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ASSESSING THE ECONOMIC BURDEN OF RHEUMATOID ARTHRITIS PATIENTS WITH DIFFERENT CLINICAL DISEASE ACTIVITY INDEX SCORES: A PROBABILISTIC MATCHING STUDY

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OBJECTIVES: To evaluate the health care resource utilization and economic burden of rheumatoid arthritis (RA) based on the Clinical Disease Activity Index (CDAI). **METHODS:** Adult patients diagnosed with RA (International Classification of Diseases, Ninth Revision, Clinical Modification code 714.xx) were identified from a large claims database and a RA registry from 2006-2015. Patients identified were probabilistically matched with a 1:1 ratio based on age, gender, state, and index year. The first RA diagnosis date was designated as the index date. Patients were required to have continuous health plan enrollment with medical and pharmacy benefits for 12 months post-index date (follow-up period). Patients were classified as having high (>22), moderate (>10 to ≤22), or low disease activity (>2.8 to ≤10), or in remission (0 to ≤2.8) based on CDAI scores. All-cause and RA-related health care costs and utilization during the follow-up period were assessed. **RESULTS:** A total of 3,749 matched RA patients were identified, and 24.11%, 31.93%, and 26.91% had high, moderate, and low disease activity, respectively, and 17.04% were in remission. RA patients were, on average, age 57 years, 76% were female, and most resided in Washington (77%), with average all-cause total costs of \$27,008 and RA-related costs of \$5,262 during the 12-month follow-up period. The average number of office visits was higher for patients with high disease activity (12.31), followed by 11.79, 11.71, and 11.59 for patients with moderate disease activity, low disease activity, and for those in remission. Primary cost drivers were outpatient and pharmacy costs, resulting in total all-cause costs of \$28,054, \$27,285, \$26,633, and \$25,600, and total RA-related costs of \$5,511, \$5,280, \$4,893, and \$5,461 for patients with high, moderate, and low disease activity, and for those in remission, respectively. **CONCLUSIONS:** RA patients with high disease activity, measured by CDAI score, have a substantial economic burden.

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THE BURDEN OF TOPHACEOUS AND NON-TOPHACEOUS GOUT IN THE UNITED STATES

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OBJECTIVES: Describe patient characteristics and healthcare resource utilization (HRU) in gout patients with and without tophi. **METHODS:** Data were assessed from detailed/systematic patient chart audits from October 2012. Category and dose of urate lowering therapy and patient characteristics were identified. Comparisons were between patients with and without tophaceous gout. Patient characteristics, comorbidities, HRU, serum uric acid, and use of colchicine during the 12-month study were compared using chi-square or Fisher's Exact tests. **RESULTS:** Patient charts were abstracted from 125 primary care physicians and 125 rheumatologists. Of 1159 patients, 273 (23.81%) had tophaceous gout. Patients with tophi had gout for a longer time (66 vs. 39 months; $p<0.001$), reported more flares (2.5 vs. 1.8 per year; $p<0.001$), and were more likely to have joint damage (43.6% vs. 6.6%; $p<0.001$). Patients with tophi were more likely to have higher rates of cardiovascular disease ($p<0.001$), chronic obstructive pulmonary disease ($p<0.001$), congestive heart failure ($p<0.001$), diabetes ($p=0.011$), depression ($p=0.004$), hypertension ($p<0.001$), osteoarthritis ($p<0.001$) and kidney stones ($p=0.002$). Patients with tophi were more likely to be treated with a urate-lowering therapy (94.1% vs. 68.0%; $p<0.001$), take colchicine (38% vs. 30%; $p<0.001$) and steroids (69% vs. 36%; $p<0.001$), and less likely to take NSAIDs (38% vs. 54%; $p<0.001$). Few patients with and without tophi achieved serum uric acid <6mg/dL and no flares (10% vs. 11%; $p=0.50$); and a greater proportion of patients with tophi had a gout-related emergency visit (19.8% vs. 7.5%; $p<0.001$) or had gout-related surgery (3.3 vs. 0.0; $p<0.001$). **CONCLUSIONS:** Patients with tophaceous gout have significantly greater burden of disease, and higher frequency of comorbidities and HRU than patients with non-tophaceous gout. Preventing the development of tophi or resolving crystal burden by treating to guideline targets remains a rarely achieved goal for patients with and without tophi.

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HETEROGENEITY IN COST-OF-ILLNESS BASED ON INDIVIDUAL-LEVEL CHARACTERISTICS

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OBJECTIVES: There is continued interest in identifying sources of heterogeneity in the costs of care however there is limited information available that summarizes the evidence. We characterize the reporting of heterogeneity in cost-of-illness (COI) estimates and quantify the heterogeneity in COI. **METHODS:** We analyzed data from a published COI review paper that reported on trends in COI methods using articles published between 2005 and 2014. The following inclusion criteria were applied for the current study: published 2011 to 2014; stated goal of investigating patient-level heterogeneity; reported COI per patient (COIPP). We grouped articles into four categories: articles with extractable data on heterogeneity in COIPP (G1); articles with non-extractable information on heterogeneity in COIPP (G2); articles that reported COI across care settings (G3); articles that did not provide any results on heterogeneity in COIPP (G4). Using G1, we extracted the minimum and maximum reported COI estimates across subgroups defined based on age, gender, race, disease severity, and income, among other patient-level characteristics. **RESULTS:** Application of the inclusion criteria resulted in 236 articles. There were 75, 50, 98 and 13 articles for G1, G2, G3 and G4 respectively. In one study, the average patient-level COI for osteoarthritis was CAD\$2,233. The COI ranged from CAD\$1,056 to CAD\$3,065 and from CAD\$1,985 to CAD\$3,596 based on age and gender, respectively. In another

study, the COIPP for childhood autism spectrum disorders was US\$17,081. The COI ranged from US\$6,492 to US\$25, US\$9,386 to US\$34,462, US\$2,119 to US\$18,234, and US\$385 to US\$10,486 across age, severity, race and income groups, respectively. **CONCLUSIONS:** Less than one-third of articles investigating heterogeneity reported extractable data to quantify heterogeneity in the reported COI. Evidence regarding heterogeneity in COI can help identify differential cost burden within and across disease settings.

