burden of cost on society (p < 0.001). The largest portion of direct cost was devoted to medicines (46%) followed by laboratory investigations (32%). Comparing cost with family income, we also found that poorest segment of society is spending about 18% of total family income on diabetes care. CONCLUSIONS: The overwhelming cost of diabetes is due to economic growth and it determines the living standards. The overall cost can be abridged by prevention of diabetes, earlier detection of disease and improved diabetes care. Prevention programs need to be initiated at larger scale to enhance health gain to the individual and to reverse the advance of this epidemic. Policy makers need to ascertain the priority of diabetes education and prevention programs at primary health care outlets as an integral component.

LONG-TERM OUTCOMES IN PATIENTS WITH TYPE 2 DIABETES RECEIVING GLIMEPIRIDE COMBINED WITH LIRAGLITIDE OR ROSIGLITAZONE
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OBJECTIVES: Poor control of type 2 diabetes (T2D) results in substantial morbidity and economic burden to the health care system. Studies of new T2D treatments are rarely designed to assess mortality, complication rates and costs. We sought to estimate long-term consequences of liraglutide and rosiglitazone both as add-on to glimepiride. METHODS: To estimate clinical and economic consequences, we used the CORE diabetes model, a validated cohort model that uses data from long-term clinical trials to simulate morbidity, mortality and costs of T2D. Clinical data were extracted from the randomized double-blind placebo-controlled LEAD 1 trial evaluating two doses (1.2 mg and 1.8 mg) of a once daily human GLP-1 analog liraglutide, or rosiglitazone 4 mg, added to glimepiride. The CORE diabetes model was calibrated to the LEAD 1 baseline patient characteristics. Survival, cumulative incidence of cardiovascular, ocular and renal events and costs were estimated over three periods: 10, 20 and 30 years. RESULTS: In a cohort of 5000 patients per treatment followed for 30 years, liraglutide 1.8 mg had higher survival compared to the group treated with rosiglitazone (15.0% and 16.0% vs. 12.6% after 30 years), and fewer cardiovascular, renal, and ocular events. Cardiovascular deaths after 30 years were 69.7%, 68.4% and 72.5%, for liraglutide 1.2 mg, 1.8 mg, and rosiglitazone, respectively. First and recurrent amputations were lower in the rosiglitazone group compared to both doses of liraglutide (1.6% vs. 0.7% for liraglutide 1.2 mg and 1.8 mg, and rosiglitazone, respectively). Projected survival and long term ocular costs favored liraglutide 1.2 mg and 1.8 mg over rosiglitazone both added to glimepiride.

CHANGES IN OPIOID USE AND ECONOMIC OUTCOMES AMONG DIABETIC PERIPHERAL NEUROPATHIC PAIN PATIENTS TREATED WITH DULOXETINE
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OBJECTIVES: Among patients diagnosed with diabetic peripheral neuropathic pain (DPNP), we sought to determine whether adherence to duloxetine therapy was correlated with medication use and health care expenditures. METHODS: Diabetic patients who were dispensed duloxetine between March 1, 2005 and December 31, 2005 were identified from a large administrative claims database and an “index date” was assigned based on the dispense date of the first duloxetine claim. Included patients were 18 to 64 years old, diagnosed with DPNP in the one year prior to the index date, and received opioids in the prior 90 days. Adherence to duloxetine therapy was based on medication possession ratio (MPR), and patients were dichotomized as “continuous” (MPR ≥ 0.8) and “non-continuous” (MPR < 0.8) users. We examined changes in short-acting (SA) and long-acting (LA) opioid utilization one year before and after the index date. One year health care utilization and costs were also examined. Multivariate linear regressions were performed to examine the association between duloxetine adherence and study outcomes, controlling for baseline demographic and clinical characteristics. RESULTS: We identified 97 continuous users and 245 non-continuous users of duloxetine. Compared with non-continuous patients, continuous users had a greater reduction in days on SA hydrocodone (30.2, p < 0.05), number of SA hydrocodone prescriptions (1.7, p < 0.05), and days on DPNP-related SA opioids (23.8, p < 0.05). We did not observe any significant reduction in LA opioid use. Continuous users also had 40% fewer inpatient stays (p < 0.05) and fewer days in hospital (3.5, p < 0.05). The outpatient and pharmacy costs were similar between cohorts. CONCLUSIONS: Continuous duloxetine users were more likely to have a reduction in SA opioids use and have lower hospital expenditures than non-continuous duloxetine users.

