around pregnancy and childbirth (cocooning) could further protect infants. In this study cost-effectiveness of cocooning was estimated for The Netherlands. METHODS: A decision tree model was developed with a birth cohort and cohort of parents. The benefit of pertussis immunization take the direct effect on parents and the indirect effect through transmission to infants into account. The incidence rate of unreported cases in The Netherlands has been corrected to take symptomatic unreported cases into account. In the sensitivity analysis the impact of the underreporting factor on the ICER (Incremental Cost-Effectiveness Ratio) was analyzed. The robustness of the estimated ICER was estimated by varying vaccine efficacy, vaccine costs, QALY (Quality-Adjusted Life-Year) estimates and indirect benefits. RESULTS: Implementation of the cocooning immunization strategy is estimated to prevent 57 infant pertussis cases per year. From the payer’s perspective, the ICER is estimated at €4,500/QALY in the base-case. Sensitivity analysis revealed that the ICER was hardly sensitive to vaccine price, indirect benefits and vaccine efficacy. The ICER was however sensitive to the underreporting factor, quality of life and cost assumptions for these unreported cases. From the societal perspective, the cocooning immunization strategy is estimated as cost-saving. By decreasing the underreporting factor, QALY losses and costs assumptions in the unreported pertussis cases remained highly cost-effective. CONCLUSIONS: The addition of a cocooning immunization strategy to the current pertussis immunization programme is likely to be cost-effective or even cost-saving from a societal perspective. However the ICER is sensitive to the underreporting factor, QALY estimates and costs assumptions in the unreported pertussis cases.

**PIN46**

**COST-EFFECTIVENESS ANALYSIS OF IMIQUIMOD VERSUS PODOPHYLLOTOXIN IN TREATMENT OF GENITAL/PERIANAL WARTS IN POLAND**

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OBJECTIVES: To conduct a cost-effectiveness analysis (CEA) of imiquimod versus podophyllotoxin as standard regimen in treatment of genital/perianal warts in Poland. METHODS: Our analysis was carried out using a decision model based on the clinical effects of imiquimod and podophyllotoxin, obtained from prospective clinical trials. Population was defined as adult patients with genital/perianal warts. Total clearing warts was assessed as health outcome. Direct medical costs of the analyzed therapies were estimated from the perspective of both payers in Poland (National Health Fund and patient). Costs of medication and clinic visits were included. Time horizon of the analysis was 28 weeks, as during the clinical trial for imiquimod. We assumed the mean time at treatment of 13.65 weeks (once a day 3x/week regimen) for imiquimod and 4 weeks for podophyllotoxin. Costs and effects were not discounted. RESULTS: Probability of total clearing warts was 0.429 for patients treated with imiquimod and 0.196, for podophyllotoxin treatment. Costs of imiquimod therapy was estimated at 1121.34 PLN and costs of podophyllotoxin therapy at 218.33 PLN. Incremental cost-effectiveness ratio (ICER) for the comparison of imiquimod versus podophyllotoxin was 3865.86 PLN per gained total clearing warts. CONCLUSIONS: Imiquimod is more effective and more expensive than podophyllotoxin in treatment of genital/perianal warts. ICER value is below the acceptable threshold, therefore imiquimod therapy is considered as cost-effective treatment in Poland.

**PIN47**

**MODELING THE OUTCOMES OF VACCINATION WITH THE 10-VALENT PNEUMOCOCCUS-TYPEABLE HAEMOPHILUS INFLUENZAE PROTEIN-D CONJUGATE VACCINE (PHD-CV) IN SPAIN**

