from 2011-2013 we selected a cohort of men diagnosed with hypogonadism who had no evidence of hypogonadism in a six month pre period. These men were divided into those who received injectable testosterone therapy (case-T) and those who did not (control-NT). For analysis three controls were selected for each case using Greedy matching on age, race, Charlson comorbidity index (CCI), presence of medical insurance, and hypertension. Each cohort was followed for two years identifying outcomes including: gynecomastia, abnormal weight gain, stroke, myocardial infarction (MI), osteopenia, and osteoporosis. Median time to event was calculated for each group. Kaplan-Meier curves with Wilcoxon tests were used to compare time to event for each disease. RESULTS: 1625 cases were identified as well as 4794 Greedy matched controls. T-test and chi-square analysis on all matching criteria showed no difference between the two groups at baseline. Kaplan-Meier analysis associated testosterone therapy was followed for a median of 19 months in cases and NT of 3 months, p<0.01), osteopenia (T-9 months, NT-7 months, p=0.04), and MI (T=13 months, NT<10 months, p<0.01). CONCLUSIONS: Testosterone therapy was showed to increase the median time to event for osteoporosis, osteopenia, and MI while not increasing the occurrence of stroke or MI. This study has shown that with long follow up injectable testosterone therapy delays the negative effects of hypogonadism in older men.

PDB4

UTILIZATION OF NEGATIVE CONTROLS TO EXAMINE ASSOCIATION BETWEEN RARE GENETIC DISORDERS AND TYPE 2 DIABETES IN FOUR LARGE OBSERVATIONAL DATABASES

Desai J, 1Babistr S, 2St Louis M, 3Hyle C 4, Bonato V 5, Loomis K 2, 3, 5

1Tufts Medical Center, New York, NY, USA, 2Tufts Medial Center Inc, New York, NY, USA, 3Tufts University, Cambridge, MA, USA

OBJECTIVES: The association between common and rare genetic disorders, hereditary fructose intolerance (HFI) or alpha-1 antitrypsin deficiency (A1AT), and type 2 diabetes (T2D) has not yet been investigated. Therefore, the objective of this undertaking was to assess the association between both genetic disorders and T2D using four large observational databases and adjust for ascertainment bias. METHODS: Patients with a HFI diagnosis (ICD-9: 271.2) or A1AT diagnosis (ICD-9: 273.4) and T2D were identified in the Truven MarketScan Claims Database (2007-2012), Optum Claims Database (2002-2012), Humedica Electronic Health Records (EHR) Database (2007-2012), and GE Centricity EHR Database (1995-2012). The association between both genetic disorders and T2D was controlled for disease heterogeneity, and rare disorders were matched on the basis of whether they had no established relationship with T2D. RESULTS: The unadjusted association between both genetic disorders and T2D was positive and hetero-
geneous (p=0.001) in our four databases. The adjusted pooled odds ratio (OR) calculated using a random-effects model meta-analysis was 3.48 (95% CI: 2.1-5.46) for HFI and 2.71 for A1AT (95% CI: 1.75-4.20). After pooling all patients and adjusting for the negative controls using a random-effects model meta-analysis, it was noted that the patients with T2D had a 73% higher risk of being diagnosed with either disorder compared to patients without diabetes. CONCLUSIONS: The risk of T2D among patients with HFI and A1AT is significantly higher than among those without diabetes, and these risks are consistent across different databases. Further research is needed to elucidate the mechanisms underlying this association.

PDB5

PREDICTING CHRONIC COMORBID CONDITIONS OF TYPE 2 DIABETES IN NEWLY-DIAGNOSED DIABETIC PATIENTS

Bagreian N, 1Smith-McAllen A2, Nigam S 3, Blecker S 4, Schmidt MA 5, Sontag D 1

1New York University, New York City, NY, USA, 2Independence Blue Cross, Philadelphia, PA, USA

OBJECTIVES: Type 2 Diabetes (T2D) and its comorbid conditions are imposing large burdens on health-care systems worldwide. Once a patient is diagnosed with T2D, their risk for immediate chronic comorbid conditions is less quantified. We aim to build risk prediction models for onset of cardiovascular, cerebrovascular, renal, and eye severe conditions for newly-diagnosed patients with T2D. METHODS: Our cohort includes 4 million insurance beneficiaries of age ≥18 years between 2005 and 2013. Of these subjects, 34,411 patients were newly-diagnosed with T2D, had continuous enrollment for 6-months pre- and 5-years post-onset, and did not have the comorbid condition diagnosis before T2D. We developed a prediction model for each condition based on L1-regularization method, which selects few(less than 350 predictor) relevant risk factors from approximately 27,000 general variables derived from claims data. We defined comorbid conditions based on the validated diabetes complications severity index. RESULTS: For patients newly-diagnosed with T2D, we predict new onset of cardiovascular conditions with Area Under Curve(AUC)=0.69±1-4, cerebrovascular conditions with AUC=0.71±1-4, and eye conditions with AUC=0.65±1-4. Our methods discover risk factors, some of which have significant (p<0.001) differences in odds ratios between the groups. A1AT and cerebrovascular diseases are associated with a high incidence of complications in blood for middle-aged patients(60-65 yrs) (male-OR 1.39 (9-19) vs. female-OR 2.1 [1-5-3]) in cardiovascular events; High erythrocyte distribution width in old patients (male-OR 1-28 [1-2]) vs. female-OR 1 [0-8-3]), increasing age (male-OR 1.10 [1-35-3] vs. female-OR 1.06 [1-22-3]), and decreasing thyrotropin for old patients (male-OR 1 [0-8-3] vs. female-OR 1 [0-8-3]). CONCLUSIONS: Our proposed model shows promise in risk prediction and risk factor discovery for 4 comorbid complications of T2D in patients newly-diagnosed with T2D. Further research is needed to understand how these predictions translate to prevention and delay of the complications onset.

