Knee and Hip Replacements

2013 Data

Pennsylvania Health Care Cost Containment Council

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About the Report

Knee and Hip Replacements

This report on knee and hip replacements presents outcomes for the 53,769 patients who underwent one or more of these procedures in a Pennsylvania hospital in 2013. Produced by the Pennsylvania Health Care Cost Containment Council (PHC4), the report includes risk-adjusted readmission ratings, average hospital charges, Medicare payments, surgeon volume, and county-level knee and hip replacement rates—information that can be helpful to patients and families making treatment decisions on where to receive care and to other purchasers of health care when evaluating hospital performance.

About PHC4

Created by the Pennsylvania General Assembly in 1986, PHC4 is an independent state agency charged with collecting, analyzing, and reporting information that can be used to improve the quality and restrain the cost of health care in the state. More than 840,000 public reports on patient treatment results are downloaded from the PHC4 website each year, and nearly 100 organizations and individuals annually utilize PHC4's special requests process to access and use data. PHC4 is governed by a 25-member board of directors, representing business, labor, consumers, health care providers, insurers, and state government.

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About the Report

About joint replacement

Joint pain, often caused by arthritis, is a common ailment that affects tens of millions of Americans in varying degrees of severity ranging from discomfort to disability. While different types of treatment options are used to address these conditions, joint replacement can offer improved quality of life for those with severe pain or poor mobility. Knee and hip replacements, the most common joint replacements, have seen a significant increase throughout the United States. Between 1992 and 2011 knee replacements have approximately tripled and hip replacements have approximately doubled.[1]

A growing elderly population, plus other factors such as rising rates of obesity among all age groups, advances in surgical techniques, and high levels of postoperative patient satisfaction have combined to make knee and hip replacements popular after more conservative options to relieve joint pain have failed.

Joint replacement surgery involves removal of worn cartilage and bone from the joint and replacement with metal and plastic implants that function like a normal bone joint. The goal of treatment is to relieve pain and improve function. After the procedure is completed most patients stay in the hospital for a few days. With the help of physical therapy, patients typically begin exercising their knee or hip shortly after surgery.

Total Knee Replacement

The knee joint consists of three parts: the lower end of the thigh bone (femur), the upper end of the shin bone (tibia), and the knee cap (patella). In a knee replacement procedure, all three parts of the knee can be replaced or just one or two parts. When the femur and the tibia are replaced, a portion of the bone is removed and metal components are inserted. If the patella is replaced, a plastic component is inserted.

Total Hip Replacement

The hip joint consists of two main parts: a ball (femoral head) which is located at the upper end of the thigh bone (femur) and a socket (acetabulum) located in the pelvis. In a total hip replacement procedure, the ball is removed and replaced with a ball component and a cup/liner is inserted into the socket.

Additional Resources

American Academy of Orthopedic Surgeons *OrthoInfo:* www.orthoinfo.org

National Institute of Arthritis and Musculoskeletal and Skin Diseases: www.niams.nih.gov

[1]United States Bone and Joint Initiative: The Burden of Musculoskeletal Diseases in the United States, Third Edition. Rosemont, IL: United States Bone and Joint Initiative, 2014. Available at http://www.boneandjointburden.org. Accessed on 2/9/2015.

About the Report

In this report

- This report includes hospital-specific outcomes and surgeon-specific volume for total knee and hip replacements, as defined by ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) codes (81.54 Total Knee Replacement, 81.51 Total Hip Replacement). Volume data includes elective and non-elective procedures. Outcomes are reported for replacements that are likely to be considered elective. Technical Notes relevant to this report provide additional detail. They are posted to PHC4's website at **www.phc4.org**.
- This report covers adult (18 years and older) inpatient hospital discharges for knee and hip replacements, regardless of payer, during calendar year 2013.
- The 157 Pennsylvania general acute care hospitals and 619 surgeons that performed knee and hip replacement surgery during calendar year 2013 are included.
- The hospital names have been shortened in many cases for formatting purposes. Hospital names may be different today than during the time period covered in the report due to mergers and name changes.

About the data

The hospital inpatient discharge data used in this analysis was submitted to PHC4 by the general acute care hospitals in Pennsylvania that performed knee and hip replacements in 2013. As part of PHC4's standard validation processes, hospitals were given an opportunity to verify and correct the discharge data. Hospitals were also given an opportunity to confirm the operating physician volume and Medicare payment data. The ultimate responsibility for data accuracy and completeness lies with each individual hospital. PHC4 wishes to acknowledge and thank the Pennsylvania hospitals who participated in the data submission and verification processes used for this report.