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OBJECTIVES: To estimate the health outcomes of vaccination with the new 10-valent pneumococcal non-typeable Haemophilus influenzae protein-D conjugate vaccine (PHD-CV) compared with no vaccination. METHODS: A cross-sectional population-based model was used to estimate the impact of vaccination over 1 year at vaccine steady-state and to perform an incremental cost-effectiveness analysis, comparing 3+1 dose vaccination schedule of PHD-CV vs no vaccination. Universal massive vaccination (UMV) for pneumococcal disease is currently not compulsory according to the National Vaccination Calendar in Spain. The analysis was performed from the National Health System perspective. Input data were obtained from the Ministry of Health public database and published regional studies, and was completed by expert opinion to validate model assumptions on the vaccination effects of herd-protection for invasive diseases, vaccine replacement, cross-protection and reservoir control. The main clinical outcomes measured were invasive pneumococcal disease (meningitis and bacteremia/sepsis), acute otitis media (AOM), myringotomies and hospitalised pneumonia. These were measured by reduction in the disease cases and their associated costs. RESULTS: Preliminary results indicate that PHD-CV could prevent annually and for all ages 4.352 hospitalisations (2.727 meningitis, 2.013 bacteremia/sepsis and 2.067 pneumonias), 2.964 myringotomies and 180.361 ambulatory GP-visits for AOM, overall reducing disease costs in €34,2M, mainly due to less AOM costs (€13,1M). Implementation of PHD-CV could be a cost-effective intervention comparing with no vaccination expressed as cost per QALY gained of €18,597. CONCLUSIONS: The analysis predicts that vaccination with PHD-CV could produce a significant health improvement and substantial disease cost offset from the National Health System perspective when compared to no vaccination. Results support that the implementation of PHD-CV UMV should be considered by Public Health decision-makers.

**PIN48**

**COMPARATIVE COST-EFFECTIVENESS ANALYSIS OF DARUNAVIR/R AND OTHER RITONAVIR-BOOSTED PROTEASE INHIBITORS FOR FIRST-LINE TREATMENT OF HIV-1 INFECTION IN GERMANY**

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OBJECTIVES: To compare the cost and efficacy of ritonavir-boosted darunavir (Darunavir/r) and other protease inhibitors (PIs) licensed for use in treatment-naive, HIV-1-infected adults in Germany. METHODS: Efficacy was measured by the percentage of individuals with plasma HIV RNA < 50 copies/ml (the current therapy goal) at 48 weeks, based on a systematic review and meta-analysis of clinical trials of PI/r-based regimens in treatment-naive populations. For each PIs, one-year antiretroviral therapy costs (May 2009 Lawer Taxe) were plotted against 48-week efficacy. An efficacy frontier was constructed by connecting the most economically efficient PIs/r-based regimens. The base-case analysis considered PIs/r with tenofovir-based backbone regimens; abacavir-based backbones were considered in scenario analysis. RESULTS: In the base-case analysis, darunavir/r was the most efficacious PIs/r with a incremental cost-efficacy ratio (ICER) of €20,322 per additional individual with virologic response, compared to fosamprenavir/r, the only other point on the efficacy frontier of PI/r-based initial therapy. All other PIs/r were less efficacious and more costly than darunavir/r or fosamprenavir/r, including the two most commonly prescribed PIs/r azatavurin and lopinavir/r. Before the introduction of darunavir/r, azatavurin was most efficacious but with a higher ICER of €34,244 versus fosamprenavir/r. Darunavir/r had an average cost of €20,036 per individual with virologic response, compared with €20,976 and €22,861 for azatavurin and lopinavir/r, respectively. Given a fixed budget of €10 million, darunavir/r successfully treated 499 patients, compared with 477 patients for azatavurin and 437 for lopinavir/r, respectively. Similar results were obtained in scenario analysis using abacavir-based backbones. CONCLUSIONS: Darunavir/r 800/100 mg QD has a lower cost per individual with virologic response after 48 weeks than the two most commonly prescribed PIs/r in treatment-naive, HIV-1-infected adults and provides more benefit per additional cost than other PIs/r currently used in this population in Germany.

