and 0.008 (D1) and 0.003, 0.013, 0.026 and 0.052 (S1) for baseline event rates of 1, 5, 10 and 20 per year respectively. CONCLUSIONS: Nonlinear models of NHSLA diabetes typically show greater benefit per NSH in avoided subjects with a lower frequency of events. As hypoglycemia frequency increases the marginal utility gain per NSH avoided decreases. Nonlinear equations provide a more plausible estimate of the health benefit associated with the avoidance of NSH.

PDB10
VALIDATING THE UKPDS 82 RISK EQUATIONS TO CONTEMPORARY OUTCOMES STUDIES IN TYPE 2 DIABETES
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OBJECTIVES: The IMS CORE Diabetes Model (CDM) is a widely published and previously validated decision support tool. The model uses the UKFS 68 risk equations (REs) to predict cardiovascular events and recent studies have demonstrated the model accurately predicted event rates consistent with those reported in contemporary T2DM outcomes studies. The CDM has been updated to include the new UKFS 82 REs; consequently the objective of this study was to compare the event rate predictions from the UKFS 82 and 68 REs within the CDM. METHODS: A total of 98 real-world settings from 14 countries, and the UKPDS 68, 82 were compared for both the neutral and UKPDS. Simulation cohorts mirroring baseline characteristics of each of the trials were generated and intensive and conventional treatment arms modeled for the relevant study specific follow-up. Predicted versus observed cardiovascular and microvascular complications and all-cause mortality (ACM) were assessed using the coefficient of determination (R2) goodness of fit measure. RESULTS: Across all validation studies the CDM simulations produced an R2 statistic of 0.909 using UKPS 68 and 0.972 using UKPS 82. R² statistic for MI, stroke, CHF, CV death, and ACM were 0.773, 0.853, 0.499, 0.659 and 0.966 for the UKPS 68 REs and 0.742, 0.848, 0.852, 0.672 and 0.88 for the UKPS 82 REs. Validating against 20-year outcomes data (UKPDS) resulted in an R² of 0.992 and 0.993 for UKPS 68 and 82 respectively. CONCLUSIONS: The CDM model has been extensively validated using the UKFS 68 risk equations and shown to have good predictive validity. Initial validation using the UKFS 82 equations resulted in low versus observed external validation to recent outcomes study trials data. This may be due to necessary assumptions applied regarding modifiable risk factor trajectories or the functional form of the new equations. Further research is required to assess the robustness of these new equations.

PDB11
ASSESSING SIMULATION RUN TIME REQUIREMENTS TO ACHIEVE STABILIZED ABSOLUTE AND INCREMENTAL COST EFFECTIVENESS RESULTS IN TYPE 2 DIABETES: A STUDY USING THE IMS CORE DIABETES MODEL
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OBJECTIVES: In cost effectiveness (CE) modeling previous studies have demonstrated incorporating parameter sampling is crucial to capture the effects of nonlinearity in base case simulation predictions of costs and quality adjusted life expectancy (QALE), however, run time requirements (RTR) to reach stabilized predictions may be increased. The objective of this study was to assess the RTR for analyses with parameter sampling necessary to reach predefined end point stabilization criteria. METHODS: The IMS CORE Diabetes Model was initiated using the following type 2 diabetes profile: 55 years of age, duration of diabetes 5 years and baseline HbA1c of 7.49%. Treatment A versus B was assumed to have a 0.5% lower HbA1c and 1.5% lower health care expenditures (HCE), than treatment B with parameter sampling using standard errors of 1% of mean. The model was run with 10,000 patients over 10,000 replications. RTR was assessed in terms of replications required to reach stabilization of absolute (A) and incremental (I) changes in costs and QALE. Stabilization was considered when estimates remaining within the interval of expected value (EV) +/- tolerance (%) was reached. RESULTS: The RTR for absolute changes in costs and QALE respectively for a tolerance of 0.5% and 4% (A) and 3,453 (QALE) for a tolerance of 0.1%. The RTR for stabilized incremental results were considerably greater: 6,886 and 9,605 replications for costs and QALE respectively at 0.5% tolerance and 9,600 (costs) and 10,000 (A) for a tolerance of 0.1%. CONCLUSIONS: Demonstrating the stability of simulation output is crucial to ensuring the interpretation of CE output is robust. The additional simulation runtime required to achieve stabilized incremental results should be factored into simulation study plans and convergence of output should be reported routinely.

