THE COST EFFECTIVENESS ANALYSIS OF TREATMENT WITH PEGINTERFERON ALFA-2A (40KD) IN PATIENTS WITH HBEAG-NEGATIVE CHRONIC HEPATITIS B

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OBJECTIVE: The aim of the study was to evaluate the cost-effectiveness of peginterferon alfa-2a (40KD) for the treatment of patients with HBsAg-negative chronic hepatitis B in Poland. The analysis compared two strategies: peginterferon alfa-2a (40KD) vs. lamivudine for 48 weeks (short-term analysis) or peginterferon alfa-2a (40KD) for 48 weeks vs. lamivudine for 4 years (long-term analysis). METHODS: The analysis was performed from the Polish payer perspective using a state-transition Markov model. Quality-adjusted life years (QALYs) was adopted as a measure of effectiveness. Efficacy with peginterferon alfa-2a (40KD) and lamivudine after 48 weeks of treatment was obtained from a randomized controlled trial (Marcellin et al. NEJM 2004;351(12):32-43). Long-term lamivudine efficacy, health state transition probabilities and utility estimates were obtained from the published literature. Direct medical costs, i.e. cost of drugs and procedures in the treatment of hepatitis B and its complications (cirrhosis, hepatocellular carcinoma, liver transplantation) were obtained from Polish sources. Costs and benefits were discounted at a 3% annual rate. RESULTS: Peginterferon alfa-2a 40(KD) vs. lamivudine for 48 weeks (short-term analysis) increased QALYs by 0.89. The mean treatment cost in the short-term analysis was 17,743 € (1€ = 4.035 PLN) and 12,522 € per patients for peginterferon alfa-2a and lamivudine, respectively. The incremental cost-effectiveness ratio (ICER) was 9316/€QALY gained. In the long-term analysis, peginterferon alfa-2a (40KD) increased QALYs by 0.75. The mean cost of treatment was 17 €398 for peginterferon alfa-2a (40KD) and €13,890 for lamivudine per patient. The incremental cost-effectiveness ratio (ICER) was €7643 per QALY gained. CONCLUSIONS: The ICER for peginterferon alfa-2a evaluated in the short-term analysis as well as in the long-term analysis did not exceed €14,870 (cost of one year dialysis in Poland). Thus, the procedure appears to be cost-effective in Poland.

THE COST-EFFECTIVENESS OF ENTECAVIR IN THE LONGTERM TREATMENT OF NUCLEOSIDE-NAÏVE AND LAMIVUDINE-REFRACTORY CHRONIC HEPATITIS B PATIENTS IN SWEDEN