**PIN49**

**A PHARMACOECONOMIC EVALUATION OF INFLUENZA VACCINATION IN THE ELDERLY POPULATION IN ITALY**

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OBJECTIVES: Influenza vaccination has proven effective in the reduction of influenza-like illness (ILI) cases and influenza-related hospitalisations, drug consumption, primary care consultations and deaths in the elderly population. The aim of this study is to assess the economic impact in Italy of different prophylactic strategies (vaccination with a standard vaccine and with the innovative MFS9® adjuvanted vaccine versus no vaccination). METHODS: A pharmacoeconomic simulation was developed. Health economic and demographic data are taken from specific Italian sources and vaccine effectiveness data derived from published. Direct sanitary costs are considered according to current Italian prices and tariffs. RESULTS: A total of 9,800,000 of the about 12,000,000 people of 65+ years residence in Italy can be considered at high risk for influenza complications due to underlying chronic diseases. Absence of vaccination could lead to more than 2 million ILI cases, and 30,000 related deaths. The vaccination programme would lead to an estimated 1.5 million ILI cases with a standard vaccine and to 1.3 million with the MFS9® adjuvanted vaccine. The standard vaccination strategy could produce a moderate direct cost increase of about €45 million (+4.3%), whereas the adjuvanted vaccine could provide an estimated saving of about €80 million (−7.9%), both compared to the null option. Costs savings are mainly related to hospital admissions avoided. The incremental cost-effectiveness ratio (ICER) of the standard vaccine vs. no vaccination strategy is of €85.68/ILI avoided, and of €4,411.42/death avoided. The strategy based on the MFS9® adjuvanted vaccine dominates the other two options. CONCLUSIONS: Vaccination with the MFS9® adjuvanted vaccine is more effective and cost saving when compared with the standard vaccine or no vaccination, thus representing the optimal strategy for the elderly population. The standard vaccine, even though a light cost increase, proved to be cost effective compared to the null option.

**PIN50**

**MICAFUNGIN VS CASPOFUNGIN FOR THE TREATMENT OF SYSTEMIC CANDIDA INFECTIONS: A COST-EFFECTIVENESS ANALYSIS FOR GERMANY**

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OBJECTIVES: Comparing the cost-effectiveness of Micafungin (MICA) and Caspofungin (CASPO) for the treatment of systemic candida infections (SCIs) (including invasive candidiasis and candidaemia) in Germany. METHODS: A health economic decision model is based on a clinical study with a global population. The study was a Phase 3 double blind randomized controlled trial comparing MICA versus CASPO. Furthermore, German hospitalization and primary medication costs were included in the model. RESULTS: The analysis predicted that vaccination with PHD-CV could produce a significant health improvement and substantial disease cost offset from the National Health System perspective when compared to no vaccination. Results support that the implementation of PHD-CV UMV should be considered by Public Health decision-makers.
the analysis. The model's effectiveness outcome is defined as patients who are successfully treated and are alive. Cost-effectiveness is measured as total costs per patient with respect to effectiveness for each medication arm. In addition, sensitivity analyses were performed to identify cost-effectiveness for different clinical and economic assumptions. The analysis shows that vaccination is cost-effectively treated and survived at the end of study compared to 58% of CASPO patients. Furthermore, the costs of a MICA treatment ($37,212) are below the costs of a CASPO treatment ($37,720). Therefore, the cost-effectiveness ratio is lower for MICA ($623,377) than for CASPO ($655,565). This result also holds for all but one of the sensitivity analyses. However, probabilistic sensitivity and subgroup analyses show that differences cannot be considered statistically significant due to large variance. For European patients only, who can be assumed to be a more homogeneous group and a better proportion of German patients, cost-effectiveness ratio for MICA was 59,406 € compared to 68,217 for CASPO, the difference being statistically significant.

CONCLUSIONS: This study analyzes the cost-effectiveness of MICA as compared to CASPO for the treatment of systemic candida infections in Germany. Both lower costs and higher effectiveness of MICA render MICA more cost-effective than CASPO.

