INFECTION – Clinical Outcomes Studies

PIN1
HEPATITIS C BURDEN ASSESSMENT IN FRANCE FROM A TECHNICAL MODEL
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OBJECTIVES: A HCV transmission model has been previously developed to describe the dynamics of chronic hepatitis C (CHC) transmission and progression in the US. In this study, we adapted this model to assess the public health burden of HCV in France. METHODS: This mathematical model captures flows across population compartments based on status of injection drug use, CHC infection, diagnosis, genotypes, treatment status, SVR and disease progression. Input parameters were derived from the literature using values of 2002-2006 from the calibrated model matched closely to published French data. The model was then applied to assess the potential benefits of a hypothetical new CHC regimen (NEW) compared to the current pegylated-interferon/ribavirin (PI/R) treatment. Key assumptions in the model included: NEW becomes available in 2011 with 23% incremental SVR rate (70% vs. 45%) from PI/R for genotype-1 treatment-naive patients; 50% SVR rate could be achieved by NEW to re-treat PI/R treatment failure patients (TFs). TFs from NEW are not re-treated with NEW; NEW is not used to treat genotype 2/3 patients; PI/R durations are consistent with current treatment guidelines by genotypes; diagnosis and treatment rates remain unchanged.
RESULTS: Our model projects that, in contrast to PI/R projections, the use of hypothetical NEW could cure 32,885 more patients (as defined by the achievement of SVR), and save 7,883 more new cases of advanced liver diseases (ALD), and 11,100 more deaths. CHC prevalence in 2040 under NEW is also projected to be lower (29,747 fewer cases), mainly among TFs (16,782) and ALD patients (11,201).
CONCLUSIONS: Our model suggests that a novel CHC regimen with higher SVR than the current PI/R treatment could potentially have a substantial public health impact in France, mainly due to the associated decrease in the incidence of CHC prevalence, CHC-associated deaths, ALD patients and number of treatment failure patients.

IMPACT OF SUSTAINED VIROLOGICAL RESPONSE (SVR) ON LIFE EXPECTANCY AND QUALITY-ADJUSTED LIFE-YEARS (QALYs) IN CHRONIC HEPATITIS C (CHC) PATIENTS
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OBJECTIVES: CHC treatment has been evaluated for its efficacy (SVR) and long-term effect in terms of reducing disease progression in a health economic model using Markov model. Here we compare the model output for the lifetime QALY and LY differences in the final reported incremental cost-effectiveness ratio (ICER) results. RESULTS: A total of 893 unique references were retrieved and 80 articles met the inclusion criteria. Among them, 46 reported for each comparator the SVR rate, LYs and QALYs. Compared to non-SVR status, SVR was consistently associated with more LYs (24.5 ranging from 15.9 to 36.5 vs. 21.2 ranging from 14.2 to 32.7) and QALYs (19.2 ranging from 13.9 to 36.5 vs. 15.9 ranging from 13.9 to 36.5). This trend was consistent across all studies where this analysis is feasible (N = 40).
CONCLUSIONS: In this literature review, SVR is associated with longer life expectancy and QALYs than non-SVR. It is important to account for these lifetime benefits when the values of an antiviral treatment in CHC are being evaluated.

A BUDGET IMPACT ANALYSIS OF THREE PRESURGICAL SKIN ANTISEPSIS PROTOCOLS
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OBJECTIVES: Surgical site infections (SSIs) occur in up to 11.6% of surgeries, lengthening hospital stays and incurring additional costs. Presurgical antiseptic techniques vary in the rates of SSIs and their impact on a hospital or surgical center’s budget. The purpose of this study was to estimate the net budget impact of three antiseptic techniques. METHODS: A budget impact analysis using ISPOR guidelines was completed. Costs associated with DuraPrep, ChloroPrep, and Povidone-Iodine scrub paint (PI) were obtained from current market sources. Rates of SSIs were derived from published clinical studies. Incremental costs to treat SSIs were derived from literature and adjusted to current U.S. dollars using the medical component of the Consumer Price Index. Presurgical skin preparation time estimates were obtained from product literature and costs calculated based on per minute surgical suite charges. Total cost per 100 surgeries was calculated: (antisepsis cost + costs of presurgical preparation + incremental costs to treat SSIs (SSIs cost + DuraPrep cost + ChloroPrep cost))/100.
RESULTS: The analysis of three different antisepsis techniques were compared to chlorhexidine gluconate 4% in 0.02%. The costs were prepared in an interactive spreadsheet to modify cost parameters and rates of SSIs.
CONCLUSIONS: PI had the lowest product cost but its skin preparation protocol took 5 times longer than DuraPrep or ChloroPrep, resulting in large presurgical expenditures. More expensive, but faster than ChloroPrep (4 mins vs. 13 mins), DuraPrep (4.8%, ChloroPrep 8.2%, PI 4.8%) would be the most cost-effective alternative to a similar time to apply. DuraPrep provided total cost savings relative to ChloroPrep and PI. The total costs per 100 surgeries using DuraPrep, ChloroPrep, and PI were $16,920, $274,508, and $216,300 respectively. The cost savings differences were due to: 1) reduced preparation time of 4 mins vs. 13 mins (DuraPrep 4.8%, ChloroPrep 8.2%, PI 4.8%); and 3) per unit product cost difference (DuraPrep $4.27, ChloroPrep $7.08, PI $0.07). CONCLUSIONS: Based on 100 surgeries, DuraPrep provides both time and cost savings relative to PI and ChloroPrep.

