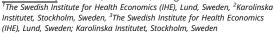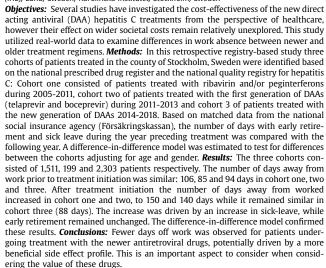Incremental Cost Effectiveness Ratio (ICER) represented the cost to detect an additional TB case and decision threshold based on Uganda's GDP (US$ 2089). One & two-way sensitivity analyses were done to assess uncertainty of the ICER around key variables. **Results:** The unit cost of detecting a TB case was $8.14 and $7.01 under ACF and PCF respectively. After sensitivity analyses, ACF was not cost effective. ACF was less effective yet more costly in detecting TB cases who presented with chronic cough. PCF was more effective and less costly. The incremental cost of detecting an additional case of TB under ACF was $ 1.13 with an incremental effectiveness ratio of -0.41. **Conclusions:** In an African City context, ACF is not cost effective compared to PCF. ACF provided a less number of TB cases yet it was more costly compared to PCF. Note that patients who present to the health facilities (with symptoms) have a high chance of having TB. Therefore, implementation of PCF as a part of the recommended TB control strategy should be prioritized. Other low cost strategies like Household Contact investigation may be used in complementary.

PIN20
SOCIETAL PRODUCTIVITY GAINS FROM NEW THERAPIES IN HEPATITIS C

Löfvendahl S,[1] Brådvik G,[1] Weiland O,[2] Lindgren P[3]
[1]The Swedish Institute for Health Economics (IHE), Lund, Sweden, [2]Karolinska Institutet, Stockholm, Sweden, [3]The Swedish Institute for Health Economics (IHE), Lund, Sweden; Karolinska Institutet, Stockholm, Sweden

Objectives: Several studies have investigated the cost-effectiveness of the new direct acting antiviral (DAA) hepatitis C treatments from the perspective of healthcare, however their effect on wider societal costs remain relatively unexplored. This study utilized real-world data to examine differences in work absence between newer and older treatment regimens. **Methods:** In this retrospective registry-based study three cohorts of patients treated in the county of Stockholm, Sweden were identified based on the national prescribed drug register and the national quality registry for hepatitis C: Cohort one consisted of patients treated with ribavirin and/or peginterferons during 2005-2011, cohort two of patients treated with the first generation of DAAs (telaprevir and boceprevir) during 2011-2013 and cohort 3 of patients treated with the new generation of DAAs 2014-2018. Based on matched data from the national social insurance agency (Försäkringskassan), the number of days with early retirement and sick leave during the year preceding treatment was compared with the following year. A difference-in-difference model was estimated to test for differences between the cohorts adjusting for age and gender. **Results:** The three cohorts consisted of 1,511, 199 and 2,303 patients respectively. The number of days away from work prior to treatment initiation was similar: 106, 85 and 94 days in cohort one, two and three. After treatment initiation the number of days away from worked increased in cohort one and two, to 150 and 140 days while it remained similar in cohort three (88 days). The increase was driven by an increase in sick-leave, while early retirement remained unchanged. The difference-in-difference model confirmed these results. **Conclusions:** Fewer days off work was observed for patients undergoing treatment with the newer antiretroviral drugs, potentially driven by a more beneficial side effect profile. This is an important aspect to consider when considering the value of these drugs.

PIN21
ESTABLISH A PHARMACEUTICAL CARE MODE FOR THERAPEUTIC DRUG MONITORING OF VANCOMYCIN AND EVALUATE ITS EFFECTIVENESS AND ECONOMICS

Xiao G,[1] Hu M,[2] Xu T,[3] Lv X,[1] Zhang Q[1]
[1]Sichuan University, Chengdu, China, [2]Sichuan University, Chengdu, 51, China, [3]Sichuan University, chengdu, China

Objectives: The traditional TDM mode of vancomycin (first the physicians prescribe medicines by experiences, then the nurses collect specimen and the technicians test concentration of medicines) was reported just achieved about 30% standard therapeutic trough levels. This study aimed to design and implement an innovative pharmaceutical care model (PC model) involving clinical pharmacists based on multidisciplinary teams of physician - pharmacist - nurse – technician, and evaluate its effectiveness and economics. **Methods:** Patients with MASA infection were involved in study in according to inclusion and exclusion criteria and divided in trial group (PC model) and control group (traditional model) randomly. The blood drug concentrations of vancomycin were measured and the achievement rates of standard therapeutic trough level were calculated as Intermediate outcome. The total treatment effective rate and the incidence of adverse reactions was measured as the final outcome. Cost of pharmacist time, vancomycins, additional examinations suggested by pharmacists, and adverse reaction treatments in two models were measured. Incremental cost-effectiveness analysis(ICER) was conducted. **Results:** Compared with the traditional model, the PC model increased the achieving rate of vancomycin therapeutic through level (74.58% vs 33.87%, p=0.000), decreased the incidence of renal toxicity (1.69% vs 12.90%, p=0.045), and showed no statistical difference in the treatment effective rate (83.05% vs 72.58%, p=0.167). The incremental cost-effectiveness ratio (ICER) of increasing the achieving rate of therapeutic through level by 1% was 23.77 yuan (3.45 USD). And the ICER of reducing the incidence of nephrotoxicity by 1% was 86.31 yuan (12.54 USD). **Conclusions:** The pharmaceutical care model of vancomycin therapeutic drug monitoring can improve the achievement of therapeutic through level, reduce the risk of adverse reactions, while the total treatment effectiveness rate showed no difference with traditional model in this study because of other therapeutic factors. And PC model of vancomycin TDM shows cost-effectiveness in terms of the general willingness to pay of Chinese patients.

