COSTS ASSOCIATED WITH HCV AND RELATED COMPLICATIONS IN THE UNITED STATES FROM A MANAGED CARE PAYER’S PERSPECTIVE
McAdum M1,2, Hanne CT3, Binkin NJ1, Denzil B1, McCurry EA4, Brziner D3
1University of Utah, Salt Lake City, UT, USA, 2Sabre Healthcare Solutions, Inc., 3Vermont Center for Health Information, Montpelier, VT, USA, 4University of Massachusetts Medical School, Worcester, MA, USA

OBJECTIVES: Estimate current healthcare costs for HCV and its consequences in a large, US managed care organization (MCO). METHODS: Patients with ICD-9 diagnosis codes for Hepatitis C Viral (HCV) infection (1st diagnosis = index date), age 18-99 with >6 months of continuous enrollment were identified in a large, MCO claims database from 1/1/2002 to 3/31/2010. HCV patients were matched 1:1 to patients without HCV diagnosis or advanced liver disease (ALD), based on gender, age, index year (where synthetic index date = enrollment + median post-enrollment days to case index date), hospital referral region (HRR) state, pre-index healthcare costs, alcoholism, HIV/AIDS, and modified Charlson Comorbidity Index. Cases were limited to those at least 1 year old without liver involvement (CLC), compensated cirrhosis (CC), decompensated cirrhosis (DC), hepatocellular carcinoma (HCC), or liver transplant. Mean per-member per-year (PMPY) costs were estimated post-index (total post-index cost of all patients / sum of all post-index days/65). Incremental PMPY costs for HCV patients vs. matched controls were cost-effectiveness analyses for each duration. RESULTS: 34,597 HCV patients were matched to 330,435 controls. Mean age of cases was 49.6 (±8.5) years; 62% were female; 78% had C-HCV, 4% CC, 12% DC, 3% HCC, and 3% transplant. Incremental costs vs. controls overall were $6,681 PMPY. Incremental PMPY costs for patients without ALD, incremental PMPYs were C-HCV: $5,870, and CC: $5,330. Incremental drug costs for HCV treatment were $2,739 overall, ranging from $1,893-8,736 for different states. C-HCV and CC drug costs were $2,659 and $3,102, respectively. CONCLUSIONS: Current estimated incremental PMPY costs burden to MCOs were higher than previously reported and increased substantially with progression to ALD. The higher estimated costs of managing chronic HCV were likely due to high non-liver related costs among HCV patients or imprecise coding of CC.

CARDIOVASCULAR DISEASE SCREENING IN HIV-INFECTED PATIENTS – A COST-EFFECTIVENESS ANALYSIS
Nolte J1, Neumann T2, Neumann A3, Manne J4, Mostardt S3, Brady T5, Nolte J1, Neumann T2, Neumann A3, Manne J4, Mostardt S3, Brady T5, Hoffmann UP, Gazelle GS, Wassem J, Goehler A1
1Institute for Technology Assessment, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA, 2University Hospital Essen, Essen, Germany, 3University Duisburg-Essen, Essen, Germany, 4Harvard School of Public Health, Boston, MA, USA, 5Massachusetts General Hospital, Boston, MA, USA