COST-EFFECTIVENESS OF LEVOFLOXACIN IV COMPARED TO OTHER GUIDELINE-ENDORSED THERAPIES FOR PATIENTS HOSPITALIZED WITH COMMUNITY-ACQUIRED PNEUMONIA
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OBJECTIVES: Levofoxacin IV (LEV) has been shown to reduce hospital length of stay (LOS) in patients hospitalized with community-acquired pneumonia (CAP) compared to other IDSA/ATS guideline recommended antibiotic regimens. This study further estimates the impact of utilizing LEV in a hospital formulary for treatment of CAP in the United States. METHODS: An Excel®-based model was developed in accordance with Good Practice Researches for Budget Impact Analysis disseminated by ISPOR to estimate the budget impact of increasing the use of or adding LEV in a hospital formulary. The model was based on published data on shorter LOS associated with LEV compared to moxifloxacin IV (MOX) or ceftriaxone and azithromycin combination therapy (0.54 and 0.8 days, respectively). Model inputs included annual hospital admission for CAP; current proportional share of LEV, MOX, combination therapy, and other antibiotic regimens (30%, 30%, 10%, respectively); antibiotic drug costs (wholesale acquisition costs); average LOS and hospital costs incurred due to community-acquired pneumonia. All costs included were cost. RESULTS: The total cost per treated patient with the current proportional share was estimated to be $6900. With the new share (increasing LEV utilization from 30% to 60%), total cost was estimated to decrease to $6630. A 3.9% ($270) reduction in hospital budget was mainly due to shorter LOS associated with LEV. Savings in pharmacy costs were 13% ($35/patient). Hospitals that switched all MOX and combination therapy utilization to LEV, yielded cost savings of $340/patient. CONCLUSIONS: The model predicts that in the base case scenario an increase in LEV for CAP patient treatment would yield savings to the hospital’s total and pharmacy budgets.

COST-OF-ILLNESS OF CHRONIC HEPATITIS B INFECTION IN VIETNAM
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OBJECTIVES: Vietnam is a high endemic country of hepatitis B virus infection, the most common cause of liver diseases. Our study aimed to assess the cost of treatment chronic hepatitis B (CHB) infection and its complications in a cost-of-illness analysis to quantify the economic burden of CHB infections in Vietnam. METHODS: Micro-costing approach was applied. Direct medical cost, direct non-medical and indirect costs incurred due to chronic hepatitis B-related disease stages to both inpatients and outpatients were collected and estimated for the year 2008. One- and two-way sensitivity analyses were performed on the cost calculated. RESULTS: In 2008, the total cost of CHB infection and its complications was estimated to be around US$ 10 billion (or US$ 9 billion contributable to the direct medical cost). Antivirals are still very expensive in Vietnam in comparison to other countries and the major driver of costly treatment of CHB infection in the country. If all Vietnamese patients received treatment of CHB infections, the estimated treatment cost would be twice as much as the total health budget of Vietnam. This highlighted the possibilities that a significant proportion of CHB infections in Vietnam are not being treated; the patients are bearing the extra cost out-of-pocket, or they are seeking treatment from traditional medicines. CONCLUSIONS: Treatment of CHB infection is very expensive and becomes a medical problem and a social issue. Given the GDP per capita of around $1,400, it is potentially catastrophic for those affected. It is urgent that Vietnam should consider universal HBV vaccination of both newborns and adolescents. It should re-examine its pharmaceutical policy to ensure the cost of antivirals to be affordable to patients. Necessary steps should be taken to ensure that the health system has the ability to place to ensure financial protection to affected patients and in need of treatment.