

# 2.5 million Americans living with an artificial hip, 4.7 million with an artificial knee

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More than 7 million Americans are living with an artificial (prosthetic) knee (4.7 million) or hip (2.5 million), which may have significant future implications in terms of the need for ongoing patient care, according to new research presented at the 2014 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS). Two related studies also found a growing incidence of adults younger than age 65 undergoing total knee replacement (TKR) and total hip replacement (THR) surgeries, and a potential underutilization of these procedures in some segments of the population.

While numerous studies have quantified the incidence rate of TKR and THR and in the U.S., there is very little information about the number of patients actually living with a prosthetic knee or hip. In "Prevalence of Total Hip (THA) and Total Knee (TKA) Arthroplasty in the United States," researchers reviewed THR and TKR incidence rates, mortality rates and relative mortality rates (the difference in survival between THR and TKR patients and the general population), over a 40-year time period, to estimate 2010 prevalence rates according to age, sex and time since surgery.

Among the study findings:

- Approximately 0.8 percent of Americans are living with a [hip replacement](#), and 1.5 percent with a [knee replacement](#).
- More women are living with prosthetic hips and knees than men.
- Prevalence of THR and TKR among adults age 50 and older is as high as 2.3 and 4.6 percent, respectively.
- The prevalence of THR rises to nearly 6 percent by 80 years of age. The prevalence of TKR rises to nearly 10 percent by 80 years of age.
- The states with the highest number of THR and TKR patients are California, Florida and Texas; the two states with the lowest

numbers are Alaska and Hawaii.

"This study shows that around 7 million Americans have a hip or knee replacement," said Daniel Berry, MD, professor of orthopaedics at Mayo Clinic and the senior author of the study. "This large number highlights how these operations have kept a substantial part of our population mobile despite severe arthritis, something that wouldn't have been possible before these technologies were available. These relatively high prevalence estimates also highlight the significant ongoing need to care for all of the patients with total hip and knee replacement. These prevalence estimates are within the same ballpark as coronary heart disease, and much higher than heart failure or stroke. To put these numbers in perspective, there are roughly one and a half times as many people living with a hip or knee replacement in the U.S. as people living with heart failure."

Individuals with total hip and knee replacement often are complex patients with multiple chronic conditions," added William A. Jiranek, MD, professor of orthopaedics, Virginia Commonwealth University School of Medicine. "They all need continuing medical attention and some need further surgical attention over the years of having a replacement. As "there are no guidelines to define long-term management of these individuals....our prevalence estimates are vital to agencies charged with planning for the provision of health care services."

A recent study published in the Aug. 21, 2013 *Journal of Bone and Joint Surgery*, and conducted by health economists, has confirmed that TKR is a cost-effective treatment for patients with end-stage osteoarthritis. By modeling indirect savings of the individual returning to the work force after surgery, researchers found that the lifetime societal net benefit for patients undergoing knee replacement averages between \$10,000 and \$30,000.

In the related studies presented at the annual meeting, "Trends in Total Hip Arthroplasty in the United States: The Shift to a Younger Demographic" and "Trends in Total Knee Arthroplasty in the United States: Understanding the Shift to a Younger Demographic," researchers conducted a retrospective review of 2000-2009 hospital discharge data on TKR and THR patients from the Nationwide Inpatient Sample (NIS) Healthcare Cost and Utilization Project (HCUP). Researchers looked at procedural rates, gender, race, age, payer type, length of stay (LOS), discharge disposition and revision burden for each year, stratified by age. U.S. National Census data was used to calculate rates for each procedure per 100,000 U.S. populations within each age group.

Among the study findings:

- The incidence of TKR increased by 120 percent from 2000 to 2009: 188 percent for patients ages 45 to 64, and 89 percent for patients ages 65 to 84. The incidence of THR increased 73 percent from 2000 to 2009: 123 percent for patients ages 45 to 64 and 54 percent for ages 65 to 84.
- The number of revision [total knee replacement](#) (RTKR) procedures increased 133 percent, and the number of revision total hip replacement (RTHR) procedures by 27 percent.
- The increase in TKR and THR patients is primarily due to "the disproportionate growth in the rate of utilization among younger patients, and secondarily by overall population growth."
- Medicare was the primary payer for 63.3 percent of all TKRs and 58.2 percent of THRs in 2000, and 54.7 percent of TKRs and 52.8 percent of THRs in 2009.
- The proportion of TKR patients discharged with home health care increased from 19.1 percent in 2000 to 40.5 percent in 2009; and the number of THR [patients](#), from 18.9 percent in 2000 to 40.8 percent in 2009.
- Race and gender distribution have remained relatively stable for TKR, RTKR, THR and RTHR.

number of primary and revision knee and hip arthroplasties have been driven predominately by increased procedural rates, as opposed to population demographics," said lead study author Jacob M. Drew, MD, of the University of Massachusetts Medical School.

In addition, "while shifts in age strata seem to be ongoing, race and gender distribution have remained relatively stable for both TKR and THR," said Dr. Drew. "This suggests that well-documented racial disparity in total joint replacement (TJR) persists, and that there remains a substantial population in whom TJR is underutilized."

Provided by American Academy of Orthopaedic Surgeons

"Our data demonstrate that increases in the

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