

were however not considered to be able to replace CE except for MEA (14% reported that it could replace CE versus 0% for the others). In countries where CE is not formally used, the proportion of experts considering them as relevant was lower except for the BOM: RoI (46%), MCDA (46%), QoC (18%), BOM (60%) and MEA (33%). Most reported barriers for use of the alternative methods were: no political interest, unfamiliarity with these methodologies, and lack of robust input data to conduct the evaluation. The method selection was most influenced by the appropriateness to the decision-making question, the country, and the vaccine or disease type assessed. **CONCLUSIONS:** Creating awareness on additional economic evaluation methods may support and facilitate the vaccine reimbursement decision-making process in Europe alongside the current CE analysis.

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ALLOCATING VACCINE FUNDS FOR PNEUMOCOCCAL VACCINATION OF INFANTS AND OLDER ADULTS: A METHOD FOR STRATEGIC EVALUATION IN THE NETHERLANDS

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OBJECTIVES: Pneumococcal conjugate vaccines are available in the Netherlands against pneumococcal disease in infants and adults. This analysis aimed to identify an optimal vaccination strategy between infants and adults when the budget is constrained. Extensive sensitivity analysis is performed around herd protection on Invasive Pneumococcal Disease (IPD) and Community Acquired Pneumonia (CAP) resulting from infant vaccination. **METHODS:** We developed an optimization model linked to a prevalence-based disease management sub-model. This program allows finding an optimal solution given an objective function (minimize cases; minimize quality-adjusted life-years (QALYs) lost; minimize life-years (LYs) lost) under budget constraints. Vaccine efficacy (VE) is based on clinical trial data. The model is run for different scenarios seeking for minimum indirect effect on IPD and on CAP in the whole population needed to keep infant vaccination as the optimal intervention, given a constrained budget. **RESULTS:** With the current disease burden and vaccine coverage rate in the Netherlands and considering an overall VE in adults against CAP of 4.5% and against IPD of 37% (estimates based on CAPITA clinical trial results), the model shows that vaccinating infants is the optimal strategy that minimizes pneumococcal-related events when compared with adult vaccination. If the objective is to minimize QALYs lost, vaccinating infants remains the optimal selection as long as the net indirect effect is $\geq 2\%$ on CAP or $\geq 3\%$ on IPD. When the objective is to minimize LYs lost, the minimum indirect effect should be $\geq 3\%$ on CAP or $\geq 7\%$ on IPD. Sensitivity analyses show that even if CAP VE in adults is 3 times higher, the estimated minimum indirect effect needed is still below the one obtained with the first pneumococcal conjugate vaccine. **CONCLUSIONS:** The optimal strategy within a constrained budget is to maintain infant vaccination instead of initiating elderly vaccination, given the reported evidence of indirect protection.

PIN70

COST-EFFECTIVENESS ANALYSIS OF A SHINGLES VACCINATION PROGRAM TO PREVENT HERPES ZOSTER AND POST-HERPETIC NEURALGIA IN THE SPANISH SETTING

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OBJECTIVES: A live-attenuated vaccine aimed at preventing herpes zoster (HZ) and post-herpetic neuralgia (PHN) is available in Europe for immunocompetent adults aged ≥ 50 years. The study objective is to assess the incremental cost-effectiveness ratio (ICER) of a vaccination program for this population in Spain when compared against the current strategy of no-vaccination. **METHODS:** A state-transition Markov model has been developed to simulate the natural history of HZ and PHN and the lifetime effects of vaccination. Several health states are defined including good health, HZ, PHN and death. HZ and PHN health states are divided to reflect pain severity. The Markov cycle was 1 month and lifetime horizon. The HZ vaccine lifetime duration (waning rate of 8.3%) and a PHN vaccine duration of 10 years. PHN proportion was obtained from Cebrián-Cuenca (2011) and adjusted to reflect the incidence of PHN among HZ patients with pain. The vaccine coverage rate estimated was 30%, considering discount rates of 3% for costs and utilities. The strength of the results was confirmed with a probabilistic analysis based on Monte Carlo simulation. **RESULTS:** A vaccination strategy compared to a no-vaccination resulted in 12.659€/QALY and 11.926€/QALY under third-party payer perspective and societal perspective respectively for the population aged ≥ 50 years. ICERs were within the commonly accepted thresholds of 30.000€/QALY (36.000€/QALY) gained in the UK. Sensitivity analyses showed that the model was most sensitive to discount rates and duration of vaccine protection. The lowest ICER was observed for the 70-74 years age group (6.657€/QALY under third-party payer perspective). **CONCLUSIONS:** In Spain, a shingles vaccination strategy in older population would be a cost-effective alternative in comparison with no vaccination, due to an ICER of 12.659€/QALY from the third-party payer perspective.

PIN71

COST-EFFECTIVENESS OF FECAL MICROBIOTA TRANSPLANT IN TREATING CLOSTRIDIUM DIFFICILE INFECTION IN CANADA

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OBJECTIVES: To estimate the cost-effectiveness of Fecal Microbiota Transplant (FMT) for Clostridium difficile infection (CDI) as compared to the current practice comprising of antibiotic treatments. **METHODS:** We developed a decision analytic model to compare strategies for the management of CDI, by age, gender, and three sources of infection: hospitals, communities, and long-term care facilities (LTCF). We performed validation analyses to demonstrate that the predicted CDI rates were a