OBJECTIVES: HIV-infected patients are at an increased risk of cardiovascular diseases (CVD), resulting in the need for integration of CVD screening into HIV treatment guidelines. We evaluated different CVD screening strategies in HIV-infected patients with regard to effectiveness, costs, and cost-effectiveness. METHODS: Cost-effectiveness analyses using a microsimulation model reflecting coronary artery disease (CAD), myocardial dysfunction, and heart failure in HIV-positive men. Data sources: Patient-level data from HIV-HEART study, literature, German reimbursement database. Time horizon: Diagnostical phase, lifetime. Perspective: Societal. Intervention: No coronary artery disease (CAD), myocardial dysfunction or advanced liver disease (ALD), based on index date, diagnosis codes for Hepatitis C viral (HCV) infection (1st diagnosis = index date), age 18-99 with >6 months of continuous enrollment (total index period = 10 years). Health states: State without liver involvement (CLC), compensated cirrhosis (CC), decompensated cirrhosis (DC), hepatocellular carcinoma (HCC), or liver transplant. If pathologic ECG or BNP (“Outpatient”), ECG (“Cardiologist”), “Cardiologist” with coronary computed tomography angiography (“Cardiologist”), “Cardiologist” with coronary computed tomography angiography and stress-ECG (“Cardiologist”), “Cardiologist” with coronary computed tomography angiography or stress-ECG (“Outpatient”), ECG + BNP with echocardiography + stress-ECG for pathologic ECG or BNP (“Outpatient”), ECG + BNP with echocardiography + stress-ECG (“Cardiologist”). Costs: Incremental costs of managing chronic HCV were estimated post-index (total post-index cost of all patients / sum of all post-index days/65). Incremental drug costs for HCV treatment were $2,739 overall, ranging from $1,893-8,736 for different states. C-HCV and CC drug costs were $2,659 and $3,102, respectively. Incremental costs vs. controls overall were $9,681 PMPY. Incremental PMPY costs for patients without ALD, incremental PMPYs were C-HCV: $5,870, and CC: $5,330. Incremental drug costs for HCV treatment were $2,739 overall, ranging from $1,893-8,736 for different states. C-HCV and CC drug costs were $2,659 and $3,102, respectively. CONCLUSIONS: Current estimated incremental PMPY costs burden to MCOs were higher than previously reported and increased substantially with progression to ALD. The higher estimated costs of managing chronic HCV were likely due to high non-liver related costs among HCV patients or imprecise coding of CC.

IMPACT OF MULTIPLE MEDICATION COMPLIANCE ON CARDIOVASCULAR OUTCOMES IN PATIENTS WITH TYPE II DIABETES AND COMORBID HYPERTENSION CONTROLLING FOR ENDOGENEITY BIAS
An J1, Nichol MB2
1University of Southern California, Los Angeles, CA, USA, 2University of Cincinnati, Cincinnati, OH, USA

OBJECTIVES: To investigate the impact of multiple medication compliance on the occurrence of cardiovascular disease (CVD) outcomes using instrumental variables (IV) to control for endogeneity bias. METHODS: We identified individuals who newly start oral diabetes or hypertension medication therapy between July 2006 and June 2007 with the pre-existing comorbid hypertension or diabetes prescription history during 6 months of pre-index period using administrative claims data from a managed care organization in southern California (N=1,565). Multiple medicine compliance was defined as a proportion of days covered for both diabetes and hypertension medications during three years of follow-up. Cardiovascular outcomes included myocardial infarction, stroke, and peripheral vascular disease. Instrumental variables estimation using physician related variables including a dummy for the same prescribers for both medications, the percentage of follow-up visit per physician, and the percentage of statin prescription per physician was implemented. Parameter estimates were compared using probit and IV probit models. RESULTS: Multiple compliance was 0.636 (±0.008) for diabetes medications, 0.686 (±0.008) for hypertension medications, and 0.527 (±0.008) for both medications. After adjusting for age, gender, baseline clinical measures (Hemoglobin A1C, blood pressure, and lipid), pre-existing condition (either diabetes or hypertension), and Elixauser-comorbidity, adherence to both medications was not significantly associated with decreased CVD rate (-0.070 ± 0.118, p=0.554) based on probit model. After controlling for endogeneity, however, the impact of multiple medication adherence became statistically significant using IV-probit model.
OBJECTIVES: To study the patterns of discontinuation of ACEI/ARB therapy and to identify predictors associated with discontinuation among post myocardial infarction (MI) patients enrolled in Medicare. METHODS: This is a retrospective cohort study utilizing the Medicare 5% national sample claims data for 2006-2007. Medicare beneficiaries with continuous enrollment in Part A, B, and D in 2006-2007, and who were hospitalized for an acute MI between January 1 and June 30 of 2006, were identified using a validated algorithm, requiring a hospitalization episode ≥3 and ≤180 days with an ICD-9-CM of 410.x1 as primary or secondary diagnosis. Post-MI patients with an ACEI/ARB prescription within 90 days of discharge were followed to study patterns of discontinuation until December 31, 2007. Time to discontinuation was defined as the days from initiation of therapy to a therapy gap of ≥90 days. Survival curves were constructed using the Kaplan-Meier technique, and potential predictors of therapy discontinuation, including demographic characteristics and comorbidities, were identified using univariate and proportional hazards regression models. RESULTS: Of the 1,949 subjects in the cohort, 66.1% were females, 82.9% were Caucasian with a mean age of 78.6 ± 8.2 years. Approximately 20% of the patients discontinued therapy within six months and 45% discontinued within 12 months. Caucasians were less likely to discontinue therapy as compared to blacks (HR = 0.774 [0.638-0.939]; p = 0.0094). Among the comorbid conditions, dyslipidemia (HR = 0.734; [0.612-0.880]; p = 0.0008), cerebrovascular disease (HR = 1.124, [0.986-1.281]; p = 0.0080) and COPD (HR = 1.154, [1.013-1.316]; p = 0.0191) were significant predictors of time to discontinuation. Patients on concomitant beta-blocker (HR = 0.771, [0.627-0.949]; p = 0.0141) and statin (HR = 0.857, [0.736-0.999]; p = 0.0491) therapy were less likely to discontinue ACEI/ARB therapy. CONCLUSIONS: Many patients initiating ACEI/ARB therapy following MI fail to consistently remain on therapy as is evident by the high rates of discontinuation within a year. Several factors including race and comorbidities are potential predictors of this behavior.