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Jensen DM, Marcellin P, Ursprung A, Papadakis K, Tonov D
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OBJECTIVES: Standard treatment for hepatitis C is peginterferon (PEG-IFN) + RBV with the aim of achieving a sustained-virological-response (SVR), which is widely considered to be a cure. Around 50% of patients infected with G1 do not achieve an SVR but re-treatment with PEG-IFN + RBV is successful in some, especially in those with an earlier early-virological-response (HCV-RNA undetectable by week 12 [eSVR]). The objective of this analysis was to determine the cost-effectiveness of re-treating previous G1 non-responders to PEG-IFN + RBV. METHODS: A published Markov-model compared three strategies: PEG-IFN2a+RBV, +RBV, and RBV alone. RESULTS: The cost-effectiveness analysis was performed considering the expenses and use of resources of Mexican Public Health Institutions. The study was based on a decision tree with a Bayesian approach defining three health states: clinical success (within short or long hospital stay frame), therapeutic failure, and death. The alternatives compared were: a) i.v. Vancomycin (VAN) as a first-line antibiotic therapy followed by a second-line antibiotic therapy in therapeutic failure, or b) i.v. Daptomycin (DAP) as a first-line or second-line antibiotic therapy. The most recent published data concerning efficacies, length of hospital stay and adverse events were included in the study. Results were evaluated with incremental analysis and one-way sensitivity analysis of most uncertain variables. RESULTS: The use of Daptomycin as first-line antibiotic therapy represents savings of US$4,619.00 per patient reaching clinical success (CS) when compared to the use of i.v. Vancomycin as first-line antibiotic therapy (DAP-VAN: US$21,168.00/CS; VAN-2nd line antibiotic: US$2,787.00/CS). A greater proportion of patients are more likely to attain clinical success when DAP is used as first-line antibiotic therapy (DAP-VAN: 62%; VAN-2nd line antibiotic: 54%) due to a less frequent development of adverse events compared to the use of VAN. The sensitivity analysis varying clinical success rates of every evaluated alternative demonstrated the robustness of the base study. CONCLUSIONS: Daptomycin is the most cost-effective alternative in the treatment of Infective Endocarditis and Bacteremia when used as first-line antibiotic therapy since it decreases hospital expenses due to a reduced hospital stay and results in a greater proportion of patients reaching clinical success. The use of Vancomycin in long term treatment is associated with a higher frequency of adverse events which can cause treatment interruption resulting in therapeutic failure.

**REFERENCES:**

**THE COST-EFFECTIVENESS OF THE NEW PNEUMOCOCCAL 13- VALENT CONJUGATE VACCINE (PCV13) FOR CHILDHOOD AND ADULT VACCINATION IN THE UK**

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OBJECTIVES: The 13-valent pneumococcal conjugate vaccine (PCV13) and 23-valent pneumococcal polysaccharide vaccine (PPV23) are currently recommended for childhood and adult vaccination respectively in the UK. A 13-valent pneumococcal conjugate vaccine (PCV13) is currently being reviewed by regulatory authorities for use in infants and young children, and a clinical development plan for adults is ongoing. This study assessed cost-effectiveness of PCV13 compared to the current vaccination strategy and to PCV7 given to children alone. METHODS: A steady state, static cohort model was constructed comparing PCV13 vaccination of the birth cohort of 63 year-old adults with the current strategy and with PCV7 in children alone. The model evaluated the incidence and subsequent costs of four infections: pneumococcal meningitis; pneumococcal bacteremia; all cause pneumonia and acute otitis media (AOM). Vaccination was assumed to have effects on vaccinated individuals and to impact unvaccinated individuals as a result of herd immunity. The number of cases and cost-effectiveness of four infections were estimated for the three scenarios: Sensitivity analysis considered incidence, mortality rates, vaccine efficacy, serotype cover, costs, discount rate, uptake and herd immunity. RESULTS: The model estimated that compared to the current strategy (and compared to PCV7 alone), PCV13 would reduce the annual incidence of bacteremia and meningitis by 1176 (1303) cases, prevent 35 (40) deaths, increase life years by 619 (666), increase QALYs by 694 (731) and reduce medical costs by £2.9m (£11.1m). Results are sensitive to vaccine effects against pneumococcal and the disease incidence in non-vaccinated individuals. CONCLUSIONS: Pneumococcal and adult PCV13 vaccination in the UK is estimated to reduce the burden of pneumococcal disease and save costs compared with either the current vaccination strategy or a pediatric PCV7 only strategy. Final cost-effectiveness will depend on the emergence of herd immunity benefits in the UK, impact on pneumonia, vaccine schedule and price.

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**THE COST-EFFECTIVENESS OF THE SURVIVING SEPSIS CAMPAIGN PROTOCOL FOR SEVERE SEPSIS IN SPAIN**

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OBJECTIVES: To determine the cost-effectiveness of the protocol of the international Surviving Sepsis Campaign (SSC) for the treatment of severe sepsis in Spain after the implementation of a multicentre educational program compared with the conventional