST-EFFECTIVENESS OF 7-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV) INCLUDING HERD PROTECTION IN TURKEY**

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**OBJECTIVES:** To determine the cost-effectiveness of 7-valent PCV in a national immunisation programme in Turkey.

**METHODS:** A model was developed in MS-Excel™ to estimate the incidence of four diseases: pneumococcal meningitis, pneumococcal septicaemia/bacteraemia, all-cause pneumonia and all-cause acute otitis media in a cohort of children zero to ten years of age. The efficacy of the vaccine against these conditions was assumed to be 97.4%, 97.4%, 7% and 6% respectively. In addition, corresponding adult disease burden was incorporated into the model by assuming reductions of 32%, 8% and 18% in the age groups 20–39 yrs, 40 to 64 yrs and 65 + yrs respectively, due to indirect (herd) effects. Turkish data used were from reports of the Ministry of Health, the Turkish Statistics Organisation, data from 11 major hospitals in Istanbul (serving about 80% of the 12 million city population), the National Burden of Disease Survey and the Verbal Autopsy Study. When Turkish data were not available, estimates were developed through expert opinion and/or extrapolated data. When paediatric costs were not known they were assumed to be one-tenth of UK costs; when adult costs were not known they were assumed to be one-fifth of UK costs. It was estimated that 1972 annual adult deaths occurred due to pneumococcal infection in Turkey. The estimated serotype coverage for invasive pneumococcal diseases was 63% for those <2 yrs of age and 35% for those 2 to 10 yrs of age. It was assumed that only 80% of the primary birth cohort would be vaccinated and the schedule would be 4 doses. **RESULTS:** The addition of indirect (herd) effects to the model reduced the cost-effectiveness by 12.5%. If one-tenth of the recognised cost-effectiveness threshold (US$60,000 cost per life-year gained) is taken as the cost-effectiveness threshold for Turkey ie US$6000, then 7-valent PCV would be cost effective at a cost-per-dose of US$45. The costs per QALY in Turkey for the treatment of lung cancer is US$6141 and for hepatitis C treatment US$6638. **CONCLUSIONS:** The inclusion of 7-valent PCV in a fully-funded Turkish national immunisation programme would be highly cost-effective.