PODIUM SESSION III: RESEARCH ON METHODS: ECONOMIC EVALUATIONS

EE1

SYSTEMATIC REVIEW OF GUIDELINES FOR HEALTH ECONOMIC EVALUATIONS

Melynk P, Wagner M, Dourdin N, Rindress D

BioMedCom Consultants Inc., Dorval, QC, Canada

OBJECTIVES: To review currently available guidelines on conduct and reporting of health economic (HE) evaluations have been developed over several decades differing somewhat in their objectives, scope and specific recommendations. We systematically reviewed all accessible HE guidelines to identify commonalities and differences with respect to types of guidelines, content (methodological approach); and prescription based scales (identified using national drug codes): Chronic

EE2

VALIDATION OF THE UPDATED CHARLSON COMORBIDITY INDEX (CCI) TO PREDICT HEALTH CARE UTILIZATION FOR DIABETIC PATIENTS USING ADMINISTRATIVE DATA

Cheng Li1, Rascati KL2, Trice S1, Lawson K2, Barner JC2

1The University of Texas at Austin, Austin, TX, USA; 2University of Texas at Austin, Austin, TX, USA; 3Department of Defense, Fort Sam Houston, TX, USA

OBJECTIVES: To validate the recently updated Charlson Comorbidity Index (CCI) for the prediction of future healthcare utilization for diabetic patients. METHODS: Administrative claims data were obtained for diabetic patients enrolled continuously for three years in the Department of Defense TRICARE program for retrospectively analyzing. The updated and the original CCI scores were calculated using base-line year data. Linear regression models were used to estimate log-transformed healthcare expenditures (COST) for one- and two-year post-index periods. Zero-inflated negative binomial regression models were used to estimate the number of hospitalization days (HOS) and the number of emergency visits (EMV) for one- and two-year post-index periods. The outcome variables were then dichotomized (above or below the 90th percentile of COST, ≥ 1 HOS or none, ≥ 1 ED or none) and estimated using logistic regression models. Adjusted R², Akake information criteria (AIC), and c statistics were assessed to compare the two CCI versions. RESULTS: Of a total of 8,704 patients were included in the study population had a mean age of 51.0 years (SD: 10.5), and 46.3 percent were male. In the linear regression models, the updated CCI explained more variance than the original CCI in one-year COST (adjusted R² = 13.9% vs. 11.5%) and two-year COST (adjusted R² = 15.7% vs. 13.9%), adjusting for age and sex. The updated CCI was a better predictor of one- and two-year HOS (AIC = 8581, 13821) as well as one- and two-year ED (AIC = 17009, 25200). In the logistic regression models, the updated CCI performed better in predicting all study outcomes (p = 0.019 ± 0.754) than the original CCI (p = 0.611 to 0.737). CONCLUSIONS: In a population of diabetic patients, the updated CCI showed improved predictive performance compared to the original CCI. The updated CCI should be validated in other patient populations.