PDB12
COST-UTILITY ANALYSES IN DIABETES: A SYSTEMATIC REVIEW AND POTENTIAL GAINS FROM USING ECONOMIC EVIDENCE
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OBJECTIVES: Diabetes-related cost-effectiveness analyses (CEA) have become more common, though little is known about the actual use of cost-saving services in real-world settings. We systematically reviewed cost-effectiveness analyses of diabetes interventions, identified cost-saving diabetes services, and estimated potential gains from increasing use of cost-saving diabetes interventions in the United States. METHODS: We conducted a systematic review of cost-utility analyses (CUAs) related to diabetes published through 2012, using the Tufts Medical Center CEA Registry. We also examined factors independently associated with favorable ratios. We used the 2008-2012 Humedica electronic medical record data to estimate the potential cost savings and health benefits gained by patients to cost-saving diabetes interventions identified in our review. RESULTS: We identified 196 diabetes CUAs. Most examined pharmaceuticals (55%) and focused on treatment rather than prevention (92%). A health care payer perspective (71%) and were industry-sponsored (52%). Of 497 published cost-utility ratios, 82% examined a guideline-recommended intervention. Approximately 73% of interventions examined in diabetes CUA were mandated by payer cost criteria and may provide good value for money. Our results also indicate that patients and the health care system could benefit considerably from shifting to greater use of cost-saving interventions.

PDB84
WEIGHT CHANGE AND HEALTH CARE RESOURCE USE (HCUR) IN ENGLISH PATIENTS WITH TYPE 2 DIABETES MELLITUS (T2DM) INITIATING A NEW ANTIDIABETIC DRUG CLASS
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OBJECTIVES: The contribution of weight change to the economic burden of T2DM is unclear. This study investigated associations between weight change and HCUR in patients with T2DM initiating new antidiabetic drug class. METHODS: Patients with T2DM initiating new antidiabetic drug classes (first-line, switch or add-on) between 01/01-05/01-01/12 were identified in UK Clinical Practice Research Datalink primary care (PC) records linked with Hospital Episode Statistics. Baseline characteristics were assessed (baseline index (an index day in the index period of data)) and weight loss, obesity and BMI were classified as lean (BMI < 25), overweight (BMI ≥ 25 and < 30) or obesity (BMI ≥ 30) and observed over 3 years. RESULTS: A total of 86,500 could be shifted to cost-saving treatments, saving more than $11 million and gaining more than 1,800 QALYs. CONCLUSIONS: Our findings suggest that most diabetes guidelines are recommended by CUA are recommended by payers and may provide good value for money. Our results also indicate that patients and the health care system could benefit considerably from shifting to greater use of cost-saving interventions.

PDB85
EFFECTS OF HEALTH INSURANCE STATUS ON HEALTH CARE RESOURCE UTILIZATION AMONG DIABETIC PATIENTS IN THE UNITED STATES
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OBJECTIVES: This study aimed to estimate the impact of health insurance status in adult diabetic patients on health care resource utilization and costs. METHODS: A national sample identified in the Medical Expenditure Panel for the 2011 cycle and were included if they had a diabetes diagnosis and were 18 or older. The insurance status was defined as private, public or uninsured. RESULTS: Of the 2,180, patients, 9% were uninsured, 31% had public health insurance and 60% had private health insurance. Uninsured patients were younger, more likely to be a racial minority, in the lower income or poor categories, with lower education compared to those with private insurance. After age adjustment, they were significantly less likely to be on Thiazolidinedione (0.03%, 11.4% and 11.7%) or anti-diabetic combination (5.2%, 14.6% and 17.3%), for uninsured, public and private, respectively. Average health care resource utilization was lowest among patients without health insurance compared to private and public, office visits (4, 11.1 and 9.5), outpatient facility visits (0.4, 0.9 and 1) and hospital discharge (0.1, 0.3 and 0.2). Uninsured patients had lower average health care expenditures ($4,319.5, $10,558.4, $10,377.6), emergency room expenditures ($110.4, $253 and $282.9) and office visits expenditures ($832.4, $2,920.5 and $2,414.6), for uninsured, public and private, respectively. CONCLUSIONS: It is important to assess whether lower resource utilization for uninsured patients impacts their current health status and is associated with long term worse outcomes and increased health care.
to extremely high daily dose results (skewed distribution). The anomalies were addressed by conducting several analyses. The primary analysis included quantities from 6-27 mg/day and calculated mg/day DACON values as <0.6, 0.6-1.5, 1.5-2.1, 2.1-1.8, and >1.8. Sensitivity analyses were conducted for: (A) all values, (B) quantity values “corrected” by corresponding price, (C) quantities corresponding exactly to 1.2 and 1.8 mg/day, (D) quantities with calculated DACONs between 0.6 and 1.8. Additional analyses were performed on excluded patients (N=30,098). RESULTS: On average, patients were 55 years old, 53% female, 60% from FPO plans. Comorbidities included hypertension (48%), cardiovascular disease (21%), obesity (10%), and neuro-ropathy (9%). The DACON for primary analysis was 1.64 (94% at ≥1 mg/day; 64.2% at 1.8 mg/day). A sensitivity analysis of all positive claims (A) produced a DACON of 1.97 with 3% of claims >1.8 mg/day; additional DACON analyses were 1.63(0), 1.64(0), and 1.9(0). DACON primary analysis and all value (A) analyses on dia-lytide patients not meeting inclusion criteria were 1.65 and 1.95. CONCLUSIONS: Careful inspection of claims data distributions should guide methods used to arrive at sensitive findings as well as possible use as DACON. Lilaglutide’s DACON in use with type 2 DM ranged from 1.5 to 1.64.

