

into single estimates (with confidence intervals for sensitivity analyses). The purpose of this study is to investigate various methodologies for synthesizing data used as inputs into an economic model, based on a systematic review of a specific disease incidence. **METHODS:** A random-effects meta-analysis was conducted to estimate herpes zoster incidence from a systematic literature review of herpes zoster incidence in Europe. Since incidence could potentially be explained by some study-specific characteristics meta-regression was investigated. The variable of interest was predicted based on the year of data collection, country, age-group and study design. As incidence (expressed as annual probability) is typically bounded by 0 and 1, a logistic function was used to model the link between the predicted variable and its predictors. **RESULTS:** Statistical tests suggested that data from some studies were outliers and were thus inconsistent with the model. A significant positive correlation was observed between age and herpes zoster incidence. The model allows for trends in incidence data to be explored based on country, year of data collection, study design and age. **CONCLUSIONS:** This project investigated the use of meta-analysis and meta-regression for synthesizing data coming from various sources identified through a systematic review. Limitations were identified for both approaches. However, the meta-regression analysis can be used to estimate the current incidence of a particular disease, for a specific age group and country. It could help health economists in populating models and, subsequently, decision makers in their evaluation and assessments.

#### PIN19

##### PREDICTORS FOR MORTALITY AMONG HUMAN IMMUNODEFICIENCY VIRUS INFECTED PATIENTS ON ANTIRETROVIRAL THERAPY

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**OBJECTIVES:** Development of highly active antiretroviral treatment (ART) had revolutionized the care of Human Immunodeficiency virus (HIV)-infected patients and led to marked reductions in HIV-associated morbidity and mortality in many developed countries. Hence this study aimed to analyze the predictors for mortality among patients living with HIV and who are on Antiretroviral Therapy (ART) in a south Indian hospital. **METHODS:** A retrospective cohort study was conducted on 350 patients infected with HIV were admitted to Asha Kirana Hospital, Mysore-South India for a period of three years. Patients who died in the hospital during the study period (n=80) were compared with patients who had survived (n=270). Both groups were matched for age and sex. Predictors for death were analyzed by chi-square test using bivariate regression in software SPSS version 21. **RESULTS:** Predictors for death in this study were increasing age >60 years (RR), (95% CI) 2.204, (1.15-4.21), CD4 count <200 cells 2.14 (1.26-3.13), patients without opportunistic infections- 1.80 (1.23- 2.63), WHO stage IV 1.83 (1.25-2.67) and being on stavudine based ART 2.01 (1.44-2.81). Patients with under-weight 1.33 (0.88-1.99) also found to be risk for mortality, but it is not statistically significant. Factors associated with survival benefit were female sex 0.81 (0.55-1.19), patients without ART toxicity 0.78 (0.51-1.20) and being on Tenofovir based regimen 0.8 (0.79-0.96). **CONCLUSIONS:** Predictors for mortality among HIV patients on ART were found to be patients age >60 years, CD4 count <200 cells, WHO stage IV, absence of opportunistic infections and patients on Stavudine therapy. The absence of opportunistic infections being a risk factor may be due to undiagnosed opportunistic infections due to limited diagnostic facility as in this study setting. Patients on Tenofovir having survival benefit support the 2013 WHO recommendation for Tenofovir being the preferred regimen.

#### PIN20

##### INITIAL INAPPROPRIATE ANTIBIOTIC THERAPY IN HOSPITALIZED PATIENTS WITH GRAM-NEGATIVE INFECTIONS: SYSTEMATIC REVIEW AND META-ANALYSIS

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**OBJECTIVES:** The rapid global spread of multi-resistant bacteria and loss of antibiotic effectiveness increases the risk of initially inappropriate antibiotic therapy. We examined the effects of use of appropriate or inappropriate antibiotic therapy on outcomes in Gram-negative infections. **METHODS:** We searched Medline, Cochrane Central, and Embase databases through March 2014 for English-language studies that quantified effects of use of appropriate or inappropriate antibiotic therapy on all-cause mortality, length of stay, hospital costs, treatment failure, or bacterial clearance in hospitalized patients with complicated urinary tract infection, complicated intra-abdominal infection, bacteremia and pneumonia due to Gram-negative pathogens. We screened citations in duplicate and resolved differences by consensus. We used random effect models meta-analysis when at least 3 studies reported the same outcome. **RESULTS:** Forty-five studies with 1895 patients were eligible. The definition of initial appropriate antibiotic therapy varied across studies. In meta-analyses of unadjusted data, initial appropriate antibiotic therapy was associated with lower risk of mortality (26 studies, 3713 patients, odds ratio (OR) 0.52, 95% confidence interval (CI) 0.41-0.66) and treatment failure (3 studies, 283 patients, OR 0.22, 95% CI 0.14-0.35). In meta-analyses of adjusted data, initial appropriate therapy was associated with lower risk of mortality (5 studies, 1211 patients, OR 0.50, 95% CI 0.25-1.00), and conversely, initial inappropriate therapy increased risk of mortality (16 studies, 2493 patients, OR 3.30, 95% CI 2.42-4.49) and decreased bacterial clearance. There were insufficient data to evaluate the impact on resource utilization and economic outcomes. **CONCLUSIONS:** Initial inappropriate therapy is associated with an increased risk of hospital mortality. The paucity of new and effective antibiotics to cover resistant Gram-negative pathogens increases the likelihood of initial inappropriate therapy and poses a serious threat to patient safety. Critical gaps include lack of information on the health and economic burden of resistance.