EE3

PERFORMANCE OF DIFFERENT COMORBIDITY MEASURES IN PREDICTING HEALTH CARE EXPENDITURE IN PATIENTS WITH DEMENTIA

Johnson M, Mehta S, Chinnas A3, Bhownik D, Dwivedi N, Kambie P

University of Houston, Houston, TX, USA

OBJECTIVES: To evaluate the performance of diagnosis based and prescription based comorbidity measures in predicting total health care expenditure in patients with dementia. METHODS: This cross-sectional study was conducted using the household component of the Medical Expenditure Panel Survey (MEPS) data from 2000 to 2003 (panel 5, 6, and 7). Dementia patients were identified using cccodex and International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes. Total health care expenditure was defined as the sum of inpatient, outpatient and pharmacy costs. The comorbidity measures evaluated were diagnosis based scales (identified using ICD-9-CM codes): D’Hoore’s adaptation of Charlson comorbidity index (CCI), and Exlichauer comorbidity algorithm; and prescription based scales (identified using national drug codes): Chronic Disease Score (CDS-1 and CDS-2). The performance of comorbidity measures was compared using the adjusted R² derived from multiple linear regression models that included baseline demographic (age, race, sex) socio-economic (income, in- surance, geographic region), and perceived health status variables. The performance of combined diagnoses and prescription-based scales was also compared. RESULTS: After the addition of comorbidity measures was: Exlichauer (0.3326), CDS-2 (0.3427), D’Hoore (0.2184), and CDS-1 (0.2388). The performance of combined diagnosis and prescription based measures was: CDS-2/Exlichauer (0.4356), CDS-2/D’Hoore (0.3959), CDS-1/D’Hoore (0.3548), CDS-1/Exlichauer (0.2537). CONCLUSIONS: The Exlichauer and CDS-2 comorbidity measures combined had the highest prediction of health care expenditure in patients with dementia. The improvement in risk adjustment from the combination of diagnosis and prescription based measures indicates that these different types of measures may be capturing different aspects of the construct of comorbidity, constructs other than comorbidity, or both.

EE4

BOOTSTRAPPING USED TO PROVIDE ROBUST MEAN AND VARIANCE ESTIMATES FOR COMPARING PATIENTS TREATED WITH LIRAGLUTIDE TO A LARGE COMPARISON COHORT

McAdams Marx C3, Ye X1, Bouchard P, Ageno M7, Conway C7, Brixner D7

1University of Utah, Salt Lake City, UT, USA, 2Novo Nordisk, Inc., Princeton, NJ, USA, 3Novo Nordisk, Inc., Redmond, WA, USA

OBJECTIVES: In an analyses of patients with type 2 diabetes (T2DM) in a large electronic healthcare database (Patient Health Management System), small differences were found to be statistically significant between N=1162 patients with liraglutide versus a comparison cohort due to the comparison group sample size (n=274,922). The purpose of this study is to evaluate a bootstrapping technique to provide robust mean and variance estimates for comparison patients, thereby helping to address the issue of being over-powered. METHODS: Study patients were age ≥18 years with T2DM, prescribed liraglutide or other antiobdiabetic drug January 1, 2010 to July 16, 2010 and with ≥13 months of EMR activity. Bootstrapping was used to provide cohort mean, and variance estimates for the comparison cohort and were calculated as the mean of the mean values identified in 1000 random draws with replacement of 1162 comparison patients. Means (95% CI) were compared for con- tinuous variables (age, HbA1c and blood pressure [BP]) for liraglutide versus the overall comparison group and to bootstrap estimates. RESULTS: Of 1162 liraglutide patients, 54.9 (95% CI) age was 54.9 (95% CI) years versus 64.0 (95% CI) years for all comparison patients and 60.9 (60.1, 61.6) years for comparison patients per bootstrap estimates (both p < 0.05). HbA1c was 8.12% (8.00, 8.24) for liraglutide versus 7.62% (7.61, 7.63) and 7.63% (7.49, 7.76) for all comparison patients and per bootstrap, respectively (both p < 0.05). BP was 127.0 (126.1, 127.8) vs 75.8 (75.3, 75.6)