PDB6

USING A TRANSITION-TREATMENT MODEL TO EVALUATE THE EFFECTS OF NEGLECTING HBcA1 DFTR IN ORAL ANTI-DIABETIC DRUGS FOR TYPE 2 DIABETES

Xu Y, 1, 2Medicare Research Inc., St. Louis, MO, USA, 2Medical Modeling Inc., Indianapolis, IN, USA

OBJECTIVES: HBcA1 dftr is the gradual loss of treatment efficacy typically for oral anti-diabetic drugs. Modeling studies including the effects of HBcA1 dftr in oral anti-diabetic drug. Key to the literature. Clinical outcomes can be distorted if the drifts are not considered. Our study compared the simulated clinical outcomes of type 2 diabetic mellitus (T2DM) treatments with and without drift. METHODS: Lifetime clinical outcomes of treatments were estimated using a Monte Carlo simulation model. Simulated cohort was newly diagnosed age ≥65 with T2DM patients with an initial 8.5% HBcA1 level. Demographic and clinical characteristics were sourced from NHANES data. Two scenarios were simulated. Both scenarios were propensity score-matched with Vijan et al. (2012). 11,100 patients were assigned with metformin with and without drift over a stable HBcA1 of 8.5%. The second compared metformin with drift to basal-bolus insulin. Data drift were extrapolated from clinical trials. RESULTS: Metformin treatment without drift gained 3.02 life years (LY), while with drift the LY gain was only 0.08. For 100,000 simulated patients, metformin without drift prevents 1,960 myocardial infarctions (MI), 320 strokes, 10,610 cases of blindness, 27,390 lower extremity amputations (LEAs), and 19,010 end stage renal disease cases requiring dialysis (ESRDs). When HBcA1 dftr was considered, the benefits of metformin treatment shrank to no additional strokes, prevention of 500 cases of blindness, 700 LEAs, and 410 ESRDs, with an increase of 100. The direct comparison of LY of metformin with drift and insulin treatment is not feasible due to the fact that the insulin therapies have a 1:51 LY over metformin. Compared with metformin treatment with drift, insulin treatment prevented more complication events including 2,110 MIs, 140 strokes, 8,340 cases of blindness, 20,450 LEAs, and 16,360 ESRDs. CONCLUSIONS: HBcA1 dftr in oral anti-diabetic drugs has substantial effects on clinical outcomes and should be incorporated into diabetes health outcomes.

PDB7

PREVALENCE AND TIMING OF COMORBID COMPLICATIONS OF TYPE 2 DIABETES IN LARGE COHORT OF INSURANCE SUBSCRIBERS

Bagreiaian N, 1Smith-McAllen A, Nigam S, 1Blecker S, 2Schmidt MA, 2Sontag D

1New York University, New York City, NY, USA, 2Independence Blue Cross, Philadelphia, PA, USA

OBJECTIVES: Type 2 Diabetes (T2D) has multiple comorbidity complications. Early detection and management of these complications can improve survival. In T2D, we have investigated the prevalence and timing of occurrence of complications of diabetes including cardiovascular, cerebrovascular, renal, and eye complications, for patients newly-diagnosed with T2D. METHODS: We studied a cohort of 4 million insurance beneficiaries of age ≥18 years between 2005 and 2012. Of these, 66,778 patients were newly-diagnosed with T2D, and had continuous enrollment for 3-years prior-to and 1-year post-T2D diagnosis. We defined diabetes complications based on the diabetes complications severity index. We assessed number and percentages of patients with each complication, in total, and in relation to time of T2D diagnosis. RESULTS: Among 66,778 patients newly diagnosed with T2D, 13,538 had at least one complication during the observation period. Of these patients, 9,526(70%) had at least one T2D complication. The most common T2D complications were cardiac events with 2,115(50%) had them before T2D diagnosis, and 571(17%) had them within 6 months after T2D diagnosis. A total of 10,143 patients had cardiovascular complications during observation period. Of these patients, 7,388(72%) had them before T2D diagnosis, and 707(7%) had them within 6 months after T2D diagnosis. A total of 3,652 patients had eye complications during study period. Of these, 2,215(50%) had them before T2D diagnosis, and 517(17%) had them within 6 months after T2D diagnosis. A total of 2,286 patients had eye complications during study period. Of these patients, 928(40%) had them before T2D diagnosis, and 355(15%) had them within 6 months after T2D diagnosis. Anti-diabetic drugs are rare in the literature. Clinical outcomes can be distorted if anti-Diabetes medications during 2-year follow up period to identify incident dementia. Multivariable logistic regressions were used to estimate the association between anti-diabetic drugs and dementia. Cross- sectional weights were used to adjust for the complex survey design. RESULTS: Overall, after adjusting for demographics,