

OR3

THE DIRECT AND INDIRECT COSTS ASSOCIATED WITH HYPOGONADISM AMONG PRIVATELY-INSURED EMPLOYEES IN THE UNITED STATES

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OBJECTIVES: Compare direct and indirect (workloss) costs between privately-insured U.S. employees with hypogonadism (HG) and demographically matched controls without HG. **METHODS:** Male employees, ages 35-64, with ≥ 2 HG diagnoses (ICD-9-CM: 257.2x) or ≥ 1 HG diagnosis and ≥ 1 claim for testosterone therapy between 1/1/2005-3/31/2009 were identified from a privately-insured claims database (N=12,000,000). The index date was defined as the most recent HG diagnosis with continuous eligibility ≥ 1 year before (baseline period) and 1 year after (study period). Employees with HG were matched 1:1 on age, region, employment status, and index year to controls without HG. Descriptive analyses compared demographic characteristics, comorbidities, resource utilization, direct costs (reimbursements to providers for medical services and prescription drugs) and indirect costs (disability and medically-related absenteeism) inflated to \$2009. Multivariate analyses adjusting for baseline patient differences were used to estimate risk-adjusted costs. **RESULTS:** 4,269 HG employees, mean age 51, with matched controls met inclusion criteria. Compared with controls, HG employees had higher baseline comorbidity rates: hyperlipidemia (50.2% vs. 25.3%), hypertension (37.7% vs. 21.1%), back/neck pain (32.0% vs. 15.7%), and HIV/AIDS (7.1% vs. 0.3%) (all $p < 0.0001$). HG employees had higher study period rates of inpatient stays (10.8% vs. 5.2%), Emergency Department visits (27.5% vs. 16.3%), outpatient visits (100.0% vs. 76.7%), prescription medication use (95.7% vs. 68.3%), and higher mean workloss days (19.3 vs. 8.8) (all $p < 0.0001$). HG employees compared with controls had higher mean study period direct (\$10,914 vs. \$3,823) and indirect costs (\$3,204 vs. \$1,450); HG-related direct costs were \$832. HG employees' costs remained higher after adjusting for baseline differences (direct: \$9,291 vs. \$5,248; indirect: \$2,729 vs. \$1,840) (all $p < 0.0001$). **CONCLUSIONS:** Employees with HG had higher comorbidity rates and costs compared with demographically matched controls. Given the low HG-related costs, the main driver of overall costs among HG patients may be their comorbidity burden.

OR4

ASSOCIATIONS BETWEEN JOBLESSNESS AND ALL-CAUSE HEALTH SERVICES UTILIZATION IN DIABETIC WORKING AGE ADULTS IN THE UNITED STATES

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OBJECTIVES: To assess associations between joblessness and all-cause emergency department (ED), hospitalization, outpatient and office-based health services utilization in US diabetic working-age adults. **METHODS:** This retrospective longitudinal panel design used nationally-representative 2001-2007 pooled public domain complete panel data from the Medical Expenditure Panel Survey (MEPS). Eligible MEPS respondents aged 24-59 years with an ICD-9-CM diabetes diagnostic code "250", were included. Those with pregnancy diagnostic codes, seasonal job status, or prescribed insulin were excluded. Subjects reporting an employment status as "not employed with no job to return to" were classified as jobless. Using MEPS weights to account for the complex survey design, logistic regression models estimated associations between joblessness and the likelihood of utilization. Negative binomial regression models assessed number of utilizations. The Taylor linearization method estimated variance. **RESULTS:** 2,678 subjects (means: age 48.7 years [SD 0.28], BMI 31.5 [SD 0.30], Charlson Comorbidity Index 0.369 [SD 0.12]) met eligibility criteria. Compared to those employed, joblessness significantly increased the odds for all-cause ED utilization 64% (OR 1.64, $p = 0.007$) outpatient visits 46% (OR 1.46, $p = 0.011$) and office-based visit 45%, (OR 1.45, $p = 0.009$). Joblessness was associated with higher logs of expected counts for ED visits ($\beta = 0.43$, $p = 0.005$) outpatient visits ($\beta = 0.49$, $p = 0.002$), and office-based visits 41% ($\beta = 0.41$, $p = 0.000$). The following covariates showed significant ($p < 0.05$) associations across ED, hospitalization, outpatient and office-based utilization sectors: family size, age, the Charlson Comorbidity Index, and the presence of one or more diabetes related complication. Hispanic ethnicity was associated with fewer ED visits ($\beta = -0.51$, $p = 0.001$), and fewer hospitalizations ($\beta = -0.41$, $p = 0.026$) than other ethnicities. Though non-significant, compared to uninsured individuals, private and public health insurance coverage also showed increased odds and number of utilizations. **CONCLUSIONS:** Joblessness was significantly associated with increased all-cause health services utilization.

