

sion and logistic regression models were used to evaluate the effect of pharmacist intervention on patients' A1c levels after controlling for gender, baseline age, baseline A1c values, ethnicity, smoking status, insurance, and the duration between the index date and last visit. **RESULTS:** A total of 484 patients were included in the analysis: 222 who received pharmacist intervention, and 262 receiving usual care. The change in A1c between baseline and last visit was -1.7 percentage points in the intervention group, -1.1 percentage points with usual care. The estimated impact of the pharmacists' interventions was -1.38 percentage points ( $p < 0.0001$ ) after adjusting for differences in patient characteristics using ordinary least squares regression techniques. Similarly, the pharmacist intervention increased the likelihood of achieving the treatment goal of an A1c  $< 7\%$  by four-fold (OR = 4.037,  $p < 0.0001$ ). **CONCLUSIONS:** Pharmacist interventions do have significant benefit for patients with diabetes. The results demonstrate the importance of the pharmacist in diabetes control and can be applied to similar clinics serving mostly uninsured Hispanic patients.

PDB63

#### THE IMPACT OF A PPO PAY-FOR-PERFORMANCE PROGRAM ON DIABETIC PATIENTS

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**OBJECTIVES:** To investigate the effectiveness of a pay-for-performance program (P4P) to increase quality care processes and decrease hospitalization among diabetics. **METHODS:** The study sample consisted of diabetic members 18 to 75 years of age enrolled in a Preferred Provider Organization (PPO) from 1999 to 2006, as identified by the administrative claims data. We used multivariate analyses to assess the impact of seeing P4P-participating providers on the receipt of quality of care (i.e., at least two hemoglobin A1c (HbA1c) and one low-density-lipoprotein (LDL) tests) and hospitalizations while controlling the following characteristics: age, gender, comorbidity, number of outpatient visits, number of distinct primary care physicians seen, seen by an endocrinologist, insulin dependence, and calendar year. **RESULTS:** Diabetics who saw P4P-participating providers were significantly more likely to receive quality care when compared to diabetics who did not (OR 1.16, 95% CI 1.11-1.22,  $p < 0.001$ ). Diabetics who received quality care were significantly less likely to be hospitalized in the following year when compared to diabetics who did not (IRR 0.80, 95% CI 0.80-0.85,  $p < 0.001$ ). Although in a one-year period, there was no difference in hospitalization rates between diabetics who saw P4P-participating providers and those who did not, diabetics who saw P4P-participating providers in 2004 through 2006 (i.e., three-consecutive years) were significantly less likely to be hospitalized in 2006 when compared to those who did not (IRR 0.75, 95% CI 0.61-0.93,  $p < 0.01$ ). **CONCLUSIONS:** We found that among diabetics in a PPO setting, a P4P can significantly increase quality care processes and decrease hospitalization rates. Further research should focus on defining the impact of P4P on intermediary outcomes such as HbA1c and LDL levels.

PDB64

#### A REVIEW OF RETROSPECTIVE, CONTINUOUS GLUCOSE MONITORING: AN EXAMPLE OF A MEDICAL DEVICE WHERE THE TYPICAL PRIMARY OUTCOME MEASURE MAY BE INAPPROPRIATE?

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**OBJECTIVES:** Normoglycaemia in people with diabetes results in improved outcome. Continuous glucose monitoring provides detailed diagnostic information used to optimize therapy. The objective of this study was to review randomised controlled trials (RCTs) of the only device available for blinded, professional use. **METHODS:** Published studies using the MiniMed Continuous Glucose Monitoring System (CGMS, Medtronic Inc., Northridge, CA) were identified using appropriate search terms in a series of clinical databases including: Medline, Pubmed, Google Scholar and Scientific Web of Knowledge. Other measures were also taken such as searching the reference lists and review by recognised experts. **RESULTS:** Seven randomised controlled trials were identified, five in children. Double-blinding was not possible. Although HbA1c was explicitly stated as the primary endpoint in four studies the studies were only adequately powered to detect large, between-group minimum differences (range 0.5 to 1.0% HbA1c). Only two studies included subjects with type-2 diabetes. Other endpoints included the frequency of hypoglycaemia and hyperglycaemia events. Within-group HbA1c decreases were observed in all but one study. The crude, weighted mean improvement in HbA1c across the studies using the device was 0.6% (range 0% to 0.8%). No studies recorded how the information was utilised to modify treatment, such as changes in dose titration or treatment regimen. **CONCLUSIONS:** Devices such as the professional CGMS provide detailed diagnostic information. However, any consequent changes in care and outcome can only result from the appropriate application of this information. Although there was a notable improvement in glucose control (HbA1c), existing studies were largely underpowered and did not capture the resulting treatment changes that could lead to improved outcome.

