A COST-EFFECTIVENESS ANALYSIS OF ANTICOMBAL THERAPY OF BLOODSTREAM INFECTIONS TREATMENT IN INTENSIVE CARE UNIT

OBJECTIVES: According to the recent international data, the incidence of bloodstream infection—associated infections is 3–8% in the structure of hospital-acquired infections in the intensive care units (ICU) and the leading cause of them are Gram-positive bacteria. The aim of this study was to conduct a comparative analysis of 30 infectious diseases—economic effectiveness of daptomycin (dapt) vs. vancomycin (vanco) usage in treatment of patients with MRSA—associated infection in the ICU. METHODS: “Decision Tree” pharmacoeconomic model was built based on results of international clinical studies and data of the non-treatment treatment of bloodstream infections in Moscow clinics. Two variants of antibacterial treatment of patients with catheter-associated infections differing on starting products (dapt or vanco) were assessed. If the first line of therapy was ineffective, patients switched over to the second line therapy covering resistant strains—meropenem and fluconazole. Direct and indirect medical costs were assessed: cost of antibiotics and additional medical treatment, antibacterial diagnostic, laboratory and cost of bed-days in ICU and therapeutic department. Costs were based on official data on hospital medical service in municipal Moscow clinics and purchasing price on medical products from price list of the biggest Russian pharmacuetical distributors. Clinical recovery was considered as efficacy with the goal to evaluate cost-effectiveness ratio (CER) of two groups (CER(dapt) and CER(vanco accordingly). RESULTS: Better clinical efficacy in daptomycin group resulted in lower—need to change antibiotic in catheter—associated infection treatment in the ICU in comparison to vancomycin group. In spite of the higher price of drug, average cost of successfully treated patient by daptomycin (CER(dapt)) was 227,887 RUR/ pt in compare with CER(van) 235,032 RUR/pt. Exchange rate is 1USD = 30 RUR. CONCLUSIONS: Good cost-effectiveness ratio in comparison to vancomycin supports use of daptomycin as the first line antibacterial therapy in bloodstream catheter—associated infections.

A COST-EFFECTIVENESS ANALYSIS OF 1 YEAR PEGINTERFERON ALFA-2B BOTH PLUS RIBAVIRIN IN SPAIN

OBJECTIVES: The objective of the study was to evaluate the cost-effectiveness of 1 year peginterferon alfa-2a compared to 4 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 incorporated a maximum analysis time horizon of 80 years with yearly cycles. The clinical model simulated immunoglobulin treatment over a one-year time horizon. Cost items included immunoglobulin costs, pharmacy administration and nursing costs, mini-forfait paid for hospital infusion, costs of adverse events, and lost productivity. Cost data were identified from published sources and Belgian hospital administrators. A probabilistic sensitivity analysis was performed to test the impact of parameter uncertainty. The price year was 2009. RESULTS: Costs per infusion cycle in adult primary immunodeficiency patients were €1.046 (95% confidence interval: €1.006–1.093) with Kiovig; €1.102 (€1.044–1.147) with Multigam; and €1.147 (€1.108–1.193) with Sandoglobulin. The average cost savings per infusion with Kiovig as compared to Multigam and Sandoglobulin amounted to €56 and €101 per infusion. CONCLUSIONS: Treatment costs with Kiovig were shown to be lower as compared to other IVIGs in Belgium. Reduced costs per infusion were attributed to lower costs associated with treating adverse events and the opportunity cost of nursing time and time off work for working adults.

A COST-EFFECTIVENESS ANALYSIS OF TREATMENT OF CHRONIC HEPATITIS C PATIENTS WITH PEGINTERFERON ALFA-2A OR PE Gilcher interferon alfa-2b both plus ribavirin in Spain