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OBJECTIVE: To model the cost-effectiveness entecavir (ETV) in treating chronic hepatitis B (CHB) in Sweden. METHODS: Design: A modified decision tree model was developed to compare two hypothetical cohorts of CHB patients undergoing therapy with antiviral agents. Based on patient viral load, the model estimates the progression to compensated cirrhosis (CC), decompensated cirrhosis (DC) and hepatocellular carcinoma (HCC). The multivariate-adjusted risk-predicting models were developed based on the R.E.V.E.A.L.-HBV Study cohort with 42,115 person-years of follow-up. Perspective: Health care payer. Patient populations: 1. Nucleoside-naïve patients: 0.5 mg ETV vs. 100 mg lamivudine (LVD) with adefovir (ADV) administered as salvage therapy in case of resistance to LVD. 2. LVD-refractory patients: 1.0 mg ETV vs. 100 mg lamivudine (LVD) with adefovir (ADV) administered as salvage therapy in case of resistance to LVD. Costs: 10-year treatment costs were estimated using drug acquisition costs published by the LFN. Costs of CC, DC, and HCC are from a Swedish costing study. Discounting: Both costs and outcomes were discounted at 3% annually. Sensitivity analyses were performed to various parameters. RESULTS: ETV therapy in nucleoside-naïve patients is a dominant treatment strategy compared to LVD therapy with antiviral agents. Based on patient viral load, the model estimates the progression to compensated cirrhosis (CC), decompensated cirrhosis (DC) and hepatocellular carcinoma (HCC). The multivariate-adjusted risk-predicting models were developed based on the R.E.V.E.A.L.-HBV Study cohort with 42,115 person-years of follow-up. Perspective: Health care payer. Patient populations: 1. Nucleoside-naïve patients: 0.5 mg ETV vs. 100 mg lamivudine (LVD) with adefovir (ADV) administered as salvage therapy in case of resistance to LVD. 2. LVD-refractory patients: 1.0 mg ETV vs. 10 mg ADV. Effectiveness: Efficacy data were used from published clinical trial results. Life-expectancy was estimated by the DEALE method, using Swedish life tables. Utility values were obtained by standard gamble in a CHB health-utility study. Costs: 10-year treatment costs were estimated using drug acquisition costs published by the LFN. Costs of CC, DC, and HCC are from a Swedish costing study. Discounting: Both costs and outcomes were discounted at 3% annually. Sensitivity analyses were performed to various parameters. RESULTS: ETV therapy in nucleoside-naïve patients is a dominant treatment strategy compared to LVD therapy with ADV salvage. Cost savings: SEK 3,612,483, QALYs gained 38.67. Across patient populations and comparators, ETV was associated with lower projections of liver-related events, a lower mortality rate with moderate to high FN risk in Germany. METHODS: We constructed a decision-analytic model from a health care payer’s perspective. Costs included drugs, drug administration, FN-related hospitalizations and subsequent costs, and were based on Rote Liste (list price) and DRG Tariff. Effectiveness was measured as FN avoided and life-year-gained (LYG). FN risk (varied by days of filgrastim), FN case-fatality, relative dose intensity (RDI), and the impact of RDI on survival were based on a comprehensive literature review and expert panel validation. Breast cancer mortality and all-cause mortality were from official statistics. Sensitivity analyses were conducted on key variables. RESULTS: Pegfilgrastim use avoided more FN events, produced greater LYG and was less expensive than 11-day filgrastim. Compared with 6-day filgrastim, pegfilgrastim avoided 10.5 absolute percentage point of FN (17.5% vs. 7%) at a modest cost increase (€1306); the incremental cost-effectiveness ratio (ICER) was €12,429 per FN avoided. The average life expectancy was 15.99 years with pegfilgrastim and 15.88 years with filgrastim, yielding an ICER of €11,972/LYG. Age of diagnosis and cancer stage had minimal impact on the results. Drug costs and FN risk has moderate influence on model results. CONCLUSIONS: In Germany, pegfilgrastim appeared to dominate 11-day filgrastim and to be cost-effective within normal thresholds compared with 6-days filgrastim per cycle.
and higher QALYs. The results were robust to sensitivity analyses. CONCLUSIONS: ETV is a dominant treatment option across all populations in the treatment of patients with CHB, compared to LVD and ADV. The results clearly suggest that suppressing VL is economically attractive.

**PIN8**

**COST-EFFECTIVENESS OF INTERVENTIONS ENSURING BLOOD TRANSFUSION SAFETY IN AFRICA**

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**OBJECTIVES:** The risk of HIV, HBV and HCV transmission by blood transfusion in sub-Saharan Africa is (very) high compared to the developed world. In this economic evaluation the cost-effectiveness of interventions (donor management, quality of testing, administration and additional tests) improving blood transfusion safety is explored. METHODS: The residual risks of HIV, HBV and HCV transmission were derived for Angola, Benin, Botswana, Côte d’Ivoire, Ethiopia, Kenya, Mozambique, Namibia, Rwanda, Uganda and Zambia from the Global Database on Blood Safety (GDBS; WHO, 2004). Cost-effectiveness ratios of the scenarios were determined by using a decision tree combined with a Markov-model. Health gains and costs were discounted by 3%. RESULTS: The CURRENT (current status) scenario is cost-saving compared to the NONE (no screening, no donor management) scenario, averting 2.0 million Disability Adjusted Life Years (DALYs) and saving US$ 82 million annually. Over 94,000 new HIV infections are averted and 27,674 and 3360 new HBV and HCV infections respectively. Improving the blood transfusion services from the CURRENT to the BEST (100% screening, no errors) scenario shows a cost-effectiveness ratio of 56.24 US$/DALY averted. With this step 2792 new HIV infections are averted and 1723 and 1622 new HBV and HCV infections respectively. In addition to the BEST scenario, HIV p24 and HCV-antigen testing would avert 19 DALYs at annual net costs of US$ 1.2 million (63,957 US$/DALY averted). Extending the BEST scenario with single donation multiplex NAT averts 60 DALYs at annual net costs of US$ 9.7 million (161,051 US$/DALY averted). CONCLUSIONS: The current level of blood transfusion safety provided in the included countries is cost-saving. However, maximizing the effects of donor management and screening (coverage and errors) shows a favorable cost-effectiveness ratio. Introducing additional tests alongside antibody testing is associated with high costs and limited reduction of transmission risks.