#### ASSOCIATIONS BETWEEN PATIENT-REPORTED DIABETES KNOWLEDGE AND HEALTH OUTCOMES, SELF-CARE, AND PREFERENCES FOR POTENTIALLY-BENEFICIAL NEW TREATMENT OPTIONS

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**OBJECTIVES:** Examine the impact of patient self-reported diabetes knowledge on diabetes self management and outcomes and assess whether diabetes knowledge influences patient preferences for a once weekly (QW) injectable therapy versus daily oral medications. **METHODS:** A nationally representative random sample of patients with self-reported type-2 diabetes ( $n = 1516$ ) participated in an on-line survey. Regression analyses were used to explore the relationship between self-reported diabetes knowledge, health outcomes, and preferences for QW therapy. **RESULTS:** Mean age of the sample was 57.5 years, 52% were men, and mean duration of diabetes was 9.7 years. Self-rated knowledge of diabetes ranged from "extremely knowledgeable" (9% of patients) to "very knowledgeable" (31%), "knowledgeable" (38%), "somewhat knowledgeable" (21%) and "not knowledgeable" (1%). Adjusted for demographic factors (age, gender, diabetes duration, education level), higher level of knowledge was associated with self-reported improvement in health since diagnosis, both physical ( $\beta = 0.15$ ) and emotional ( $\beta = 0.18$ ), and better self-care adherence, including dietary ( $\beta = 0.14$ ), exercise ( $\beta = 0.11$ ), medication ( $\beta = 0.12$ ) and blood glucose monitoring recommendations ( $\beta = 0.18$ ) ( $p < 0.001$  for all included variables). When asked to consider potential advantages of a QW injectable medication if superior blood glucose control and similar safety could be achieved as compared to a daily oral medication, preference for a QW approach was positively associated with diabetes knowledge (OR 1.18,  $p < 0.03$ ), after adjustment for demographics and past and present experience with self-injected medications (43%). Assuming same blood glucose control and safety, overall, 54% of patients stated a preference for once weekly versus daily injectable diabetes medication. **CONCLUSIONS:** Higher levels of self-reported diabetes knowledge are associated with greater improvement in self-reported health, as well as adherence to diabetes self-care behaviors. Patients who report higher levels of diabetes knowledge may be more willing to consider new treatment options, such as a once weekly injectable therapy for diabetes.

