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Comparison of Knee Osteoarthritis Treatment Patterns by Rheumatologists vs. Other Providers in a U.S. Administrative Claims Database

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Background: Knee osteoarthritis (OA) is a painful, disabling condition with increasing prevalence.

Objective: To compare characteristics and treatment patterns of patients newly diagnosed with knee OA by rheumatologists (RH) to those diagnosed by general practitioners (GP) and those diagnosed by orthopedic surgeons (OS).

Methods: U.S. administrative claims data from 2011-2018 (IBM Watson Health MarketScan® Research Database) was used to perform an observational cohort study. Inclusion criteria included ≥18 years and ≥1 claim with ICD9 lower-leg OA diagnosis prior to October 2015, followed by a confirmatory ICD10 knee OA diagnosis *or* ≥1 claim with an ICD10 knee OA diagnosis. Index date was the earliest claim/diagnosis date preceded by ≥2 years of prior continuous enrollment without these diagnoses. Demographic characteristics and diagnosing physician specialty were assessed on index date, whereas comorbid conditions and treatment patterns were observed during the variable post-index follow-up period. A two-sample t-test or a two-sample proportion test, where appropriate, was used to perform comparisons in GP vs RH and OS vs RH (P<0.05 considered statistically significant).

Results: 488,510 knee OA patients met inclusion criteria of which 76% (371,219) had physician type of interest noted on initial diagnosis claim. RH-diagnosed knee OA accounted for 3.2% (15,517), while GP and OS for 20.2% (98,911) and 47.6% (232,567), respectively. The average age of patients diagnosed by RH and OS was less than those GP-diagnosed (RH, 58.9; GP, 63.4; OS, 58.9; RH vs GP, P<0.001; RH vs OS, P=0.91). There were more female patients in the RH- than GP- or OS-diagnosed group(s) (RH, 75.6%; GP, 58.4%; OS, 58.9%; RH vs GP, P<0.001; RH vs OS, P<0.001). The RH-diagnosed group had significantly higher comorbidity burdens, as summarized by Deyo-Charlson Comorbidity Index (DCI) (RH, 1.53; GP, 1.40; OS, 1.01; RH vs GP, P<0.001; RH vs OS, P<0.001). The proportion of comorbid rheumatoid arthritis (RA) diagnoses was about 10-fold higher in RH-diagnosed patients, potentially indicating knee OA as an ancillary diagnosis noted on clinic visits for these patients (RH, 29.7%; GP, 3.8%; OS, 2.7%; RH vs GP, P<0.001; RH vs OS, P<0.001). RH-diagnosed patients received fewer total knee replacements (TKRs) (RH, 5.7%; GP, 9.3%; OS, 14.3%; RH vs GP, P<0.001; RH vs OS, P<0.001) and time to TKR initiation was significantly longer than GP- or OS-diagnosed patients (RH, 596.1 days; GP, 448.2 days; OS; 399.9 days; RH vs GP, P<0.001; RH vs OS, P<0.001). More RH-diagnosed patients received corticosteroids (CS) and hyaluronic acid (HA) with shorter initiation

times than GP-diagnosed patients but OS-diagnosed patients utilized HA and CS the most with the shortest initiation times; CS use: (RH, 73.0%, 109.6 days; GP, 62.3%, 122.5 days; OS, 74.3%, 84.7 days; RH vs GP, $P<0.001$; RH vs OS, $P<0.001$), HA use: (RH,15.8%, 227.5 days; GP, 14.3%, 236.8 days; OS, 23.2%, 198.7 days; RH vs GP, $P<0.001$; RH vs OS, $P<0.001$). Furthermore, RH-diagnosed patients received more NSAIDS (RH, 58.1%; GP, 51.4%; OS, 53.9%; RH vs GP, $P<0.001$; RH vs OS, $P<0.001$) and opioids with >30-day supply (RH, 27.3%; GP, 23.5%; OS, 19.8%; RH vs GP, $P<0.001$; RH vs OS, $P<0.001$) than GP- or OS-diagnosed patients.

Conclusion: This descriptive claims analysis suggested that RHs saw a considerable number of knee OA patients, with different characteristics to other providers, particularly females and those with co-occurring RA. RH-diagnosed patients received the least number of TKRs, which may represent a higher CCI patient population not suitable for surgery. However, rheumatologists prescribed pharmaceutical therapies more than general practitioners. Further research into treatment patterns and characteristics of knee OA patients treated by rheumatologists is warranted.