#### INFECTION – Cost Studies

##### PIN21

##### COST SAVINGS FOR THE USE OF ANTIBACTERIAL SUTURES IN SPANISH HOSPITALS. BUDGET IMPACT MODEL

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**OBJECTIVES:** The surgical site infection (SSI) is the most often acquired hospital infection in Spain, about 19.4% of all nosocomial infections. The prevalence of this adverse event is 8.01%, generating high economic impact on hospital costs and undermining the quality of care. The risk of SSI has increased in recent years and infections have become more resistant to treatments. About 50% of SSIs are preventable, their costs are avoidable, and health technology can help avoiding them. The aim of this study is to analyze the economic impact that could represent the use of anti-bacterial sutures compared with conventional ones in Spanish hospitals. **METHODS:** An interactive Excel model was developed using data obtained through a published literature review. The rate of reduction of SSI with antibacterial suture is 30%. The incremental cost per patient with SSI is between €9,657 and €10,112.63. Two scenarios were designed: 100% of surgeries with normal sutures and 100% of surgeries with anti-bacterial sutures. A sensitivity analysis for the variables of greatest uncertainty was performed (cost per SSI). **RESULTS:** The budget impact of the use of antibacterial sutures resulted in a 24% of cost savings related to the normal sutures. It represents savings of €5.4M per year for an average Spanish hospital, and €1,264M per year for the whole Spanish Health System. The results of the sensitivity analysis shows that even by changing the effectiveness of the suture and using the most unfavourable data found in the literature for the cost of an SSI, the use of the antibacterial suture still produces savings of 24% compared with the use of normal suture. **CONCLUSIONS:** This budget impact analysis provides new evidence that reinforces the use of antibacterial sutures, because it may reduce the risk of SSI, the negative effects of its consequences and associated costs and significantly improving the quality of care for surgical patients in Spain.

##### PIN22

##### MONITORING ANTIRETROVIRAL THERAPY IN UGANDA: BUDGET IMPACT ANALYSIS OF TWO STRATEGIES FOR VIRAL LOAD MONITORING VERSUS IMMUNOLOGIC MONITORING

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**OBJECTIVES:** The 2013 WHO-guidelines recommend viral load (VL) monitoring plus CD4-count monitoring for patients on antiretroviral treatment (ART) in resource-limited settings. We calculated the budget impact (BI) of VL monitoring strategies at the Infectious Diseases Institute (IDI), a large urban HIV program in Kampala, Uganda. **METHODS:** We calculated cost for the first 2 years of ART (drugs/tests/staff) for three strategies: (1) Immunologic monitoring, standard of care (SOC): 6-monthly CD4-count (2) New WHO-guidelines: SOC plus 6-monthly VL (3) A novel strategy: exclusive-VL (no CD4-counts after ART start), with VL at 3-months (to support adherence monitoring) and at 24 months. Patients with VL >400copies/ml VL at 3-months will receive adherence counseling and repeat VL at 6-months. All costs are current actual costs at IDI and presented as 2012 USD (\$): CD4-count=\$9; VL=\$65; first-line patients \$206/year in year-1 and \$272/year in year-2; second-line patients=\$1381/year. For each strategy, rates of switch to second-line were estimated using IDI clinic data (1) SOC: 27%, 29%, 32% at 6, 12, 18 months (2) WHO-guidelines: 7.3%, 10.8%, 13.8% at 6, 12, 18 months (3) Exclusive-VL: 21% at 3 months, 8.3% at 6 months. **RESULTS:** The cost per patient for the first 2 years of ART and BI of VL monitoring are (1) SOC: \$572 (2) WHO-guidelines \$897, BI \$325 (3) Exclusive VL: \$720, BI \$148. Exclusive VL-monitoring results in a lower BI by supporting adherence and averting ART failure. Increased cost with VL-monitoring is driven by more patients switching timely to second-line treatment with the cost of 2<sup>nd</sup> line patients being 3.6 times higher for the new WHO-guidelines and 2.8 times higher for the exclusive-VL compared to SOC, rather than VL tests. **CONCLUSIONS:** Implementing VL-monitoring strategies result in modest BI (26%-57%). Since switching timely to second-line benefits patients, similar programs should consider allocating resources to VL monitoring.

##### PIN23

##### BUDGET IMPACT ANALYSIS OF 13-VALENT PNEUMOCOCCAL VACCINE IN ADULT POPULATION WITH COMORBIDITIES OR IMMUNOCOMPROMISED FROM THE PUBLIC PAYER PERSPECTIVE IN BRAZIL

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**OBJECTIVES:** Invasive pneumococcal disease (IPD) is a major public health challenge. This study aims to perform a budget impact analysis (BIA) of 13-valent pneumococcal conjugated vaccine (PCV13) in adults immunocompromised (IC) or with comorbidities (CM), from a public payer perspective in Brazil. **METHODS:** BIA using a Markov model framework estimated the incremental costs of a vaccination program over a 10 year period comparing PCV13 versus PPSV23 or no vaccination in adults ≥18 years with CM or IC. Population size was calculated from Brazilian Institute of Geography and Statistics (IBGE) projections for 2014-2023 period and prevalence of risk groups were extracted from literature. Efficacy data for PCV13 and PPSV23 were based on published data. Direct medical costs obtained from the literature included hospital days, medical fees, outpatient visits, diagnostic tests, and drugs in Brazilian Real (BRL). PCV13 and PPSV23 costs per dose were 52.40BRL and 23.00BRL, respectively. **RESULTS:** Eligible population consisted of 15,241,353 (CM) and 1,305,794 (IC) patients, for the 10-year period. After vaccination with PCV13, 111,869 (CM) and 42,786 (IC) IPD cases were avoided versus PPSV23 and 110,208 (CM) and 40,224 (IC) IPD cases versus no vaccination. Incremental costs per patient were 52.02BRL (CM), and 51.92BRL (IC), for vaccination with PCV13 versus no vaccination, leading to a budget impact of 793,005,843BRL (CM) and 67,805,835 (IC) for the 10-year