Also on PHC4's Website for Knee and Hip Replacements

Statewide Statistics and Key Findings	**County-Level Rates**
Hospital Results	**Hospital and Surgeon Comments**
Surgeon Volume	**Technical Notes**
Medicare Payment	**Downloadable Data**

About the Report

The Medicare fee-for-service payment data was provided by the Centers for Medicare and Medicaid Services. The Medicaid payment data (fee-for-service and managed care), was provided by the Pennsylvania Department of Human Services. The most recent Medicare and Medicaid payment data available to PHC4 for use in this report was for 2012. Medicaid data is reported at the statewide level only.

Accounting for high-risk patients

Some patients who undergo joint replacements have more complex conditions than others—conditions that may be associated with the need for joint replacements and/or other chronic diseases such as diabetes, heart disease, and hypertension. Included in the data PHC4 receives from Pennsylvania hospitals is information indicating, in simple terms, "how sick the patient was" on admission. The information is used to report fair comparisons among hospitals. Using this information, PHC4 developed a complex mathematical formula to "risk adjust" the readmission data included in this report, meaning that hospitals receive "extra credit" for operating on patients who are more seriously ill or at a greater risk than others. Risk adjusting the data is important because sicker patients might be more likely to be readmitted.

To calculate risk for the patients in this report, PHC4 uses the results from laboratory blood tests, patient characteristics and demographics (e.g., age, gender, race/ethnicity, and percent not speaking English very well), and billing codes that describe the patients' medical conditions such as the presence of heart failure, aseptic necrosis (bone death due to loss of blood supply), morbid obesity, and other chronic diseases. A comprehensive description of the risk-adjustment techniques can be found in the Technical Notes on PHC4's website at **www.phc4.org**.

What is measured in this report and why are these measures important?

PHC4's mission is to provide the public with information that will help to improve the quality of health care services while also providing opportunities to restrain costs. The measurement of quality in health care is not an exact science. As such, there may be a number of ways to define quality. Measures for this report were chosen because they are important components in examining quality of care and resource use for patients undergoing joint replacement surgery.

Results for the measures included in the report are displayed separately for knee and hip.

About the Report

The following measures are reported:

Total Number of Cases (reported for hospitals and surgeons) – This is the number of total knee or hip replacements (both elective and non-elective procedures) performed by the hospitals and surgeons included in this report. This information provides an idea of the experience each facility or surgeon has in performing knee and hip replacements. Studies have suggested that, in at least some areas, the volume of cases treated by a hospital or physician can be a factor in the success of the treatment. Not included in this measure are procedures performed on patients less than 18 years old, those performed in Veterans' hospitals, or those performed in other states by surgeons who also practice outside Pennsylvania. Also, if two joint replacements were performed during the same hospitalization, the case was only counted once. (Note that if two joint replacements were performed during the same hospitalization and two different surgeons performed the surgeries, an exception was made when counting surgeon volume. Each replacement was counted once for each surgeon.)

Risk-Adjusted 30-Day Hospital Readmission (reported for hospitals) – This measure is reported as a statistical rating that represents the number of patients who were readmitted to a Pennsylvania general acute care hospital within 30 days of being discharged from the hospital where the joint replacement was performed. A readmission was counted only if it was considered "unplanned"; that is, the patient was readmitted for a reason that was not defined as planned using the Centers for Medicare and Medicaid Services planned readmission algorithm developed specifically for total knee and hip replacements that are likely to be elective.[2]

Readmission is an outcome influenced by the quality of inpatient and outpatient care, including coordination of care, discharge planning, and medication reconciliation. Identifying readmissions provides information that can inform quality improvement efforts that have the potential to improve patient experience and lower health care costs.

While the *total number of cases* includes all knee and hip replacements for adult patients including elective and non-elective procedures, this *30-day readmission* measure only includes patients whose procedures were likely to be considered elective. That is, more clinically complex cases were excluded from the readmission analysis such as patients with femur, hip or pelvic fractures, patients with mechanical complications of a device as a principal diagnosis, and patients undergoing revisions or resurfacing procedures at the same time as the joint replacement. Additional exclusions specific to this measure are outlined in the Technical Notes on PHC4's website at **www.phc4.org**.