#### INFECTION – Clinical Outcomes Studies

PIN1

##### STATISTICAL ANALYSIS OF MONONUCLEOSIS IN ADOLESCENTS

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**OBJECTIVES:** Mononucleosis is a non-fatal disease that is most widely seen in the adolescent ages of teenagers and toddlers. Mono is caused by the Epstein-Barr virus; a member of the herpes virus family and one of the most common human viruses, affecting as many as 95% of adults between 35 and 40 years of age. When infection with EBV occurs during adolescence or young adulthood, it causes mononucleosis 35% to 50% of the time. Our objective is to use data from the National Inpatient Sample for 2005, conducted by the Agency for Healthcare Research and Quality to explain these and other correlations with respect to mononucleosis. **METHODS:** Within the sample, there were 2000 observations of patients with mono and 1814 without mono. The SAS statistical analysis software was used to produce table, graphical, and regression analysis to explain data correlations and discrepancies among the diseased population and the non-diseased population or the control group. **RESULTS:** Demographic variables of gender and race were normally distributed within the disease group. Procedures of injection of antibiotic, venous catheterization, biopsy of bone marrow, tonsillectomy with adenoidectomy, along with diagnosis of disorder of fluid, acute tonsillitis, acute pharyngitis, general symptoms, peritonsillar abscess, and other symptoms involving abdomen and pelvis were seen as predictive variables correlated with having the disease. Because a wide array of procedures were seen in the disease population, the most common procedure classifications were extracted and used to perform regression analysis. **CONCLUSIONS:** Procedure classes of other operations on lung and bronchus, incision, excision, and anastomosis of intestine, along with incision, excision, and occlusion of vessels, and operations on bone marrow and spleen were found to be the best indicators of predicting length of stay and total charges of the diseased group.

PIN2

##### FACTORS INFLUENCING PEDIATRIC PATIENTS WITH PNEUMONIA

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**OBJECTIVES:** Pneumonia is a bacterial or viral infection that affects the lungs, and makes it difficult to breathe. This disease can cause hospitalization and sometimes death. It is the purpose of this study to examine a group of pediatric patients with pneumonia and factors such as sex, length of stay, Charlson Index, age and hospital expenses to determine how they are related to the disease. **METHODS:** Data were

taken from the 2005 National Inpatient Sample. One-way frequencies, summary statistics, table analysis, logistic regression, linear regression, and kernel density were all used to evaluate the data. We used exploratory data analysis to investigate patient outcomes. There were 5622 patients with pneumonia and a control group of 5600 patients. **RESULTS:** Pneumonia affects 1–2 year olds more than older children. Most of the patients had a Charlson number of 0, indicating non-severe conditions. Out of 5622 patients, there were 73 fatalities. The majority of patients had a hospital expense of \$2,000 to \$12,000. Sex did not play a huge factor in the distribution of patient deaths. The mean age was 7.29 years old. The mean length of stay was 9.41 days. Patient procedure and diagnosis codes were analyzed to discover which codes had the most significant impact on patients, length of stay, and total hospital charges. Patients with additional diseases were analyzed to see if there was a significant difference in hospital length of stay and total hospital charges. **CONCLUSIONS:** Patients have different hospital costs, lengths of stay, initial diagnosis, procedures and outcomes according to their sickness, and how they can be treated. Most patients that come into the hospital do not have to stay too long, have a moderate hospital expense, and are generally young children. Pneumonia is a serious illness, occasionally fatal, but it can usually be treated successfully.

PIN3

#### **ECONOMIC ANALYSIS OF MICAFUNGIN VERSUS CASPOFUNGIN THERAPY FOR THE TREATMENT OF CANDIDEMIA AND PNEUMONIA INFECTIONS**

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**OBJECTIVES:** The primary objective is to compare candidemia treatment success between micafungin and caspofungin. Secondary objectives are to identify cost and mortality rates associated with the use of micafungin versus caspofungin. **METHODS:** This was a retrospective chart review of patients who received one dose of micafungin or caspofungin during their hospitalization in a regional VA medical center between January 1, 2004 and February 29, 2008. A combination of electronic data extraction and manual chart review was performed on each subject's medical record for patient characteristics, risk factors, antifungal use prior and post echinocandin, adverse drug reactions associated with echinocandins, microbiological eradication, clinical success, length of stay, total hospital cost, and echinocandin cost. All statistical tests were two-tailed with p-value of less than 0.05 considered statistically significant. **RESULTS:** A total of 106 patients with at least one positive bloodstream or sputum culture for *C. albicans* or *C. non-albicans* were included. Treatment groups had similar baseline characteristics in all areas except more micafungin patients had renal failure ( $p = 0.016$ ), prior antifungal use ( $p = 0.021$ ) and post antifungal use ( $p = 0.002$ ). Treatment success rates were comparable among groups (74% micafungin compared to 64% caspofungin,  $p = 0.279$ ). Microbiological success was 54% vs. 45% ( $p = 0.367$ ) for micafungin vs. caspofungin, respectively. There was no difference in microbiological success between *C. albicans* and *C. non-albicans* for micafungin ( $p = 0.802$ ), however, a significant difference was seen in the caspofungin patients (*C. albicans* 35% vs. 59% *C. non-albicans*,  $p = 0.05$ ). Total cost of patient care ( $p = 0.027$ ) and echinocandin overall cost ( $p = 0.001$ ) were significantly lower in the micafungin group. Length of stay and mortality rates were comparable among groups. **CONCLUSIONS:** We found overall treatment success was non-inferior among micafungin and caspofungin therapies.