PDB87 HEALTH CARE UTILIZATION AND DIRECT ECONOMIC BURDEN OF DIABETES PATIENTS UNDER ONE URBAN HEALTH INSURANCE SCHEME OF CHINA Chen W.1, Lou J.2, Fudan University, Shanghai, China

OBJECTIVES: The objective of the study was to measure the health care utilization and direct economic burden of diabetic patients covered by urban employee basic medical insurance (UEBMI) in China. METHODS: All diabetic enrolls were collected from UEBMI data from 2009 through 2011. The UEBMI data included patient personal information, complications and co-morbidities (CCs), service utilization, total medical expense and expense reimbursed by the scheme. Descriptive analysis was employed to examine the disease condition and direct economic burden. RESULTS: There were 1659, 1824, and 2088 diabetic patients treated in the schemes from 2009 through 2011, respectively. The propor- tion of patients received ≥38% each year of diabetes admissions was 54.5%, 56.5%, and 59.2% in 2009, 2010, and 2011, respectively. The average medical expense per patient was RMB 15,387, 16,817, and 18,714, respectively but only more than 30% of total expenses were paid by patients. Medicines accounted for over 74% of total expenses, but medicines for glycemic control only occupied 23%. The top 8 products most used for glucose control accounted for 79% of total medical costs, in which, acarbose and met-for-metformin were ranked as the first two products, amounting to 34% of total medicine costs. CONCLUSIONS: Chronic CCs in diabetic patients brought higher medical service utilization. Direct economic burden and service utilization increased year by year. Medicines was the main expense, but used for other purposes rather than glycemic control. The rational use of medicines and CCs monitoring and manage- ment should be promoted in China.

DIABETES/ENDOCRINE DISORDERS – Patient-Reported Outcomes & Patient Preference Studies

PDB88 EXAMINING A THRESHOLD OF ADHERENCE TO ORAL HYPOGLYCEMIC AGENTS REFLECTED TO CLINICAL OUTCOMES IN DIABETES: A TREE-STRUCTURED SURVIVAL MODEL Lo-Cygan W.1, Donohue J.M.2, Thorpe J.M.2, Perera S.3, Sampliner RE.1, Gellad WF.1

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OBJECTIVES: A number of quality improvement efforts for chronic diseases are tied to patients achieving ≥80% annual refill adherence. However, there is little empirical evidence that this threshold optimally predicts important health outcomes overall or within different patient subgroups. The optimal threshold may also vary by whether adherence is calculated using interval-based (e.g., measured over 365 days) or prescription-based (measured from first through last prescription) methods. We used a survival tree model to identify adherence thresholds to oral hypoglycemic agents (OHA) most associated with avoidance of hospitalizations in different subgroups of diabetes patients. METHODS: We obtained prescription drug and medical claims for 30,961 Pennsylvania Medicaid enrollees aged 18-64 years with diabetes on at least 2 OHA fills analyzed from 30 months from 2007-2011 (6 months before and 2 years after their first OHA prescription). Adherence rates were calculated during year 1 using interval- and prescription-based proportion of days covered (PDC). Survival tree models were fit to predict risk of all-cause hospitalization for patients aged 18-64 years in the samples used in the survival tree analyses. Twenty-eight percent (n=7,472) of patients had ≥1 hospitalization. Among patients with no baseline hospitalizations or comorbidities, adherence cut points of 78% (interval-based) and 92% (prescription-based) optimally differentiated hospitalization risk, result- ing in a risk ratio of 1.64 (95% CI 1.13-2.38) with adherence above these thresholds. For patients with baseline hospitalizations or comorbidities, PDC did not significantly predict future hospitalization. CONCLUSIONS: Refill adherence thresholds may lack predictive validity in terms of hospitalization risk for patients with prior hospitalization or comorbidities. For healthier patients, adherence thresholds most predictive of hos-pitalization were not 80%, and were higher using prescription-based PDC (92%) than interval-based PDC (78%).