[2] Centers for Medicare and Medicaid Services. 2014. "2014 Procedure Specific Readmission Measures Updates and Specifications Report: Elective Primary Total Hip Arthroplasty (THA) and/or Total Knee Arthroplasty (TKA) – Version 3.0." Available at http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Measure-Methodology.html.

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To determine the risk-adjusted rating, PHC4 compares the number of patients one could reasonably expect to be readmitted, after accounting for patient risk, with the actual number of readmissions. (Please see "Understanding the Symbols" box below.) A rating is reported for hospitals with five or more knee or hip replacement cases.

Understanding the Symbols

The symbols displayed in this report represent a comparison of an actual readmission rate to what is expected after accounting for patient risk.

Symbol	Description	Explanation
○	Rate was significantly lower than expected.	Fewer patients were readmitted than could be attributed to patient risk and random variation.
⊙	Rate was not significantly different than expected.	The number of patients who were readmitted was within the range anticipated based on patient risk and random variation.
●	Rate was significantly higher than expected.	More patients were readmitted than could be attributed to patient risk and random variation.

Case-Mix Adjusted Average Hospital Charge (reported for hospitals) – The amount a hospital bills for a patient's care is known as the charge. The charge includes the facility fee but does not include professional fees (e.g., physician fees) or other additional post-discharge costs such as rehabilitation treatment, long-term care, and/or home health care. In almost all cases, hospitals do not receive full charges from private insurance carriers or government payers. Hospitals typically receive actual payments that are considerably less than the listed charge. Hospital charges often vary by individual hospital and by regions of the state. The average charge included in this report was adjusted for the mix of cases specific to each hospital and reflects the entire length of stay. As with the readmission measure, the average hospital charge only includes patients whose procedures were likely to be considered elective. Additional exclusions specific to this measure are outlined in the Technical Notes on PHC4's website at **www.phc4.org**. The average charge is reported for each hospital with 11 or more cases.

Average Medicare Fee-for-Service Payment (reported for hospitals) – This section of the report displays the average amount a hospital is paid for a Medicare patient in the fee-for-service system (along with the number of cases included in the average payment and average hospital charge for these cases). Payments from Medicare Advantage plans (e.g., Medicare HMOs) are not included. The average Medicare payment was calculated

using the dollar amount the Centers for Medicare and Medicaid Services provided for the Medicare Part A hospital insurance fund payment. Patient liabilities (e.g., coinsurance and deductible dollar amounts) were not included. The average payment was calculated by summing the Medicare payment amounts for the cases (calculated separately for knee and hip replacement) and dividing the sum by the number of cases. Hospitals were given an opportunity to verify the average Medicare payments reported for their facilities prior to the public release of the information.

Medicare payments are based on formulas that take into account regional variation in the cost of delivering care, the increased costs from teaching doctors still in training, higher costs for hospitals that service large numbers of low-income patients, and for costs of new technologies. Medicare payments are based on the entire hospital stay.

The most recent Medicare payment data available to PHC4 was for calendar year 2012. As with the 30-day readmission and average charge measures, the average Medicare payment only includes patients whose procedures were likely to be considered elective. That is, more clinically complex cases were excluded from the Medicare payment analysis. The average Medicare payment is reported for each hospital with 11 or more cases.

Uses of the report

The report can be used as a tool to examine hospital performance for knee and hip replacement surgery. It is not intended to be a sole source of information in making decisions about knee and hip replacement surgery, nor should it be used to generalize about the overall quality of care provided by a hospital. Readers of this report should use it in discussion with their physicians who can answer specific questions and concerns about knee and hip replacement surgery.

Patients/Consumers can use this report to aid in making decisions about where and with whom to seek treatment involving knee or hip replacement. This report should be used in conjunction with a physician or other health care provider when making these decisions.

Group Benefits Purchasers/Insurers can use this report as part of a process in determining which hospitals provide quality care for employees, subscribers, members, or participants who need knee or hip replacement surgery.

About the Report

Health Care Providers can use this report as an aid in identifying opportunities for quality improvement and cost containment.

Policymakers/Public Officials can use this report to enhance their understanding of health care issues, to ask provocative questions, to raise public awareness of important issues, and to help constituents identify health care options.

Everyone can use this information to raise important questions about why differences exist in the quality and efficiency of care.