antihypertensive drug class was assessed in the calendar year (CY) 2000. The time to the incidence of dementia was assessed from CY2001 to CY2002. A Multivariable Cox regression model adjusted for sociodemographic factors, comorbidities, comediations and other factors was constructed to estimate the adjusted relative risk of dementia associated with use of AHT drug classes. The analysis was stratified for patients with and without hypertension. RESULTS: A total 377,838 patients were included in the final analysis. The adjusted Hazard Ratios (HRs, 95% CI) for risk of dementia with different classes was: Angiotensin receptor blockers (ARB) 0.76 (0.70–0.83), Angiotensin converting enzyme inhibitors (ACEI) 0.89 (0.85–0.93), CCB 0.93 (0.89–0.97), Diuretics 0.86 (0.83–0.90), Alpha blockers 1.05 (1.00–1.09) and Beta-Blockers 0.96 (0.92–1.01). Only ACEI and ARB were significant in a stratified analysis of patients with HT (ACEI 0.89, 0.85–0.93; ARB 0.78, 0.71–0.85) and patients without HT (ACEI 0.81, 0.69–0.94; ARB 0.55 (0.34–0.88). CONCLUSIONS: Drugs acting on the Renin-Angiotensin system (RAS) may be protective for dementia irrespective of the status of hypertension. More studies are required to explore this association further.

**DB3**

**DIRECT AND INDIRECT COSTS ASSOCIATED WITH DIABETES PATIENTS WITH AND WITHOUT MACROVASCULAR COMORBIDITIES IN THE UNITED STATES**

*Johnson AL, FoPulz, Radahan L, et al.* Mayo Clinic, Rochester, MN, USA; *Cleveland Clinic, Cleveland, OH, USA*

**OBJECTIVES:** Macrovascular disease remains a common and costly comorbidity in patients with diabetes. The purpose of this study was to examine the marginal impact of macrovascular comorbidities on direct and indirect costs associated with patients with diabetes in the United States. METHODS: Using the pooled Medical Expenditure Panel Survey (MEPS) 2003 and 2005 data, a nationally representative adult sample (age ≥18) was included in the study. Direct cost was measured by the total health care expenditure. Indirect cost was calculated from the lost productivity from missed work days and additional bed days due to illness/injury based on the 2005 average national hourly wage. The direct costs of both 2003 and 2005 data were adjusted to 2005 dollars. Given the heavily right-skewed distribution of the cost data, GLM with log-link function and gamma variance was used to identify the relationship between macrovascular conditions and costs after controlling for age, sex, race, ethnicity, education, income, smoking status, health insurance, and number of other comorbid categories. Negative binomial models were applied to analyze the outcomes of missed work days and bed days. All statistics were adjusted using the population weights from the MEPS. RESULTS: The average annual heath care expense for patients with diabetes was $10,909. The average annual missed work days and additional bed days due to illness/injury for patients with diabetes were 6.3 and 14.8, respectively, equivalent to $2.366 in total. Compared to diabetes patients without macrovascular comorbidities (N = 3132), those with macrovascular comorbidities (N = 762) had statistically significant higher annual health care expenses ($5587, p < 0.001), more missed work days (4.05, p < 0.001) and more bed days (7.15, p < 0.001). The marginal lost productivity cost was $1257 annually. CONCLUSIONS: Macrovascular comorbidities in patients with diabetes result in increased direct and indirect costs.

**DB4**

**COST OF DIABETIC-RELATED COMPLICATIONS AND CARDIOVASCULAR EVENTS BY TYPE OF ONSET AND SETTING ANNULARLY FOR THE FIRST THREE YEARS FOLLOWING ITS ONSET**

*Simons WJ, Hagan MA*  

*Global Health Economics & Outcomes Research Inc, Summit, NJ, USA; Daichi-Sankyo, Whippany, NJ, USA*

**OBJECTIVES:** This study evaluates using Tobit regressions the costs specific to each type of complication following its onset in annual increments for three years by setting (inpatient and outpatient). METHODS: We use a U.S. managed care database to identify newly diagnosed type 2 diabetics and then identify the initial onset of manifestations of diabetic related complications. Detailed ICD-9 codes associated with each type of complication were used to define dichotomous variables as well as a time to event variable, one for each selected type of complication. Outpatient and inpatients costs were accrued for one, two and three year periods. Because of the number of zero costs (i.e., not everyone consumes resources such as hospitalization annually), Tobit regressions were used, a combination of a probit probability model and a linear regression to resolve the disproportionality in resource utilization. Parameter estimates from a Tobit are not directly interpretable as those from a linear regression and require transformation to obtain the predicted cost values. RESULTS: A total of 351,900 type 2 diabetics were identified in the analyses; 663 patients consumed inpatient services compared to 226,972 patients consuming outpatient services in year one related to a manifestation of a diabetic related complication. For those who encountered inpatient services, ischemic heart disease ($43,268), congestive heart failure ($43,870), lacticacidosis ($29,588) and renal manifestations ($24,995) were the most costly. Outpatient costs for these complications were significantly less, $682, $781, $1,031, and $1,267, respectively. Following the onset of these complications additional costs, as accrued in year two, $50,458, $51,698, $53,080 and $28,823, albeit at a declining rate. The total first year cost across all types of complications was $2,827 per person (a 0.00993 first year event rate). CONCLUSIONS: The cost of diabetic-related complications is considerable even in the first year of newly diagnosed type 2 patients.