PDB89 ACUTE-PHASE PERSISTENCE WITH ANTIDEPRESSANT THERAPY AND ANTIMICROBIALS AMONG PATIENTS WITH A COMMERCIAL ANALYSIS OF COMMERCIALLY INSURED PATIENTS IN RHODE ISLAND Chinthapatla H.1, Kogut S.1, Paine D.2

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OBJECTIVES: To measure the acute-phase persistence and cost of antidepressant therapy among commercially insured patients having diabetes. METHODS: We conducted a retrospective study among patients with diabetes receiving antidepressant therapy through Blue Cross Blue Shield of RI between July 1, 2008-December 31, 2009. New users of antidepressants were defined as having no history of an antidepressant within 120 days preceding the new prescription order. Patients that continued their medication for at least for 90 days were classified as persistent. We compared persistence rates according to the therapeutic class of antidepresant prescribed, and by users of brand versus generic products. A logistic regression with antidepressant type as the independent variable was conducted to assess the impact of antidepressant therapy on 30 days of treatment persistence. RESULTS: Patients not meeting inclusion criteria were 1.65 and 1.95. CONCLUSIONS: Careful inspection of claims data distributions should guide methods used to arrive at sensitive findings as well as possible use as DACON. Lilaglutide’s DACON in use with type 2 DM ranged from 1.5 to 1.64.

PBDB90 DIABETES PATIENTS ARE MORE ADHERENT THAN PLANS REALIZE Morgen L.1, Henderson S.2, Dockery JD.1

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OBJECTIVES: Many retailers offer low cost generic prescriptions, which may mean Medicare patients pay cash for at least some Rx’s. Plans typically have visibility only to the cash they receive and do not include any cash paid in their adherence metric. This research investigates whether adherence is actually higher than that reported in the Medicare Advantage Star Ratings. METHODS: Adheris® receives a nationally representative sample of prescriptions data, collected directly from retail pharmacies, containing roughly 40% of all U.S. retail prescription volume and 130 million unique patient IDs. The HIPAA-compliant, longitudinal data captures all prescriptions filled at the pharmacy, including all payment methods. The study cohort selected all patients filling at least one non-cash prescription in the oral diabetes category between January and September 2013. Patients were observed through December 2013. Exclusion criteria used by CMS for the 2013 Star Plan data is 60% and 120% of average cash paid. RESULTS: Patients ≥65 with at least 1 cash prescription (n=62,454), including cash prescriptions improve average PDC by 14.8% (64.09-78.98%) and the percentage of patients adherent was 19.38% (60.92- 60.30%). In all patients (n=483,740), the improvement was 1.92% (76.45-78.38%) and 2.50% (58.60-60.66%) respectively. CONCLUSIONS: Including cash prescriptions improves adherence rates reported by plans as part of the Star Ratings, indicating that patients are more adherent than other statistics indicate.

PBDB91 LONG-TERM ADHERENCE AND PERSISTENCE WITH DPP-4 INHIBITORS IN ADULTS WITH TYPE 2 DIABETES Farr AM.1, Sheehan J.1, Curkendall SM.1, Smith DM.1, Johnston SS.2, Kalasukar P.3

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OBJECTIVES: Dipeptidyl peptidase-4 enzyme inhibitors (DPP-4is) are a class of oral antidiabetic medications approved to lower blood glucose in patients with type 2 diabetes (T2DM). This analysis compared adherence and persistence over 1-year and 2-year study periods among patients initiating saxagliptin or sitagliptin, two DPP-4is. METHODS: Adults with T2DM in the MarketScan® US claims database who initiated saxagliptin or sitagliptin (index drug) between 1/1/2009-1/31/2012 were included in this analysis. RESULTS: In patients ≥65 with at least 1 cash prescription (n=62,454), including cash prescriptions improve average PDC by 14.8% (64.09-78.98%) and the percentage of patients adherent was 19.38% (60.92- 60.30%). In all patients (n=483,740), the improvement was 1.92% (76.45-78.38%) and 2.50% (58.60-60.66%) respectively. CONCLUSIONS: Including cash prescriptions improves adherence rates reported by plans as part of the Star Ratings, indicating that patients are more adherent than other statistics indicate.


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