data by education level from the Bureau of Labor Statistics to the WPAI scores. Work productivity and indirect social cost were compared across patient sociodemographic characteristics and disease severity. **RESULTS:** A total of 191 MS patients were evaluated at baseline with 114 working either full-time (78.1%) or part-time (21.9%). In this working sample, 75.4% were females, 72.8% were married, 71.1% were below 50 years old and a majority were White (88.5%). The overall productivity loss due to MS among full-time employed patients and part-time employed patients was 42.5% (SD: 26.9) and 42.1% (SD: 30.6), respectively. This translates into a substantial productivity loss of 17 hours of loss time in a 40-hour work-week for full-time workers and 8.4 hours of loss time in a 20-hour work week for part-time workers. At average wages, this productivity loss equates to an indirect annual social loss of $18,106 per patient (SD: $13,265) among full-time workers and $8,871 per patient (SD: $7,080) among part-time workers. Indirect social costs were significantly correlated with increasing MS severity ($r = 0.21$; $p = 0.0.029$). **CONCLUSIONS:** Multiple sclerosis results in a substantial loss of work productivity among patients, which collectively results in significant indirect social cost. The MS-related indirect social costs increase with increasing MS severity.

CO4

MICRO-COSTING VS GROSS-COSTING IN THE ESTIMATION OF COSTS FOR THE PHARMACOECONOMIC EVALUATION OF GLAUCOMA IN KOREA

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OBJECTIVES: This study compares the result of cost estimation for glaucoma outpatients using micro-costing and gross-costing methods. It also examines the factors contributing to the difference in results and investigates the impact of the result by costing method on Budget Impact Analysis(BIA). **METHODS:** Per year costs of glaucoma outpatients were estimated for micro-costing, which consists of medical fee, eye examinations and laser therapy. A decision tree designed with 6 pathways was used. A patient's visit frequency and transition probability for each pathway were obtained from literature and clinical expert opinions. In gross-costing, yearly per-capita outpatient average costs were calculated by using health insurance statistics data on glaucoma (ICD 10 code: H40). For BIA, each costing result was applied to the patients nationwide. **RESULTS:** The calculated costs of annual outpatient were $148.7 and $71.1 for micro-costing and gross-costing, respectively. The cost calculated by pathway in micro-costing ranged from the minimum of $142.9 to the maximum of $589.8. BIA result were $11,302,788 for micro-costing and $5,407,527 for gross-costing. **CONCLUSIONS:** One factor contributing to the difference between the two methods is the gap between the standard model and the actual use of medical services. Another factor particular to gross-costing is that in the case a patient changes medical institutions, data from previous institutions do not accumulate, which underestimates the total cost of medical care. As a result, different costing methods may result in different decision-making of new drugs.

PODIUM SESSION IV: DIABETES STUDIES

DB1

USING POPULATION-BASED ESTIMATES FOR DISEASE MODELING: POTENTIAL BIAS COMPARED TO USING DISEASE-SPECIFIC DEATH AND COMPLICATION RISK ESTIMATES

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Most previous work estimating survival rates for diabetes has been based on logistic regression or standardized ratios to derive odds ratios rather than being based on survival analysis with risk estimates over time. Few studies have estimated the excess risk between those with and without diabetes. **OBJECTIVES:** The purpose of this study was to estimate the excess risk and cumulative relative risks of death and complications between those with newly diagnosed diabetes and those without. **METHODS:** Newly diagnosed type 1 and 2 diabetes cases aged 35 and over were identified from the Ontario Diabetes Database and matched 1:2 using propensity scores with controls (non-diabetes cases). Using linked provincial administrative databases, data on death and the following complications were recorded: myocardial infarction, stroke, angina, heart failure, blindness, amputation, nephropathy and cataract. Kaplan Meier curves were calculated to estimate the probability of being event-free for those with and without diabetes for up to 10 years of follow-up. **RESULTS:** A total of 610,852 patients aged 35 and over with diabetes were matched with 1,221,704 patients without diabetes. For those with diabetes vs. those without, there was a statistically significant increased relative risk at 10 years for death (1.417, [95%] CI 1.415–1.418), myocardial infarction (2.094, [95%] CI 2.092–2.095), stroke (1.877, [95%] CI 1.874–1.879), angina (1.526, [95%] CI 1.525–1.527), heart failure (2.520, [95%] CI 2.529–2.522), amputation (6.824, [95%] CI 6.823–6.824), nephropathy (2.902, [95%] CI 2.901–2.904), blindness (1.212, [95%] CI 1.205–1.218) and cataract (1.326, [95%] CI 1.324–1.327). **CONCLUSIONS:** Diabetes is a significant health problem with excess risk of death and complications typically associated with diabetes. Using estimates of risk of death or complications for a general (non-diseased) population can result in significant underestimates of disease burden or cost-effectiveness in decision analytic models of disease management or prevention.

