

administration were examined by vaccine and type of setting including physician offices, pharmacies, and other medical settings (e.g., inpatient/outpatient hospitals, emergency rooms). **RESULTS:** Of those receiving ZOSTAVAX<sup>®</sup>, PNEUMOVAX<sup>®</sup> 23 and influenza vaccines, 25%, 1%, and 7%, respectively, received it at a pharmacy. Compared to other US regions, pharmacy-based vaccination for these 3 vaccines was generally higher in the western and southern regions. Overall, the mean (SD) paid amounts per enrollee per vaccine administration at the physician offices, pharmacies, and other medical settings were as follows: ZOSTAVAX<sup>®</sup> \$208.7 (42.1), \$168.5 (15.7), and \$209.5 (50.8), respectively ( $p < 0.05$ ); PNEUMOVAX<sup>®</sup> 23 \$65.6 (27.5), \$55.0 (9.7), and \$72.1 (50.0), respectively ( $p < 0.05$ ); and influenza \$29.3 (15.3), \$21.6 (6.6), and \$24.2 (13.1), respectively ( $p < 0.05$ ). The mean paid amounts also differed by geographic regions and type of health plan, with costs usually lower for the vaccinations given at the pharmacies. **CONCLUSIONS:** The average direct costs per adult vaccination were lower in pharmacies, compared to physician offices and other medical settings by 16-26% and 11-20 %, respectively. These results were mostly consistent across geographic regions and types of health plans. These data may help payer and policymaker understand economic value of adult vaccination in different settings, especially in pharmacies.

#### PIN38

##### POTENTIAL MEDICAL COST SAVINGS ASSOCIATED WITH ROUTINE HOSPITAL-BASED USE OF A RAPID DIAGNOSTIC TOOL FOR BLOODSTREAM INFECTION IN THE UNITED STATES

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**OBJECTIVES:** Currently, diagnosis of a bloodstream infection relies on culture-based methods and takes 2-3 days. The development of a rapid diagnostic tool has been deemed a high priority by the Infectious Disease Society of America. Available rapid tests are limited by the need to target specific pathogens. Rapid tests for universal detection of bacterial or fungal pathogens are in development. Commercialization of such a test will allow physicians to make rapid decisions, avoid unnecessary hospitalization, and decrease morbidity. No economic analyses have yet assessed the potential medical cost impacts of such a test. **METHODS:** We performed a decision tree analysis to estimate the potential medical cost consequences of a rapid test to detect bloodstream infection, using data from published literature and expert opinion. We considered potential impacts in the areas of diagnostic testing, prevention of diseases, and reduction in hospital admissions. Medicare pricing schedules were used, analyses were conducted from the health care payer perspective, and a base case cost of \$20/test was used. **RESULTS:** Our model demonstrates that with population-wide implementation, the annual U.S. medical cost savings associated with decreased clinical diagnostic testing, reduced antimicrobial use, disease prevention, avoidance of hospitalization, and reduction in hospital length of stay could be \$0.2, \$0.3, \$1.2, \$1.1 and \$1.6 billion, respectively. An increase in diagnostic testing cost to \$40, \$50 and \$60/test lowers net savings by 3.6%, 5.4% and 7.2%, respectively. A tripling of the testing cost still allows for net savings of >\$3.6 billion to the health care system. **CONCLUSIONS:** Our analysis suggests that routine hospital-based use of a rapid diagnostic test for bacterial and fungal bloodstream infections would result in substantial savings to U.S. health care payers. If such a test were available, and its negative predictive value for bloodstream infection were very high, it would likely become a dominant diagnostic strategy.

#### PIN39

##### COST OF ILLNESS OF HEPATITIS C IN GERMANY: A RETROSPECTIVE MULTICENTER ANALYSIS

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**OBJECTIVES:** Currently, 400-500 thousand people are suffering from Hepatitis C (HCV) in Germany (62% genotype 1). HCV is one of the leading causes for chronic liver disease. Experts have estimated that about 27% of end-stage cirrhosis and 25% of hepatocellular carcinoma are associated with HCV. Although HCV is associated with high costs, reliable data are scarce in Germany. Aim of the study was to assess the costs for treating chronically infected HCV patients in routine care. **METHODS:** We conducted a retrospective multicenter observational study. Design was approved by an ethics committee and patients were asked for their informed consent. Health care utilization was extracted from doctor files in six medical centers. Costs were calculated using official fee-scales and statistics. Societal perspective was taken. **RESULTS:** In total, 315 patients were analyzed. The mean age was 49.4 years, 57.5% were male and 67.9% had a genotype-1 infection. Most common routes of transmission were injection drug use (39.0%) and infection through blood products (15.9%). In 41.3% of patients route of transmission was unknown. The average total costs were €19,147 including ambulatory care (€1,686), pharmaceuticals (€14,875), inpatient care (€1,293) and sick leave (€1,293). Cost differences were observed between patients groups (mild HCV, moderate HCV and compensated cirrhosis, decompensated cirrhosis). Patients receiving a 16-week treatment had average total costs of €8,230. A 24-week treatment resulted in €13,674, 48-week treatment in €25,396 and 72-week treatment in €41,175. In nearly 30% of patients treatment duration did not correspond to official recommendations. **CONCLUSIONS:** Treatment of HCV patients is associated with high costs mainly affected by length of antiviral therapy. It is inevitable to follow current guidelines and monitor patients closely in order to avoid unnecessary costs. The analysis is the basis for implementing new therapies which started with the introduction of protease inhibitors in 2011.