PIN22
MORTALITY, MORBIDITY AND BURDEN OF HOSPITALIZATIONS IN INFLUENZA PATIENTS WITH LOW AND HIGH COMORBIDITY INDEX: A PROPENSITY SCORE MATCHED ANALYSIS OF IN-PATIENT CLAIMS DATABASE

Aggarwal S,[1] Bela A,[2] Topaloglu O[2]
[1]NOVEL Health Strategies, Bethesda, MD, USA, [2]NOVEL Health Strategies, Chevy Chase, MD, USA

Objectives: To examine trends in mortality, morbidity, hospital length and cost of stay in influenza patients with low and high comorbidity index. **Methods:** The latest available 2016 National Inpatient Sample (NIS) data set from the Healthcare Cost and Utilization Project was utilized in order to determine the number of hospital admissions for patients with influenza. Propensity score matched analysis was conducted to compare mortality hospital, LOS and costs in patients with low and high comorbidity index. Thirty comorbidities were assessed using Elixhauser scoring. Multivariate logistic regression was conducted to assess predictor variables for LOS and costs. **Results:** In 2016, there were an estimated 145,360 hospitalizations with a diagnosis of influenza. Approximately 54% and 46% had comorbidity index of <3 and ≥ 3, respectively. The mean age was 43.1 (SD 28.3) and 66.2 (SD 15.8) in low and high comorbidity groups, respectively. 51.8% and 52.6% were female in low and high comorbidity groups, respectively. Most common comorbidities (more than 10%) were congestive heart failure (19.8%), cardiac arrhythmias (23.5%), hypertension (37.4%), chronic pulmonary disease (40.5%), diabetes (15.7% uncomplicated, 12.1% complicated), renal failure (16.7%) and depression (16.1%). The propensity score matched hospital LOS was 4.4 and 7.3 days, with a statistically significant difference of 2.9 days (SE 0.44, P<0.05), in low and high comorbidity groups, respectively. The propensity score matched hospital charges were $29,038 and $83,301, with a statistically significant difference of $54,263 (SE $6178, P<0.05), in low and high comorbidity groups, respectively. Mortality rate was 1.2% and 5.9% in low and high comorbidity groups, respectively (P<0.0001). **Conclusions:** Influenza patients with high comorbidity index incur significantly longer hospital length of stay and nearly 3 times the costs and mortality compared to patients with low comorbidity index. There is a need for better treatment management for influenza patients with high comorbidity index.

PIN23
A MACHINE LEARNING BASED METAMODEL FOR COST-EFFECTIVENESS ANALYSIS OF HEPATITIS C TREATMENT

Ayer T,[1] McCandlish JA,[1] Chhatwal J[2]
[1]Georgia Institute of Technology, Atlanta, GA, USA, [2]Value Analytics Labs, Boston, MA, USA

Objectives: Complex simulation models used for cost-effectiveness analysis (CEA) of medical interventions can have high computational complexity. In such cases, metamodels, which statistically approximate a computationally intensive simulation model, can facilitate generating model outcomes in near-real time (e.g., for value of information analyses or online decision-support tools). Our objective was to develop a machine learning (ML)-based metamodel for replicating the key outcomes of a complex microsimulation and conduct CEA of hepatitis C virus (HCV) treatment using the metamodel. **Methods:** To construct an ML-based metamodel, we first generated 1 million samples using an HCV microsimulation model by probabilistically sampling simulation parameters. We then built a random forest metamodel (RFM) and trained it using cross-validation. The outcomes of the metamodel included total costs and quality-adjusted life years (QALYs) of HCV management, and incremental cost-effectiveness ratio (ICER) of treatment. We compared the performance of the RFM against a multiple linear regression metamodel (LRM), the conventional approach for metamodeling in the literature using R^2. For benchmarking purposes, we also considered other ML algorithms, including a support vector regression model and an artificial neural network. **Results:** The random forest model strictly dominated all other ML methods considered and outperformed the conventional metamodel on R^2 across all outcomes. Specifically, R^2 values for LRM vs. RFM model for QALYs were 0.92 vs. 0.99, respectively; for costs were 0.81 vs. 0.94, respectively; and finally for ICER were 0.31 vs. 0.80, respectively. **Conclusions:** Results of a highly complex microsimulation model can be replicated with high accuracy using machine learning-based metamodeling compared with conventional metamodeling methods such as multiple linear regression. The resulting metamodel can be used to generate results in near real-time and facilitate the value of information analysis or development of an interactive decision-support tool.

PIN24
INCIDENCE AND COSTS OF INFLUENZA-RELATED HOSPITALIZATIONS BY COMORBIDITY IN THE UNITED STATES

Near A,[1] Tse J,[2] Young-Xu Y,[3] Hong D,[4] Reyes C[4]
[1]IQVIA, Durham, NC, USA, [2]IQVIA, Cambridge, MA, USA, [3]Veterans Affairs Medical Center, White River Junction, VT, USA, [4]Vir Biotechnology, Inc., San Francisco, CA, USA