DB2

PERSISTENCE WITH BASAL SUPPORTED ORAL THERAPY—COMPARISON OF INSULIN GLARGINE VERSUS NPH INSULIN

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OBJECTIVES: To assess the persistence of type-2 diabetic patients treated with basal supported oral therapy (BOT) with insulin glargine (GLA) compared to NPH insulin (NPH). **METHODS:** We performed a retrospective cohort study using claims data for ambulatory prescriptions within the German statutory health-insurance scheme, based on a representative sample of more than 80 % of German community pharmacies. Insulin-naive patients treated with oral antidiabetic drugs (OAD) who were additionally initiating therapy with GLA or NPH between January 2003 and December 2006 were included and followed up until December 2007. Persistence was defined as the duration of time from initiation of GLA or NPH until switching to intensified conventional insulin therapy (ICT). A switch to ICT was assumed whenever a short-acting insulin was prescribed for the first time followed by at least one prescription of a long-acting insulin within six months. Univariate and multivariate Cox proportional hazards models were used to compare both cohorts. **RESULTS:** In total, 97,998 patients (61,070 Glargine and 36,928 NPH) were included. Within the observation period, 23.5 % of GLA patients and 28.0 % of NPH patients switched to ICT. On average, these patients stayed 388 days on GLA and 313 days on NPH, respectively ($p < 0.001$, log-rank test). The risk of switching to ICT was significantly higher for NPH patients compared to GLA patients (unadjusted hazard ratio [HR] 1.34 (99 % CI: 1.29–1.38)). After adjustment for predefined covariables i.e., type of physician (general practitioner vs. specialist), region, insurance status (member, family member, retired), health insurance company, comedication, number of OAD, dose of basal insulin, the risk for NPH patients remained significantly higher (adjusted HR: 1.22 (99 % CI: 1.18–1.27). **CONCLUSIONS:** Type 2 diabetic patients under basal supported oral therapy treated with insulin glargine stay significantly longer on initial therapy until they switch to ICT when compared to NPH.

DB3

USING ELECTRONIC MEDICAL RECORDS TO IDENTIFY UNDIAGNOSED DIABETES MELLITUS IN PRIMARY CARE PRACTICES

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OBJECTIVES: To assess the prevalence of potentially undiagnosed diabetes mellitus (UDM) in a nationally representative patient sample. **METHODS:** The data source was GE's Medical Quality Improvement Consortium (MQIC) database (February 2009) containing electronic medical record (EMR) data on >11 million patients in the U.S. Two previously published (Holt, et al, 2008) search strategies were applied to identify patients without diagnosis or medication evidence of DM, but with a fasting (FBG) or random blood glucose (RBG) result available (denominator for prevalence estimates). Strategy A patients were non-DM patients whose last glucose on record (LGOR) = RBG ≥11.1 or FBG ≥7.0 mmol/l. Strategy B patients were non-DM patients with LGOR (FBG or RBG) ≥7.0 mmol/l. Strategy A and B patients were each grouped by age/sex categories, and prevalence of UDM calculated. The time since LGOR to datacut date was also assessed. **RESULTS:** From 11,196,881 total patients, 923,007 had diagnosed DM on record (n = 570,723) or were presumed to have DM on the basis of prescribed oral hypoglycemics or insulin (n = 352,284). After excluding additional patients with gestational diabetes and impaired glucose tolerance/pre-diabetes,10,147,355 remained. Of these, 3,799,599 had a glucose result available, with 38,068 identified as possible UDM using Strategy A (prevalence 0.38%), and 221,624 using Strategy B (prevalence 2.18%). In both instances, UDM prevalence increased with increasing age, in both sexes. Over 2 years had elapsed since the LGOR for over 50% of Strategy A patients, and 40% of Strategy B patients. **CONCLUSIONS:** The application of simple search algorithms to a large EMR database suggests there may be substantial underdiagnosis of DM in the US general population.

DB4

RISK OF STROKE OR MYOCARDIAL INFARCTION OF T2DM PATIENTS TREATED WITH PIOGLITAZONE OR NON-THIAZOLIDINEDIONE IN A MANAGED CARE SETTING IN THE UNITED STATES

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OBJECTIVES: To evaluate the risk of stroke or myocardial infarction (MI) in patients with type-2 diabetes mellitus (T2DM) receiving pioglitazone (PIO) or non-thiazolidinedione (Non-TZD) therapies. **METHODS:** A analysis of I3 Innovus database from January 1, 2000 to June 30, 2007 was conducted. T2DM patients (ICD-9 diagnosis codes 250.x0 or 250.x2) were grouped into PIO or Non-TZD cohorts based on the study drugs initiated. The index date is the first dispensing of pioglitazone or Non-TZD medications. Follow-up started at the index date and ended upon disenrollment from the health plan, first occurrence of stroke or MI, or the end of the period,