#### PIN40

##### BURDEN OF INFLUENZA DISEASE IN THE UNITED KINGDOM (UK): A LINKED GENERAL PRACTICE RESEARCH DATABASE (GPRD) ANALYSIS

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**OBJECTIVES:** To determine the economic and health care resource burden of seasonal Influenza, in the UK, using linked, individual patient, hospital and family doctor records, including mortality stratified by; age, risk factors and complications. **METHODS:** A cross-sectional observational study design was carried out using data derived from linked GPRD, between January 2001 and March 2009. Subjects included were; all those with family doctor coded episodes of care for acute respiratory events related to infection (influenza, upper and lower respiratory tract infections (LRTI), and Influenza like illness (ILI)). Analysis was stratified by age and 'at risk' conditions recommended for influenza vaccination in the UK. UK 2011 published reference costs were used. **RESULTS:** 156,193 influenza episodes were recorded during the study period, with mean age 42.7 years (SD 20.3). Of these 1,592 (1.0%) were hospitalised with mean length of stay of 7 days; 1,182 (0.8%) deaths occurred within 28 days. The risk of hospitalisation and mortality was lower in those vaccinated; odds ratio 0.59 and 0.78 respectively. Cardiovascular complications, COPD and LRTI were associated with the largest number of deaths. Highest mortality rates were in patients ≥65yrs. Costs escalate with complicated influenza episodes (average cost influenza £2,264/hospitalisation vs. complicated influenza £9,384/hospitalisation) and age (≤64yrs £6,166/hospitalisation; ≥65yrs £11,674/hospitalisation). Respiratory and chronic heart disease risk status had highest overall costs, but CNS risk had highest cost per episode (£15,198/hospitalisation). **CONCLUSIONS:** This study, the first of its kind in the UK, demonstrates that seasonal influenza, even at a time of low overall activity, is associated with a substantial burden of illness, which is preventable by vaccination. This study is likely to underestimate the true impact of influenza due to; only capturing individuals who visit a physician, because most affected individuals self-diagnose, and the incompleteness and coding errors inherent within administrative databases.

#### PIN41

##### HEALTH CARE RESOURCE UTILIZATION AND COSTS OF PATIENTS WITH ASPERGILLOSIS IN THE UNITED STATES

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**OBJECTIVES:** To evaluate health care utilization and costs of patients with aspergillosis within a large, commercially-insured population in the US. **METHODS:** Adults ≥18 years with at least one inpatient, emergency room, or outpatient medical claim with an aspergillosis diagnosis (ICD-9-CM 117.3 or 484.6) between July 1, 2004 to March 1, 2011 and ≥6 months of pre-index and ≥1 month of continuous post-index health plan and pharmacy benefit enrollment were identified from the MarketScan Research Databases. Patients with a diagnosis of aspergillosis in the pre-index period were excluded. Aspergillosis cases were propensity score-matched to a sample of controls without aspergillosis. A general linear model was used to estimate total costs which were adjusted by the probability of remaining in the study to a given point in time (e.g., 90, 180, 365 days). Incremental costs were calculated between cohorts and a bootstrap procedure was used to produce corresponding variation and 95% confidence interval estimates. **RESULTS:** Patients with aspergillosis (N= 5499; mean age: 57.8 years; 48.6% female; 39.1% with cancer; 34% with an index diagnosis in the inpatient setting) were matched to 5499 controls (mean age: 58.3 years; 48.4% female; 40.3% with cancer). Aspergillosis cases had a higher proportion of hospitalizations and a longer average length of stay, as well as a higher rate of ER use and monthly outpatient office visits, laboratory tests, and outpatient prescriptions during follow-up than controls. All contrasts were significant at  $p < 0.001$ . The estimated mean incremental costs of patients with aspergillosis, adjusted for the probability of remaining in the study for a given duration of follow-up time, were \$22,732.99, \$19,620.51 and \$17,870.09 for durations of 90, 180, and 365 days, respectively. **CONCLUSIONS:** The economic burden of aspergillosis is substantial. Patients with aspergillosis utilize significantly more health care and thus incur greater health care costs than do similar patients without aspergillosis.

#### PIN42

##### ESTIMATED HUMAN AND ECONOMIC BURDEN OF FOUR MAJOR ADULT VACCINE-PREVENTABLE DISEASES IN THE UNITED STATES, 2010

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**OBJECTIVES:** Low uptake of routinely recommended adult immunizations is a public health concern. Using data from peer-reviewed literature, we developed a customizable model to estimate the human and economic burden caused by four major adult vaccine-preventable diseases (VPD) in the United States and for each US state individually in 2010. **METHODS:** Three primary estimates were developed to populate the model: 1) estimated number of cases per year based on 2010 US Census population data and published incidence rates; 2) estimated direct medical costs of a single case; and 3) estimated indirect medical costs related to morbidity/lost productivity. Four major adult VPDs were examined: 1) influenza; 2) pneumococcal disease (both invasive disease and pneumonia); 3) herpes zoster; and 4) pertussis. **RESULTS:** Estimated US annual cost for the four adult VPDs was 15.1 billion (B) (10.4B for age ≥50). Among adults indicated for vaccination against the four VPDs, influenza (≥18yrs), pneumococcal disease