

Projections and Epidemiology of Revision Hip and Knee Arthroplasty in the United States to 2030

Andrew M. Schwartz, MD, Kevin X. Farley, BS, Thomas L. Bradbury, MD, George N. Guild, MD

Introduction: As the incidence of primary total joint arthroplasty rises in the United States, it is important to investigate how this increase will impact rates of revision arthroplasty. There is an abundance of data on the current incidence of revision arthroplasty, but no recent projections of future incidence based on this most recent data. The purpose of this study was to project the current and future incidence of revision total hip arthroplasty (rTHA) and revision total knee arthroplasty (rTKA) to the year 2030. Anticipating surgical volume will aid surgeons in designing protocols to efficiently and effectively perform rTHA/rTKA.

Methods: The National Inpatient Sample (NIS) was queried from 2002 to 2014 for all rTHA/rTKA. Using previously validated measures, Poisson regression and linear regression, analysis was performed to project annual incidence of rTHA/rTKA to the year 2030.

Results: In 2014, there were 50,220 rTHA and 72,100 rTKA. From 2002 to 2014, the annual average percentage change was 2.02% for rTHA and 5.8% for rTKA. From 2016 to 2030, rTHA incidence is projected to increase by between 43%-70% (71,384-85,528 cases performed in 2030; linear and Poisson regression models, respectively). rTKA incidence is projected to increase by between 78%-182% (127,984-202,966 cases performed in 2030, linear and Poisson regression models, respectively).

Conclusions: The incidence of rTHA/rTKA is projected to increase substantially in the next decade. Given the known risk factor profiles and advanced costs associated with revision arthroplasty, our projections should encourage high-volume institutions to generate revision-specific protocols akin to the primary arthroplasty pathways that many hospitals are currently optimizing. Early anticipation and protocolization of a perpetually increasing demand for rTHA/rTKA could promote safe, high-throughput systems in a cost-effective manner that is commensurate with current healthcare trends towards value-based care.