DAILY AVERAGE CONSUMPTION OF BASAL INSULIN IN PATIENTS WITH TYPE 2 DIABETES
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OBJECTIVES: study compared the daily average consumption (DACON) of insulin degludec (DET), insulin glargine (GLAR) and NPH insulins in patients with T2D in a real-world setting. METHODS: Patients with T2D (per ICD-9 code 250.x 250.x) newly treated with DET, GLAR or NPH insulin monotherapy were identified in the Verispan Electronic Data Warehouse (SDI, Plymouth Meeting, PA) from 7/1/2006 to 6/30/2007. A study limitation is that Verispan has no open architecture and thus not include eligibility data, but filtering techniques were employed to eliminate cohort shrinkage. A patient level DACON was calculated as the number of insulin units dispensed from the first to the second to last prescription in the observation period divided by the elapsed days from the first to last fill. Unpaired t-tests and chi-square
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tests were used to identify differences between GLAR or NPH and DET for continuous and categorical variables respectively. A Wilcoxon rank sum test was used to identify differences in mean DAICON between GLAR or NPH and DET. RESULTS: Of the 21,881 patients identified, 2,215 (10.1%) were treated with DET, 16,518 (75.6%) with GLAR, and 2,964 (13.3%) with NPH. A higher percentage of NPH users were above 65 years (42.4%) compared to GLAR (35.2%) and DET (31.2%) (p < .001). Mean/ median DAICON as units/day were 35/26 for DET, 32/27 for GLAR (p = 0.06) and 41/32 for NPH (p < .001). A higher percentage of DET patients had prior antidiebe tic use compared to GLAR and NPH users (75.8%, 67.3% 52.3% respectively, p < .001). The percentage using multiple antidiebe tic agents before the observation period was highest for DET (56.3%), followed by GLAR (45.7%) and NPH (29.5%) (p < .001). CONCLUSIONS: DAICON was highest with NPH and did not vary between DET and GLAR. A greater proportion of DET patients were treated with multiple antidiebe tic agents prior to insulin start, suggesting more severe diabetes.

DIABETES/ENDOCRINE DISORDERS – Patient-Reported Outcomes Studies

PDB34
THE EFFECT OF MEDICATION CHOICE BETWEEN DULOXETINE AND PREGABALIN ON MEDICATION COMPLIANCE AMONG PATIENTS WITH DIABETIC PERIPHERAL NEUROPATHIC PAIN
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OBJECTIVES: To examine the effect of medication choice between duloxetine and pregabalin on medication compliance outcomes among patients with diabetic peripheral neuropathic pain (DPNP). METHODS: A retrospective cohort study design was used with a large US national commercial health care claims database over 2005-2007. Patients aged 18-64 who dispensed duloxetine or pregabalin in 2006 were selected, with the first dispense date as the “index date.” All individuals were included who were diagnosed with DPNP in the 12-month pre-index period, and continuously enrolled in both the 12 months pre- and post-index periods. Duloxetine and pregabalin cohorts were constructed based on the initial agent. Propensity score analysis was used to control for cross-cohort differences in demographics, pre-index clinical and economic characteristics, and pre-index treatment patterns. Medication compliance outcomes were examined between cohorts via medication possession ratio (MPR) and proportion of patients with MPR ≥ 80%. RESULTS: Both the duloxetine (n = 603) and pregabalin (n = 1,751) cohorts had the mean age around 55 years (54.9 ± 55.6). Many duloxetine and pregabalin patients had cardiovascular disease (86.9% vs. 89.0%), neuropathic pain other than DPNP (80.3% vs. 83.2%), hypertension (78.8% vs. 82.6%), osteoarthritis (52.2% vs. 53.1%), and used anticonvulsants (36.3% vs. 35.6%) and opioids (32.2% vs. 28.4%). Controlling for demographics, pre-index clinical and economic characteristics, and prior medication history, duloxetine patients had significantly higher MPR than pregabalin patients (75.8% vs. 52.9%, p < 0.05). The proportion of patients with MPR ≥ 80% was also significantly higher among significant patients in the duloxetine cohort (47.4% vs. 27.6%, p < 0.05). CONCLUSIONS: In a real world setting, medication compliance measured by MPR or proportion of patients with MPR ≥ 80% was statistically significantly higher among DPNP patients treated with duloxetine than those on pregabalin. The results suggest that medication choices between duloxetine and pregabalin had statistically significant effects on medication compliance outcomes.

MEDICATION NON-ADHERENCE AND NON-PERSISTENCE IN A MANAGED CARE DIABETES MELLITUS POPULATION
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OBJECTIVES: To evaluate patterns of medication use in Type II diabetes patients and to assess risk factors associated with non-adherence/non-persistence to drug therapy. METHODS: Administrative claims data (2003-2006) were used to identify newly diagnosed patients aged ≥20 years with at least one oral anti-diabetic/OAD) prescription. Patterns of medication use (augmentation, switch, gap) were evaluated. Medication adherence was assessed using MPR ≤0.8 and proportion of days covered (PDC) ≤0.8 were defined as non-adherence to the index and any OAD medication, respectively. Persistence was assessed for medication discontinuation (gap ≥ 90 days) and time to discontinuation. Logistic regression and Cox models were performed to investigate significant factors of non-adherence/non-persistence. RESULTS: A total of 7799 patients were identified. Patients initiated on biguanides (16%) were less likely to augment with another drug as compared to those on other medications (19%, p < 0.0001). Patients on fixed dose medication (FDM) thiazolidinedione & biguanide were more likely to switch (26%) and discontinue (45%), but less likely to experience a gap (17%) as compared to other medication cohorts (≤5% for switch, 54% for discontinuation, and ≤38% for gap). They were also least adherent to their index drug (16%), but their adherence rate to any OAD medication increased to 42%. Significant variables associated with non-adherence/discontinuation of drug therapy included younger age (≤65 years) (OR = 3.19 vs. 265 years, HR = 0.98, for non-adherence and discontinuation, respectively), fewer number of drugs taken (OR = 0.95, HR = 0.98), female (OR = 1.34, HR = 1.19), initiation on monotherapy or FDM (OR = 1.62, HR = 1.39), and increasing comorbidity (OR = 1.20, HR = 1.22). Significant factors also associated with discontinuation included not augmenting (HR = 0.83), switching medications (HR = 2.64), and no medication gap (HR = 0.23). CONCLUSIONS: Index medication played an important role in medication compliance based on non-adherence and non-persistence measures. Intervention/disease management programs designed to improve medication compliance should be tailored according to index medication, especially for those initiated on FDM thiazolidinedione & biguanide, for which patients displayed less optimal medication use patterns and were more likely to discontinue drug therapy.