OBJECTIVES: To estimate long-term cost-effectiveness of treatment of chronic hepatitis C (CHC) patients with peginterferon alfa-2a (180 mcg/week) versus peginterferon alfa-2b (1.5 mcg/kg/week) both in combination with ribavirin (800–1400 mg/day) from the Spanish National Healthcare System perspective. METHODS: A meta-analysis of head-to-head randomized trials of peginterferon alfa-2a and peginterferon alfa-2b both plus ribavirin, evaluating sustained virological response (SVR) has been recently published. It showed RR = 1.11 (95% CI 1.04–1.19) for all genotypes, RR – 1.21 (95% CI 1.03–1.42) for G-1/4, and RR = 1.11 (95% CI 1.02–1.22) for G-2/3, a Markov model with 7 health states was developed to simulate the disease progression of adult patients with CHC for a lifetime horizon. Efficacy, in terms of SVR, was calculated from the meta-analysis, showing a better SVR rate for peginterferon alfa-2a than for peginterferon alfa-2b; the absolute differences were of 6.0% and 7.6% for all genotypes, G-1/4 and G-2/3 respectively. Transition probabilities and health states utilities were obtained from published literature. Health direct costs include costs of treatment + ribavirin (48 weeks for G-1/4 and 24 weeks for G-2/3) and of disease complications were collected from Spanish databases and studies (€) 2010. The annual discount rate was 3.5% for costs and outcomes. RESULTS: Each patient gained lifetime practice treatment life-years (LTV) and 0.155, 0.672, 0.705, 0.762 and 0.794 for the 1.5mcg/kg; and quality-adjusted life-years (QALY) with peginterferon alfa-2a in comparison with peginterferon alfa-2b, for all genotypes, G-1/4 and G-2/3 respectively. The savings per patient treated with peginterferon alfa-2a were €705, €672 and €1900, for all genotypes, G-1/4 and G-2/3, respectively. Peginterferon alfa-2a was the dominant treatment strategy (lower costs and higher efficacy than peginterferon alfa-2b treatment); CONCLUSIONS: Treatment of patients with chronic hepatitis C with peginterferon alfa-2a + ribavirin is a cost-effective strategy in comparison with peginterferon alfa-2b + ribavirin for all genotypes, G-1/4 and G-2/3.

KIOVIG FOR PRIMARY IMMUNODEFICIENCY: REDUCED INFUSION AND DECREASED COSTS PER INFUSION

OBJECTIVES: Kiovig is a new, ready-to-use 10% liquid immunoglobulin preparation that is medically indicated for the treatment of primary immunodeficiency. This study aims to conduct an economic evaluation which compares the intravenous immunoglobulin (IVIG) preparations Kiovig, Gammagard S/D, and Sandoglobulin from the societal perspective. METHODS: Given that three prospective studies have observed no difference in outcomes, a cost-minimization analysis considered the differences in costs that can arise from these immunoglobulin products. a decision-analytic model simulated immunoglobulin treatment over a one-year time horizon. Cost items included immunoglobulin costs, pharmacy administration and nursing costs, mini-forfait paid for hospital infusion, costs of adverse events, and lost productivity. Cost data were identified from published sources and Belgian hospital administrators. A probabilistic sensitivity analysis was performed to test the impact of parameter uncertainty. The price year was 2009. RESULTS: Results. Costs per infusion cycle in adult primary immunodeficiency patients were €1.046 (95% confidence interval: €1.006–1.093) with Kiovig; €1.102 (€1.044–1.147) with Multigam; and €1.147 (€1.108–1.193) with Sandoglobulin. The average cost savings per infusion with Kiovig as compared to Multigam and Sandoglobulin amounted to €56 and €101 per infusion. CONCLUSIONS: Treatment costs with Kiovig were shown to be lower as compared to other IVIGs in Belgium. Reduced costs per infusion were attributed to lower costs associated with treating adverse events and the opportunity cost of nursing time and time off work for working adults.