reasonable representation of the selected actual rates. Mortality rates were stratified by age. A probabilistic sensitivity analysis (PSA) was performed to account for the effect of uncertainty in the model parameters. **RESULTS:** For the current practice, we estimated that annually 75% of CDI cases are new infections; the rest are recurrences; 40% of CDI occurs among individuals aged 80+, 41% among 60-79, and 19% among those below 60; hospital-based CDI accounted for 69% of all CDI, while community and LTCF based CDI accounted for 26% and 5% of all CDI, respectively. The recurrence rates for current antibiotic treatment were estimated at 25.3% and 35.9% for first and second recurrences, respectively. The recurrence rate for FMT was estimated at 10.4%. For the base case, we estimated 79.0 and 64.9 per 100,000 population cases of CDI for current practice and FMT, respectively. The number of deaths is estimated at 5.8 and 4.7 per 100,000 population for current practice and FMT, respectively. The results of the cost-effectiveness analysis indicate that in the base case, FMT is a dominant strategy. The results of the PSA reveal that for the majority of simulations, FMT is dominant (positive incremental QALYs and negative incremental cost). **CONCLUSIONS:** The results of the cost-effectiveness analysis indicate that FMT appears to be the dominant strategy, with lower costs and better outcomes than the existing antibiotic treatments.

PIN72

THE IMPORTANCE OF SENSITIVITY ANALYSIS IN ASSESSING CLINICAL AND ECONOMIC IMPACT OF NATIONAL IMMUNIZATION PROGRAMS: AN EXAMPLE OF SLOVENIA

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OBJECTIVES: To demonstrate the role of sensitivity analysis (SA) in assessing clinical and economic impact of national immunization programs. **METHODS:** We applied our recent cost-effectiveness model of pneumococcal vaccination to the local data in Slovenia, which is particularly notable for high incidence of community-acquired pneumonia (CAP) and acute otitis media (AOM). In the model, we followed the cohort of 21,938 Slovenian infants over their lifetime and compared two pneumococcal vaccine (PCV) options (PHiD-CV and PCV-13) with each other and with a "no vaccination" strategy (NVS) from a payer perspective, both at current and parity prices. The model simulated vaccine protection against both pneumococcal diseases (invasive, CAP, AOM) and AOM related to non-typeable *Haemophilus influenzae* (NTHi). We performed various sensitivity analyses, including probabilistic Monte Carlo simulations by employing parameter values derived from clinical trials and post-marketing surveillance data. **RESULTS:** SA has shown that PHiD-CV vaccine dominated PCV-13 vaccine across the range of parameters, both at current and parity prices, and robustness of domination was further confirmed by more than 95% out of 1,000 Monte Carlo simulations, where PHiD-CV dominated PCV-13. SA when comparing each vaccine with NVS showed that at current prices reduction of CAP, AOM, and myringotomy-procedure incidence by 50% in children younger than 10 years increased incremental cost-effectiveness ratio (ICER) from €4,237 per quality-adjusted life year (QALY) to €18,917/QALY for PHiD-CV and from €16,049/QALY to €35,040/QALY for PCV-13. At current prices, vaccination with PHiD-CV dominated NVS when at least 17.5% of parents of sick children would take a paid leave, which – in the Slovenian jurisdiction – constitute direct costs; in comparison, corresponding ICER for vaccination with PCV-13 vs. NVS was €12,306/QALY. **CONCLUSIONS:** Both base case and SA model findings suggest that Slovenian authorities would save resources by implementing national immunization program of infants with PHiD-CV as a vaccine of choice.

PIN73

THE PAN-GENOTYPIC COSTS-EFFECTIVENESS OF SOFOSBUVIR IN HEPATITIS C VIRUS

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OBJECTIVES: This study assesses the PAN-genotypic costs-effectiveness of sofosbuvir compared with standard of care in the Netherlands. **METHODS:** Untreated hepatitis C virus (HCV) infection results in chronic liver disease. The prevalence in The Netherlands is estimated at 0.1-0.4% with 50% of patients having HCV genotype 1 (GT1), 10% GT2, 30% GT3 and 10% GT4-5-6. Current standard of care (SoC), regardless of genotype consists of weekly subcutaneous pegylated interferon-alpha (PegIFN- α) plus daily oral ribavirin. In GT1, the protease inhibitors telaprevir or boceprevir are added. Sofosbuvir (SOF), a novel Direct Antiviral Agent (DAA), has consistently demonstrated high rates of sustained virological response (SVR) when given with ribavirin+PegIFN- α . This cost-effectiveness evaluation is based on a Markov transition model, that combines efficacy and safety data from published RCTs with SOF and SoC in all genotypes with specific attention for subgroups for whom no alternatives are available (no PegIFN- α eligibility). Medical resource use is based on clinical guidelines and expert opinion. Costs include treatment costs, monitoring costs, costs for treatment of complications and adverse events as well as productivity loss. The model has a lifetime horizon and costs are discounted with 4% and outcomes with 1.5%. Results are presented for an HCV mono-infected population with 20% cirrhotic patients. **RESULTS:** The incremental QALY gain for SOF was 1.23 in PegIFN- α eligible patients and 2.68 in those not eligible for PegIFN- α . The incremental costs were €25,291 for PegIFN- α eligible patients and €89,707 for those not eligible for PegIFN- α . The resulting PAN-genotypic ICERs were €20,487 for PegIFN- α eligible patients and €33,516 for those not eligible for PegIFN- α . **CONCLUSIONS:** PAN-genotypic cost-effectiveness is demonstrated for sofosbuvir in the treatment of HCV in the Netherlands.

PIN74

COST-EFFECTIVENESS OF HUMAN PAPILLOMAVIRUS VACCINATION PROGRAMMES PARALLEL TO CURRENT ROUTINE VACCINATION OF YOUNG TEENAGE GIRLS

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