

Study examines usage, outcomes of knee replacement procedures among Medicare patients

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There has been an increase in total knee arthroplasty (TKA; knee replacement) procedures over the past 20 years that has been driven by both an increase in the number of Medicare enrollees and increase in per capita utilization, according to a study in the September 26 issue of *JAMA*. There has also been a decrease in hospital length of stay for TKA, but increased hospital readmission rates and increased rates of infectious complications.

"Total knee arthroplasty is a common and safe procedure typically performed for relief of symptoms in patients with severe [knee arthritis](#). Available data suggest that approximately 600,000 TKA procedures are performed annually in the United States at a cost of approximately \$15,000 per procedure (\$9 billion per year in aggregate)," according to background information in the article. Total knee arthroplasty is one of the most common and costly surgical procedures performed in the United States. "Despite the clinical and [economic policy](#) importance of TKA, there are few analyses evaluating recent trends over time in use of and outcomes associated with TKA."

Peter Cram, M.D., M.B.A., of the University of Iowa Carver College of Medicine, Iowa City, Iowa, and colleagues conducted a study to evaluate trends in primary and revision TKA volume, per capita utilization, and outcomes in the U.S. Medicare population for the time period between 1991 and 2010. The analysis included 3,271,851 patients (age 65 years

or older) who underwent primary TKA and 318,563 who underwent revision TKA identified in Medicare Part A data files.

The researchers found that the number of primary TKA procedures increased from 93,230 in 1991 to 243,802 in 2010 (an increase of 161.5 percent), while per capita utilization increased 99.2% (from 31.2 procedures per 10,000 Medicare enrollees in 1991 to 62.1 procedures per 10,000 in 2010). The number of revision TKA procedures increased from 9,650 in 1991 to 19,871 in 2010 (an increase of 105.9 percent), and per capita utilization increased 59.4 percent (from 3.2 procedures per 10,000 Medicare enrollees in 1991 to 5.1 procedures per 10,000 in 2010). Also during this time period, the prevalence of obesity among patients undergoing primary TKA increased from 4.0 percent to 11.5 percent. The average hospital length of stay (LOS) for primary TKA declined from 7.9 days in 1991-1994 to 3.5 days in 2007-2010, a relative decline of 55.7 percent. All-cause 30-day readmission rates increased from 4.2 percent in 1991-1994 to 5.0 percent in 2007-2010.

"Trends in discharge disposition after revision TKA demonstrated a similar pattern to that which was observed for primary TKA, a decline in discharges to home or inpatient rehabilitation and an increase in discharge to skilled care and outpatient rehabilitation," the authors write.

The researchers add that for revision TKA, a decrease in hospital LOS was accompanied by an increase in all-cause 30-day readmission from 6.1 percent to 8.9 percent and an increase in readmission for wound infection from 1.4 percent to 3.0 percent.

"These figures suggest that growth in primary and revision TKA volume is being driven by both an increase in the number of [Medicare](#) enrollees and an increase in per capita arthroplasty utilization," the authors write. "This growth is likely driven by a combination of factors including an expansion in the types of patients considered likely to benefit from

TKA, an aging population, and an increasing prevalence of certain conditions that predispose patients to osteoarthritis, most notably obesity."

"The growth in TKA should prompt consideration of whether too many (or too few) of these procedures are being performed both in aggregate and among key patient subgroups defined by race, sex, or age."

James Slover, M.D., M.S., and Joseph D. Zuckerman, M.D., of the Hospital for Joint Diseases of New York University Langone Medical Center, New York, comment on the findings of this study in an accompanying editorial.

"The report by Cram et al characterizes some important epidemiologic aspects of primary and revision knee replacement that have occurred over the past 20 years, including the evolution of increased volume and changes in care patterns, complication, and readmission rates. In an effort to control costs and improve quality of care, the findings provide important information concerning patient demographics associated with primary and revision total knee replacements and complications. In the currently challenging and dynamic health care environment, critical evaluation and systematic data collection about total knee replacements will be needed to optimize outcomes and ensure access to these life-improving procedures."

More information:

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