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## Title

*Validation of an Administrative Knee Osteoarthritis Severity Index in a Veterans Health Affairs Cohort*

## Priority 1 (Research Category)

Big Data

## Presenters

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## Abstract

Context: Administrative electronic health record (EHR) datasets offer a low-cost opportunity to investigate influences on knee osteoarthritis (OA) prevalence and outcomes such as total knee arthroplasty (TKA). The Osteoarthritis Severity Index (OASI) was developed to inform clinical trajectory of knee OA toward TKA and was previously created and validated in a nationally distributed, general population cohort of EHR data. However, it is unclear whether results would generalize to other healthcare populations. Objective: To validate the use of OASI among patients with knee OA to predict TKA in Veterans Health Affairs-Corporate Data Warehouse (VHA-CDW) administrative dataset. Study Design and Analysis: Retrospective Cohort using Cox proportional hazard models with time-dependent exposures and covariates. Dataset: VHA-CDW data from 2007-2020. Population Studied: Adults aged 45-80 years with knee OA identified by ICD-9/10 code, no history of psoriatic or rheumatoid arthritis, and no history of TKA prior to index date. The first OA diagnosis in record must occur from 2009-2014 and index date is OA diagnosis date. Final sample size was 435,731. Intervention/Instrument: OASI, updated every 6-months from OA date to end of follow-up. OASI is the sum number of care elements offered (NSAID fills, opioid fills, intra-articular injection, knee x-ray, knee advanced imaging, and physical therapy). Outcome Measures: Time to TKA. Follow-up time is months from OA index date to TKA or censoring. Results: Overall, average age at OA diagnosis was 64.0 years (SD 8.8), 78.2% were White, 19.7% were Black, and 93.7% were male. By the end of follow up, 19.4% of the sample had undergone TKA and mean OASI index was 3.5 (SD 1.5). Median follow-up time was 83 months (IQR: 54-108 months). After controlling for confounding, each additional treatment modality was associated with 55% greater hazard of undergoing TKA (HR=1.55; 95%CI=1.54-1.56). Conclusions: This retrospective cohort study demonstrated a similar performance of the OASI in predicting TKA in this VHA population compared to a previous cohort using private EHR data. This study confirms that OASI is a helpful tool to

account for disease course, treatments tried, and care offered among people with knee OA when conducting administrative studies investigating trajectory and clinical outcomes.