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HEALTH CARE RESOURCE UTILIZATION AND DIRECT MEDICAL COST FOR INPATIENTS WITH OSTEOPOROTIC FRACTURE IN TIANJIN, CHINA

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OBJECTIVES: Estimate the 12-month osteoporosis-related health care resource utilization and direct medical cost. **METHODS:** Data were obtained from the Tianjin Urban Employee Basic Medical Insurance database (2008-2011). Patients were aged ≥50 years, with their first osteoporotic fracture hospitalization from January 1, 2009 to December 31, 2010, and had 12-month continuous enrollment before and after the hospitalization. Both osteoporosis-related health resource utilization and direct medical cost were estimated during the 12-month follow-up period. Ordinary least-square regression models were applied to identify factors associated with annual direct medical cost and inpatient length of stay (LOS). **RESULTS:** 1839 patients were included (mean age 67.2 years, 58.2% female, 89.0% retired). Patients had 1.27±0.8 (mean±SD) hospitalizations due to osteoporotic fractures, and average LOS was 18.0±14.4 days/admission. Of all patients, 19.5% experienced ≥1 osteoporotic fracture hospitalizations within 12 months after the first one; 45.2% had ≥1 osteoporosis-related outpatient visit (7.6±8.1). The average direct medical cost was 19917 CNY/hospital admission and 102 CNY/outpatient visit. The total mean direct medical cost was 25553 CNY/patient-year; the highest cost components were medical device (41.5%), drug (28.1%), examination (11.0%), and treatment (8.2%). Cost increased as age increased but differences were not significant. Cost for female patients were higher ($p=0.031$); patients with hip, lower limb, and multi-location fractures were more likely to have a higher cost and patients with rib fractures were more likely to have a lower cost compared to arm fracture patients ($p<0.05$). Older patients (≥70 years), those with more comorbidities, and those with hip and lower limb fractures had longer LOS. **CONCLUSIONS:** Among patients with osteoporotic fracture hospitalizations, females and those with hip, lower limb, and multi-location fractures were more likely to incur more direct medical cost, and LOS was longer for older patients, those with more comorbidities, and those with hip and lower limb fractures.

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EXAMINING THE HEALTH CARE RESOURCE UTILIZATION AND ECONOMIC BURDEN AMONG RHEUMATOID ARTHRITIS PATIENTS WITH DIFFERENT ROUTINE ASSESSMENT OF PATIENT INDEX DATA 3 SCORES: A PROBABILISTIC MATCHING STUDY

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OBJECTIVES: To examine the health care resource utilization and economic burden of rheumatoid arthritis (RA) using the Routine Assessment of Patient Index Data 3 (RAPID3). **METHODS:** Patients diagnosed with RA (International Classification of Diseases, 9th Revision, Clinical Modification diagnosis code: 714.xx) were identified from a large claims database and a RA registry from 2006-2015. Patients identified were probabilistically matched with 1:1 ratio based on age, gender, state, and index year. The first RA diagnosis date in the index year was designated as the index date. Patients were required to have continuous health plan enrollment with medical and pharmacy benefits for 12 months post-index date (follow-up period). Patients were classified as having high (>12), moderate (>6 to ≤12), low (>3 to ≤6) disease activity, or in remission (0 to ≤3) based on RAPID3 scores. All-cause and RA-related health care costs and utilization were assessed in the four groups during the follow-up period. **RESULTS:** Of the eligible matched RA patients (N=3,749), 46.60%, 22.94%, and 11.79% had high, moderate and low disease activity, respectively, and 14.67% were in remission. On average, patients were 57 years, mostly female (76%), residing in Washington State (77%), with an average all-cause total cost of \$27,008 and RA-related cost of \$5,262 over the 2-month follow-up period. The average number of office visits was high for patients with low disease activity (12.23) followed by 11.89, 11.88, and 11.63, respectively, for patients in remission, and with high and moderate disease activity. Among patients with high, moderate, and low disease activity, or in remission, the major costs drivers were outpatient and pharmacy costs resulting in total all-cause costs of \$27,777; \$26,347; \$26,371; and \$26,287, and total RA-related costs of \$5,333; \$4,985; \$5,282 and \$5,531, respectively. **CONCLUSIONS:** RA patients with high disease activity measured by the RAPID3 have a significant economic burden, which also validated the matching process.

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LATERAL EPICONDYLITIS: PREVALENCE AND HEALTH CARE COSTS IN THE UNITED STATES

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OBJECTIVES: The prevalence, treatment pathways and financial burden of lateral epicondylitis (LE) on the healthcare system are poorly understood. This study was designed to estimate prevalence of LE, the frequency of treatments provided, and costs of care from the payer perspective. **METHODS:** The MarketScan Commercial and Medicare databases were queried. Patients presenting with LE (ICD-9 726.32) between 2011 and 2013 were identified. Prevalence of disease was estimated using the MarketScan projection methodology. The frequency and payments for outpatient treatment modalities for all visits and procedures associated with primary vs secondary diagnoses of LE were estimated. Payments were adjusted for inflation and are presented at 2014 price index. To estimate cost of disease per patient, a