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Analysis of Outcomes Following TKA: Do All Databases Produce Similar Findings?

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Introduction: Use of large database for orthopaedic research has increased exponentially. Each database represents unique patient populations and vary in their methodology of data acquisition. The purpose of this study was to evaluate differences in reported demographics, comorbidities and complications following total knee arthroplasty (TKA) amongst four commonly used databases.

Methods: Patients who underwent primary TKA during 2010-2012 were identified within National Surgical Quality Improvement Programs (NSQIP), Nationwide Inpatient Sample (NIS), Medicare Standard Analytic Files (SAF) and Humana Claims Database (HCD). NSQIP definitions for comorbidities and surgical complications were matched to corresponding ICD-9 and CPT codes and these coding algorithms were used to query NIS, SAF and HCD. Age, sex, comorbidities, inpatient and 30-day postoperative complications were compared (NIS has inpatient data only) using standard statistical techniques.

Results: The number of primary TKA patients from each database was 48,248 in HCD, 783,546 in SAF, 393,050 in NIS and 43,220 in NSQIP. Databases were similar in their gender distribution (1.7-1.8:1 female to male). Age distribution was clinically similar between databases, but slightly older in HCD and SAF. There was variation in prevalence of comorbidities and rates of postoperative complications between databases. Prevalence of COPD and coagulopathy in HCD and SAF were more than twice those in NIS and NSQIP. NSQIP had more than twice the obesity than NIS. Rates of stroke 30-days after TKA had more than twofold difference between all databases. HCD had more than twice the rates of 30-day complications at all endpoints compared to NSQIP and more than twice the 30-day infections than SAF.

Conclusions: There is considerable variation in complication rates following TKA depending upon the database used for analysis. It will be important to consider these differences when critically evaluating database research. With the advent of bundled payments, these differences must be considered in risk adjustment models.

Notes