PODIUM SESSION I:

CASE STUDIES IN ADDRESSING SELECTION BIAS

SB1

COMPARISON OF DIFFERENCE-IN-DIFFERENCE, PROPENSITY SCORE MATCHING AND INSTRUMENTAL VARIABLES IN ESTIMATING COST DIFFERENCES BETWEEN TWO COHORTS

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OBJECTIVES: Endogeneity is a common problem in retrospective claims data studies because patients in claims data were not assigned to treatment by randomization. Propensity score matching (PSM), instrumental variables (IV), and difference-in-difference (DID) have been used to control for selection bias in evaluating the impact of treatment on outcome measures. This study compares the estimated incremental costs between typical and atypical antipsychotic medication users in

patients with schizophrenia using these three methods. **METHODS:** Patients ages 18-64 years old with at least one prescription of typical or atypical antipsychotic medication and at least one diagnosis claim of schizophrenia (ICD-9-CM diagnosis 295.xx) within 90 days of the antipsychotic medication were identified in Market-Scan® Multi-State Medicaid Database 2002-2009. The index date was the first prescription date of antipsychotic medication. All patients had ≥ 12 -month continuous enrollment prior to and post the index date. Outcomes were total all-cause expenditures and psychiatric-related expenditures during the 12-month follow-up. The incremental costs associated with the use of typical antipsychotic medication versus atypical medication was estimated using six regression models—three estimation methods (GLM, IV, and DID) on two samples (matched and non-matched sample). IV was prescribing physicians' characteristics. **RESULTS:** A total of 447 atypical and 4544 typical antipsychotic users met all study criteria, with a mean age of 38.9. Five out of the six models (with the exception of the DID model on the unmatched sample) did not find a significant relationship between types of antipsychotic medications and total costs, and five out of the six models (with the exception of the IV model on the full unmatched sample) found atypical medication users had significantly higher psychiatric-related costs than typical medication users. **CONCLUSIONS:** The PS-based approach combined with the DID or IV methods may be better than each approach alone.

SB2

ZEROS AND NON-REPORTED HEALTH CARE AND WORKPLACE PRODUCTIVITY DATA: AN APPLICATION OF TWO-STAGE ESTIMATION TECHNIQUES MEASURING INPATIENT COSTS AND ABSENTEEISM ASSOCIATED WITH LOW BACK AND NECK PAIN

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OBJECTIVES: Abundance of zero values is commonly observed in cost data resulting in skewed distribution. This analysis measured the inpatient cost and workplace absenteeism associated with low back and neck pain and demonstrated the consequences of ignoring zeros in inpatient cost and unreported absenteeism. **METHODS:** We used employer-based claims from the Thomson Marketscan® Research Database (2007), a database representing approximately 100 payers of insured employees containing health and productivity management (HPM) and health care utilization data. Adult insured employees with continuous eligibility in 2007 were included. The ICD-9 codes identified medical conditions including low back and neck pain without (nociceptive pain, NOCI) or with a neuropathic component (mixed pain, MIXED). Ordinary least squares (OLS) and two-stage Tobit analyses evaluated the marginal inpatient costs while OLS and Heckman's Selection Bias (HSB) were applied to absenteeism data. Estimated inpatient costs and absenteeism using OLS versus two-stage techniques were compared. **RESULTS:** A total of 2,046,332 employees (male=59.2%; mean age 40.2 \pm 11.6 years) were analyzed. Hypertension (9.8%), NOCI (9.5%), diabetes (3.7%), MIXED (3.0%) and depression (1.1%) were the most prevalent medical conditions among these employees. 1,976,952 (96.6%) employees had no inpatient episodes, thus, with no inpatient costs. Mean inpatient cost for the entire study population was \$537.45 (median=\$0) versus \$15,851.93 (median= \$8,302.20) among those with inpatient episodes. The incremental inpatient costs associated with MIXED and NOCI were \$1,333.02 \pm 26.67 and \$328.36 \pm 15.63 using OLS versus \$2,478.97 [95%CI: 2,148.50 - 2,811.16] and \$1,242.41 [95%CI: 1,020.10 - 1,469.18] using the two-stage Tobit. Unreported absenteeism occurred in 80% of the employees. Annual absenteeism associated with MIXED and NOCI using OLS were 5.25 \pm 0.21 and 4.06 \pm 0.35 compared to 45.92 \pm 1.06 and 16.33 \pm 2.01 hours using the HSB technique. **CONCLUSIONS:** Ignoring zeros in cost data and unreported absenteeism may result in substantial underestimation of inpatient cost and workplace absenteeism associated with low back and neck pain.

SB3

INNOVATIVE DESIGN FOR A COMPARATIVE EFFECTIVENESS STUDY OF SCHIZOPHRENIA TREATMENTS: ANALYSIS OF RECORD REVIEW DATA INCORPORATING RANDOMIZATION AND PROPENSITY SCORE MATCHING

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OBJECTIVES: Abstraction of hospital records is currently underway at inpatient psychiatric facilities across the United States to facilitate a large comparative effectiveness study with the following goals: 1) to observe and describe re-hospitalization patterns among patients with schizophrenia, and 2) to compare re-hospitalization outcomes between patients receiving paliperidone palmitate and those receiving oral atypical antipsychotics. This abstract is intended to describe the innovative design of this study. **DESIGN/METHODS:** This naturalistic record review study incorporates several novel design elements and a unique two-phase abstraction process. In the first phase, all patients with a qualifying inpatient hospitalization for schizophrenia are identified and basic demographic, clinical, and treatment data is abstracted. From this pool of potentially-eligible patients, two groups are identified; 1) patients discharged on paliperidone palmitate, and 2) patients discharged on oral atypical antipsychotics. Random samples of patients are drawn from each of these groups and designated for full data collection in phase two. In the second review phase, these designated records are further abstracted to collect detailed demographic variables, hospitalization and treatment history, condition severity, comorbid conditions, and discharge characteristics. These variables are used to model propensity scores for receipt of the target drug, and identify two propensity-matched cohorts for the subsequent comparative effectiveness analysis. Pilot testing at three hospitals has confirmed the availability of key data ele-