A COST-EFFECTIVENESS ANALYSIS OF PNEUMOCOCCAL VACCINES IN CHINA

OBJECTIVES: To evaluate cost-effectiveness of pneumococcal non-typeable Haemophilus influenzae protein D conjugate vaccine(PHiD-CV), 7-valent pneumococcal conjugate vaccine(PCV7), and PCV13 in Taiwan. METHODS: An age-compartmental, deterministic, cohort model simulated in 198,733 birth cohort the disease process of invasive disease(ID, meningitis and bacteremia), community acquired pneumonia(CAP), and acute otitis media(AOM) over life-time. The model was developed by GlosaxonKline and adapted with local data. For base-case analysis for all vaccines, a 4-door(3–1) schedule was assumed with 95% vaccine coverage. Cost and outcomes were analyzed from healthcare payer perspective with 3% discount rate. Herd protection on ID, limited cross protection against 6A and 19A, minimal estimation of NTHI(non-typeable Haemophilus influenzae) infection rates in ID and CAP were assumed for base case. Costs for PHiD-CV, PCV7 and PCV13 were assumed parity at 3200 New Taiwan Dollar(NTD). Epidemiological and cost data were obtained from local disease burden study. Vaccine efficacy data were obtained from published sources. One way and probabilistic sensitivity analyses were conducted. RESULTS: Compared with PCV7, PHiD-CV is expected to prevent additional cases of 1.21, 2.291 CAP and 63,597 AOM, with 548 additional quality-adjusted life-years(QALY) gained with total saving of NTD 69,347,211. Compared with PCV13, PHiD-CV is expected to prevent less cases of 4 ID and 264 CAP, but expected to prevent additional 45,111 AOM cases. PHiD-CV is expected to provide additional 181 NTD in lifetime saving of NTD 14,512,124, for PCV13. Sensitivity analyses show the results are most sensitive to the changes of AOM related parameters, but when the AOM related parameters were changed up to +/-20%, PHiD-CV is still cost-saving to PCV7 and PCV 13. CONCLUSIONS: PHiD-CV is expected to provide more QALYs with potential saving of total health care cost.
C INFECTION IN MEXICO
COST-EFFECTIVENESS OF PEGINTERFERON ALPHA-2A VERSUS options of PEG-IFN alpha. We aimed to compare two different serious liver-related complications. Current standard of treatment includes Peginterferon (PEG-IFN) alpha plus ribavirin (RBV). We performed under the perspective of national public health care system. Only direct medical costs were accounted for; these included acquisition cost of antiviral drugs and medical attention for health states incorporated into the model. Costs (expressed in 2010 Euros) and QALY were discounted at an annual rate of 5%. Transition probabilities and utility scores were gathered from published literature and cost data was based on local sources and experts’ opinion. RESULTS: Average discounted costs were estimated at €16,854 for PEG-IFN alpha-2a plus RBV and at €18,247 for PEG-IFN alpha-2b plus RBV, leading to overall savings of €1,393 per patient when PEG-IFN alpha-2a is used. Discounted QALY were 12.29 for PEG-IFN alpha-2a and 12.17 for PEG-IFN alpha-2b. Results are robust to variations in model parameters. CONCLUSIONS: PEG-IFN alpha-2a plus RBV is a dominant strategy compared to given PEG-IFN alpha-2b treatment to CHC patients in Mexico.

PHARMACO-ECONOMICS OF ANTIBIOTICS
Simons S
IKU Leuven, Leuven, Belgium
OBJECTIVES: Antibiotics have made a significant contribution to improving patient health. Developed countries and health care payers are concerned about the costs of antibiotics in addition to their effectiveness. This study aims to assess the value of antibiotics by examining published incremental cost-utility ratios of antibiotics. METHODS: Evidence was derived from cost-utility analyses of antibiotics included in the Tufts-New England Center Cost-Effectiveness Analysis Registry through September 2009. For each cost-utility analysis, the following variables were examined: publication year, target population, intervention type, country of patient sample, disease classification, prevention stage, funding source, study perspective, discounting, sensitivity analysis, incremental cost-utility ratio, and methodological quality. Evidence of the value of antibiotics was summarized by calculating median incremental cost-utility ratios and frequency distributions. Associations between incremental cost-utility ratios on the one hand and the prevention stage, study perspective and methodological quality were examined by means of the Mann-Whitney U-test for ordinal variables. The analysis included 85 incremental cost-utility ratios from 23 cost-utility analyses. The findings showed that 38.8% of incremental cost-utility ratios related to dominant antibiotics; 45.9% referred to antibiotics that improved effectiveness, but also increased costs; and 15.3% related to dominated antibiotics. The median ratio was €748 per quality-adjusted life-year. Using threshold values of €20,000 per quality-adjusted life-year and €50,000 per quality-adjusted-life-year, the probability that an antibiotic provides value for money was 64% and 67%, respectively. No statistically significant association was observed between incremental cost-utility ratios and the prevention stage (p = 0.19), study perspective (p = 0.285) or methodological quality (p = 0.146). CONCLUSIONS: The current evidence base suggests that the majority of antibiotics provide value for money.

COST-EFFECTIVENESS OF PEGINTERFERON ALPHA-2A PLUS RBVIRABIN FOR TREATING CHRONIC HEPATITIS C INFECTION COMPARED WITH NO TREATMENT IN MEXICO
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OBJECTIVES: Prevalence of hepatitis C virus infection is approximately 2.2–3.0% worldwide (130–170 million people). A persistent infection develops in up to 85% of these patients, leading to chronic hepatitis C (CHC), a condition associated with acquired immunodeficiency syndrome (AIDS), suffer from a coronary heart disease (CHD) event and/or experience other adverse events. Mortality was also captured in the model. RESULTS: The incremental cost-effectiveness ratio (ICER) for initiating therapy with raltegravir versus using it as a rescue therapy was 4,075 million HUF per quality adjusted life year gained (QALY), equivalent to €16,830/QALY. The model predicted lower cumulative incidence of CHD in the raltegravir arm versus the PI arm. (15.1% versus 16.1%). The model predicted that patients initiating on raltegravir therapy have longer life expectancy than patients starting with PI treatment over a 50-year time horizon (18.74 versus 17.17 years). CONCLUSIONS: Our long-term economic model suggests that it is cost-effective to use raltegravir early in HIV therapy versus in patients who have experienced multiple failures.

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