IMPACT OF TREATMENT COMPLEXITY ON ADHERENCE AND GLYCEMIC CONTROL; AN ANALYSIS OF ORAL ANTI-DIABETIC AGENTS
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OBJECTIVES: The objective of the current study is to explore the impact of treatment complexity on patient behavior and subsequent glycemic control among type 2 diabetics (T2DM). METHODS: This was a retrospective evaluation of T2DM patients continuously enrolled in a national health plan during 2000-2007. Patients with a T2DM diagnosis, naïve to OADs, and not using insulin were included. A treatment complexity score was assigned based on dosage form, use frequency, and special directions (e.g. with food, time of day) with higher values indicating higher complexity. Adherence was calculated as a medication possession ratio (MPR) weighted by time on each OAD during a 1-year period. Baseline and follow-up A1c values were obtained for those with laboratory data. Logistic and linear multivariate regressions were conducted, controlling for patient demographics, baseline A1c and comorbidities.
RESULTS: A total of 94,860 patients were identified, 16,198 with A1c values. Mean age was 52.6 years, 55% male, 78% initiated on monotherapy (48% metformin, 17% sulfonylurea), and 20% initiated on 2 OADs. Mean treatment complexity score was 3.31 (range (h = 14), 29% were considered low complexity (≤2 points), 57% medium complexity (3–5), and 14% high complexity (≥5). Mean 1-year adherence to OAD therapy was 75%, 73% and 69% for low, medium and high complexity. After controlling for confounders, the odds of being adherent (MPR ≥ 80%) were 1.9% and 43% lower for medium and high complexity, versus low complexity regimens (p < 0.0001). Mean baseline and follow-up A1c values were 8.20% and 6.56%. After controlling for confounders, follow-up A1c values were predicted to be 0.36% lower among adherent patients than non-adherent patients. CONCLUSIONS: The complexity of diabetes treatments has negative effects on adherence, which results in poor glycemic control. Less complex diabetes treatments (i.e. less dosing frequency and no special directions) may offer improvements in patient adherence and subsequent A1c values.

HYBRID APPLICATIONS OF EXACT COVARIATE MATCHING AND PROPENSITY SCORE IN THE EVALUATION OF PATIENT PERSISTENCE
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OBJECTIVES: Hybrid applications of conventional exact covariate matching and propensity score concepts have recently been explored in the literature. In this research, we examine the advantages and disadvantages of hybrid usage of these two principles. Specifically, we evaluate the impact on comparable samples and treatment persistence measures from retrospective prescription claims data. METHODS: Patient persistence on anti-diabetic agents (Exenatide and Insulin Glargine) was used to compare six hybrid matching algorithms proposed by Yang and colleagues. We used EM’s Link1ogt longitudinal prescription database (LXRs). Persistence was evaluated by persistent days on quartiles, persistence rate over time, survival censoring rate, Kaplan-Meier survival curves and Cox Proportional Hazard Model. The hybrid matching algorithms were compared on run time, matching rate and bias reduction. RESULTS: Directly matched cohorts resulted in more comparable samples and improved the evaluation on treatment persistence relative to pre-matched sample. When propensity score played as a caliper, the matching process resulted in un-balanced variables and exhibited the weakest ability in bias correction due to the least drop in standardized difference. This was the only method among the six that failed assumption tests in the survival analysis (P < 0.05). Conversely, among all other algorithms where all factors were balanced, the algorithm in which propensity score acted in a parenting role had the least running time and greatest bias reduction, which was displayed by the largest decline in standardized difference. The smallest values in Fit-of-Statistics through the whole study period also indicated the strongest hold of assumptions in the Cox proportional hazard model, relative to the other five algorithms. CONCLUSIONS: In the assessment of treatment persistence through survival analysis, the role of propensity score as a parenting factor in the selection of matched samples outperformed alternative hybrid matching algorithms. In contrary, use of propensity score as a caliper factor, was least satisfactory.