

# Guiding knee replacement patients to high-volume hospitals could save \$4 billion annually

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If all patients scheduled for knee replacement were directed to high-volume hospitals for the surgery, it could save the U.S. healthcare system between \$2.5 and \$4 billion annually by the year 2030, according to a study at Hospital for Special Surgery (HSS) in New York City.

"Numerous studies have shown lower complication rates and better outcomes in hospitals that do a high number of knee replacements compared to low-volume hospitals. Our study aimed to determine whether the lower rate of complications, hospital readmissions and revision surgeries translated into cost savings," said Jayme Burket, PhD, lead study author.

"We found that [knee replacement surgery](#) at higher-volume hospitals is less costly over a patient's lifetime and provides better outcomes, and if all knee replacements were performed at these hospitals, it could save between \$15 and \$23 million annually in New York State alone. With the number of procedures growing at a rapid rate nationwide, this could potentially translate into annual cost savings to society of up to \$4 billion by 2030," according to Dr. Burket.

The study, "Cost-Effectiveness of Total Knee Arthroplasty at High Volume Hospitals," will be presented at the annual meeting of the American Academy of Orthopaedic Surgeons (AAOS) on March 4, in Orlando, Florida.

"Regionalization of knee replacement surgery to high-volume hospitals has been proposed as a means for reducing escalating health care expenditures in the United States, especially given the large and growing demand for the procedure," said Stephen Lyman, PhD, study author and director of the Healthcare Research Institute at HSS.

"This is the first study to include a younger patient population in addition to Medicare patients in a cost-effectiveness analysis of [total knee replacement](#). This is important because patients under 65 now account for about 50 percent of those having the procedure," said Douglas Padgett, MD, chief of the Adult Reconstruction and Joint Replacement Service at HSS. "The list of complications included in our study was also much more comprehensive than those in previous analyses."

Researchers compared the cost-effectiveness of elective knee replacement over a patient's lifetime in low-, medium-, high-, and very high-volume hospitals utilizing data from the New York Statewide Planning and Research Cooperative System (SPARCS) from 1997-2014. The various volume categories were defined as follows:

- Low volume: less than 90 total knee replacements per year.
- Medium volume: 90-235 total knee replacements per year.
- High volume: 236-644 total knee replacements per year.
- Very high volume: 645 or more total knee replacements per year.

Complication, revision and mortality rates, as well as costs, were obtained from SPARCS for the younger (ages 55 - 65) and Medicare-age patients (65 - 75). All costs were converted into 2014 U.S. dollars.

Researchers identified, 89,796 patients in the younger group and 111,492 cases in the Medicare group. Among the young patients, 16% of surgeries were performed at low-volume hospitals; 31% at medium-volume; 32% at high-volume; and 20% at very high-volume centers.

Total knee replacement in the younger patients at very high-volume hospitals was associated with the lowest lifetime costs and the greatest benefits. Hospitals performing the most knee replacements showed significantly greater cost-effectiveness than all other hospital categories. In the Medicare group, results were similar; however, the cost savings of very high-volume centers relative to the other categories was more modest than in the younger patient group.

"Based on current trends, 2.8 million patients will be eligible to regionalize to very high-volume hospitals annually by the year 2030," Dr. Burket noted. "While regionalization may not be feasible for all patients, many low-volume hospitals are located in or near a metropolitan area with a high-volume hospital. Policy initiatives aiding to guide patients to higher-volume hospitals when available will not only reduce their risk for complications and improve outcomes, but will also considerably reduce the large financial burden [knee replacement](#) surgery places on our healthcare system. "

Provided by Hospital for Special Surgery

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