PIN4

#### **US HEPATITIS-C BURDEN ASSESSMENT FROM A TRANSMISSION MODEL**

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**OBJECTIVES:** Achieving sustained virologic response (SVR) could prevent further transmission of hepatitis C virus (HCV) and reduce chronic hepatitis C (CHC) incidence; we developed a compartment model to describe the dynamics of HCV transmission in the United States. **METHODS:** This population model was expressed by partial differential equations across compartments based on: injection-drug use, CHC infection, diagnosis, genotypes, treatment/re-treatment, SVR and disease progression. Model inputs were based on published sources. Model was calibrated from 2002–2006 and matched closely with CDC reports and other published literature. The calibrated model was then applied to assess the CHC burdens from 2007–2040 under the current pegylated-interferon/ribavirin (P/R) treatment strategy. A scenario from a hypothetical new CHC regimen (NEW) was also assessed. This included: NEW available in 2011 (70% SVR) for genotype-1, treatment-naïve patients; P/R treatment-failure patients (TFs) re-treated by NEW with 50% SVR; NEW not used to treat genotype-2/3 patients; P/R durations consistent with current treatment guidelines by genotypes and costs \$28,000/48-week; diagnosis and treatment rates remain unchanged with NEW. All costs were converted into 2007 dollars using 3% discount rate. **RESULTS:** Under P/R, US CHC prevalence at 2040 is projected to be around 1.7 million. Overall CHC direct medical cost is about \$6 billion a year under P/R, only 13% of which is treatment-related; the remaining 87% comes from managing the comorbidities and long-term consequences of advanced liver disease (ALD) among undiagnosed patients, diagnosed-but-never-treated patients, and TFs. Compared to P/R, NEW is projected to cure 351,448 more patients, prevent 23,444 more CHC incidences, avert 103,953 more ALD incidence, and prevent 39,929 more deaths from 2007–2040. CHC prevalence at 2040 under NEW is projected to be 335,000 fewer patients. **CONCLUSIONS:** A new CHC regimen may have a higher public health impact than P/R. Costs unrelated to current CHC treatment with P/R are the major burden of hepatitis C.