**PIN9**

**COST-EFFECTIVENESS ANALYSIS OF COMBINED THERAPY WITH Peginterferon alfa-2a (40KD) (PEGASYS) AND ribavirin (COPEGUS) IN PATIENTS WITH CHRONIC C HEPATITIS (CHC) AND HUMAN IMMUNODEFICIENCY VIRUS (HIV) CO-INFECTION**

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**OBJECTIVE:** The AIDS Pegasys Ribavirin International Coinfection Trial (APRICOT) demonstrated the efficacy and safety of peginterferon alfa-2a plus ribavirin (RBV) and interferon alfa plus ribavirin (IFN/RBV) in patients co-infected with HIV-HCV. However, the cost-effectiveness of treating CHC with peginterferon alfa-2a/RBV in this patient population has not assessed from the Spanish National Health care System (NHS) perspective. The objective was to establish the clinical prognosis, costs and cost-effectiveness of peginterferon alfa-2a (180 mcg/week) plus RBV versus IFN (3 million IU, three times a week) plus RBV, in patients with HIV-HCV co-infection from a Spanish national health care system (NHS) perspective. METHODS: A Markov model was developed to simulate the disease progression of 40-year old patients with HIV-HCV co-infection. Fibrosis progression rates were obtained from published studies. Efficacy, in terms of sustained virological response (SVR), for peginterferon alfa-2a plus RBV and IFN/RBV in patients with genotype 1, genotypes 2/3 and genotypes 1/2/3 was obtained from APRICOT. Transition probabilities and quality of life estimates were obtained from published literature. Unit costs were obtained from a Spanish database. Cost and outcomes were discounted by 3.5% annually. RESULTS: In genotype 1 patients, peginterferon alfa-2a plus RBV compared with IFN/RBV increases patient’s life expectancy by 1.27 years (0.77 quality-adjusted life years (QALYs)), yielding an incremental cost-effectiveness ratio (ICER) of €3,677/ life year gained (LYG) (€6077/QALY gained). In genotypes 2/3 patients, peginterferon alfa-2a plus ribavirin increases life expectancy by 4.63 years (2.33 QALYs), yielding an ICER of €569/LYG (€1130/QALY gained). In genotypes 1/2/3 patients, the ICER is €1487/LYG (€2762/QALY gained). CONCLUSIONS: From the Spanish NHS perspective, peginterferon alfa-2a (40KD) (PEGASYS®) plus ribavirin (COPEGUS®) in patients with HIV-HCV co-infection is a cost-effective treatment option, regardless of HCV genotype.

**PIN10**

**COST-EFFECTIVENESS OF Peginterferon alfa-2a (40KD) FOR THE TREATMENT OF CHRONIC HEPATITIS B IN ITALY**

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**CHRONIC HEPATITIS B** (CHB) is caused by chronic infection with Hepatitis B Virus (HBV) and represents a major global health problem. Traditional CHB treatments are lamivudine (LAM) and interferon alfa-2a (IFN). Peginterferon alfa-2a (PEG) has been recently approved for the treatment of CHB disease. OBJECTIVES: To assess the economic and clinical impact of the use of peginterferon alfa-2a (40KD) versus LAM for the treatment of HBsAg-negative CHB and versus IFN for the treatment of HBsAg-positive CHB disease in Italy. METHODS: The CHB disease course was simulated with the use of a Markov model. The simulation was prolonged over a cohort’s lifetime. Comparative evaluation of PEG vs. LAM was based on a recent phase III clinical trial in HBeAg-negative CHB. Comparative evaluation of PEG vs. IFN was based on a phase II clinical trial comparing the two treatments in HBeAg-positive CHB. Considered scenarios were: 48-week PEG vs LAM treatment; 48-week PEG vs 4-year LAM; 24-week PEG vs IFN. Clinical outcomes measured were average life years gained (LYs) and quality-adjusted life years (QALYs). Direct costs were considered and valued according to current Italian national prices, tariffs and published literature. Deterministic and probabilistic sensitivity analyses were performed and acceptability curves generated. Costs and outcomes were discounted at a 3.5% annual rate. RESULTS: 0.82, 0.68, and 0.26 discounted QALYs per patient are gained with PEG vs 48-week LAM, 4-year LAM and IFN, respectively. Discounted incremental costs per patient are €7021, €5725, and €2304. Corresponding cost-effectiveness and cost-utility ratios are €9440/LY and €8603/QALY, €9218/LY and €8368/QALY, €7021, €5725, and €2304.