PIN5

#### **PHARMACOGENOMICS: APPLICABILITY IN ANTIRETRO VIRAL THERAPY (ART) IN HIV PATIENTS**

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**OBJECTIVES:** The objective of the study was to explore the applicability of pharmacogenomics in ART (Antiretroviral therapy). **METHODS:** Pharmacogenomic studies in HIV patients were identified from the database of WHO, Pubmed, Clinical trials, gov and relevant grey literature from 2000–2008. Two reviewers independently extracted data. **RESULTS:** Pharmacogenomics provides a powerful support to investigate variable responses to antiretroviral therapy. To date, few antiretrovirals appear to have a clear genotype–phenotype correlation. However, such correlations have been demonstrated for CYP2B6 and efavirenz disposition, HLA-B\*5701 and abacavir hypersensitivity, and UGT1A1 and atazanavir hyperbilirubinemia. Clinically significant and confirmed pharmacogenomic relationships were identified for three ART drugs. Out of 405 studies, 6/202 studies were identified as relevant to CYP2B6 and efavirenz disposition (2RCTs, 1 nRCT and 3 pharmacokinetic studies). Three (3/118) studies were identified for HLA-B\*5701 and abacavir hypersensitivity (2 RCTs and 1 nRCT) and 2/85 studies for UGT1A1 and atazanavir hyperbilirubinemia (1RCT and 1nRCT). Studies (2/6) revealed that genotype and sex were identified as predictive covariates of efavirenz disposition. Studies (2/3) across the world have consistently demonstrated that HLA-B\*5701 predicts the likelihood of hypersensitivity reactions to abacavir. As a consequence, pharmacogenetic screening for HLA-B\*5701 has entered routine clinical practice and is recommended in most guidelines before starting an abacavir containing regimen. Studies (1/2) show that polymorphisms at MDR1-3435 significantly influence atazanavir plasma concentrations, although ATV plasma concentrations directly correlate with bilirubin levels, the risk of severe hyperbilirubinemia is further increased in the presence of the UGT1A1-TA7 allele. **CONCLUSIONS:** Although the wider applicability of pharmacogenomic relationships is prevalent and its use in clinical practice is still limited. Pharmacogenomics can greatly contribute in taking more adequate therapeutic decisions and to optimise treatment for HIV/AIDS.

PIN6

#### **A DATA ANALYSIS OF INPATIENTS AFFECTED BY THE HUMAN PAPILLOMAVIRUS**

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**OBJECTIVES:** The human papillomavirus is the most common sexually transmitted disease in America. This virus will affect 6.2 million Americans this year. Most cases of HPV come from sexual contact or vaginal delivery from an infected mother. It is the objective of this study to gain more knowledge about HPV in order to be able to control or prevent the spreading of this virus. **METHODS:** A data set of over 22,000 pediatric patients from the 2005 National Inpatient Sample was used for analysis with SAS Enterprise Guide to examine different characteristics of HPV. From SAS, we were able to set up one way frequencies, pie charts, kernel densities, and logistic and linear regressions to compare and contrast different aspects of HPV. We also examined patient diagnosis and procedure codes. **RESULTS:** The most prominent age groups affected by HPV are young children and adolescents. This is a concern since there is a strong relationship to cervical cancer in later life. Although two types of the virus (16 and 18) are responsible for 70% of cervical cancers, less than 1% of the patients in our sample died with HPV. This virus is not costly to detect or treat with the majority of the patients charged around \$5,000 from hospitalization with the virus. We found that 90% of patients with a URI also had HPV. We found many statistically significant relationships between demographics, procedures, and diagnoses, and length of stay or total charges of the patient. **CONCLUSIONS:** Further research is still needed for doctors to be able to prevent or cure HPV. Trial medications are out on the market targeting young females, but surprisingly, more males have HPV because they are the carriers of this virus. We need to focus more time and money to find a cure for HPV.

PIN7

#### **EXPLORING CELLULITIS: WHO GETS IT AND HOW SERIOUS IS IT?**

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**OBJECTIVES:** Cellulitis is a skin infection caused by bacteria. In children, cellulitis most often occurs on the face, legs, arms, or around the area near the anus. It can usually be treated with antibiotics (oral or topical). However, if not treated, the infection can spread and cause far more serious conditions such as meningitis or blood clots in the legs. The objective of this paper is to explore the data of pediatric patients who have cellulitis and to compare the results to patients who do not have the disease. Basic variables such as age, race, and gender are examined along with recorded patient diagnosis and procedure codes. **METHODS:** The statistical software SAS was used to analyze and explore the data supplied by the National Inpatient Sample for 2005. The dataset contained 1287 patients with cellulitis and a control group of 1300 without cellulitis. Statistical methods used include one-way frequencies, kernel densities, summary statistics, table analyses, logistic regression, and linear regression. We also examined the most frequent patient diagnoses and procedures for the patients in the dataset. **RESULTS:** The patients represented by the data are all pediatric. About 63% of patients with cellulitis are male, with about 37% female. The age group with the highest concentration of patients is 0–3 with about 29% of the total. Only 0.08% of the patients with cellulitis actually died. In general, the disease is not fatal. The average