

Kaiser Permanente Policy Story, v1, No. 6

Tracking Surgical Outcomes: Kaiser Permanente's Total Joint Replacement Registry

- The demand for total joint replacements (new hips and knees) has been increasing rapidly in the United States and is expected to grow at an explosive pace in the coming years.
- Since 2001, Kaiser Permanente has operated a tracking system to determine which joint replacement implants work the best and last the longest, and which surgical methods produce the best results for total joint patients.
- Kaiser Permanente orthopedic surgeons and other caregivers have now tracked 150,000 hip and knee implants, creating by far the largest database of joint replacement outcomes in the country.
- This information has allowed Kaiser Permanente surgeons to share collective experience over time, alter practice patterns, and measurably improve patient outcomes.

Policy Context

Demand for total joint replacement surgery is accelerating rapidly as baby boomers reach retirement age. According to one estimate, the number of hip replacements in the United States will increase by 174 percent from 2005 to 2030, while knee replacements are expected to rise 673 percent.¹ Another estimate shows Medicare spending on total joint replacement surgeries rising from \$5 billion in 2006, to almost \$50 billion in 2030.²

The Affordable Care Act directs the Medicare program to test bundled payments for total joint replacement surgery—a single payment for all hospital, physician, post-acute, and home care involved in a surgical case, from three days before hospital admission until 30 days after discharge.³ Such a payment mechanism would put providers at greater financial risk for the cost of surgeries.

The Challenge

The safety of the implantable devices used in joint replacement surgeries has been a concern for many years. These devices have often been involved in product recalls, requiring patients to undergo repeat surgeries (known as “revisions”). The Food and Drug Administration (FDA) does not require

manufacturers to perform clinical trials for efficacy or safety if a new product is found to be sufficiently similar to earlier ones. Once a device is approved, the FDA only tracks patient outcomes after a sizable enough number of problems has been reported.

The U.S. has no central location where data on long-term patient outcomes from total joint procedures are collected or analyzed. The American Academy of Orthopaedic Surgeons has sought to establish a national joint replacement registry, but has encountered many obstacles, including privacy and litigation concerns, inconsistent data reporting, issues regarding the ownership and management of data, and funding.⁴ By contrast, Sweden maintains such a registry and has reduced its revision rate by 50 percent using outcomes information to identify best clinical practices.⁵

Kaiser Permanente Solution

Kaiser Permanente has operated its own total joint replacement registry since 2001. This registry—the largest of its kind in the U.S.—was specifically developed to: (1) notify surgeons of implant recalls; (2) identify the most effective surgical techniques and implant devices; (3) determine which patients might be at risk for poor clinical outcomes; and, (4) provide a foundation for research.

Outcomes

Kaiser Permanente's total joint registry provides physicians with direct feedback about patient outcomes and has helped shape clinical best practice within the organization. Currently, 350 surgeons from 43 medical centers contribute to the registry, with a voluntary participation rate of over 90 percent. The database now includes 150,000 cases.⁶

In 2009 alone, registry data were used to investigate 15 product recalls and advisories associated with specific implant devices. In addition, registry data have been instrumental in identifying the most effective surgical techniques. For example, surgeons reduced partial knee replacements after registry data showed that the revision rate was 10 percent greater than for total knee replacement. When registry data demonstrated that the use of an uncemented compound in total knee operations was associated with shorter implant life and higher revision rates, surgeons increased their use of other alternatives.⁷

Registry data have also helped surgeons identify which patients are more at risk for poor clinical outcomes. For example, they learned that patients with diabetes are at greater risk for revision surgery. They learned, also, that patients with higher body mass index are at greater risk for surgical site infection.⁸

In addition to the total joint registry, Kaiser Permanente has developed four more orthopedic registries, plus others focused on heart valve replacement, pacemakers, and implantable cardioverter-defibrillators.

Practical Implications and Transferability

Kaiser Permanente has published numerous clinical findings from the total joint registry, helping to build scientific evidence that supports total joint replacement procedures. In addition, we have helped other organizations develop similar registries. Kaiser Permanente co-chairs the International Consortium of Orthopaedic Registries, established by the FDA in 2010, which includes 14 countries engaged in similar efforts.

Successful registry design and development hinge on the active involvement of medical groups. A key to the success of Kaiser Permanente's joint registry—both in terms of physician participation and impact on practice—is the work's origin as a clinician-led initiative focused on improving care for patients.

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- ¹ Steven Kurtz, Kevin Ong, Edmund Lau, Fionna Mowat, Michael Halpern, "Projections of Primary and Revision Hip and Knee Arthroplasty in the United States from 2005 to 2030," *The Journal of Bone and Joint Surgery*, April 2007; 89-A(4): 780-785.
- ² Natalia A. Wilson, Eugene S. Schneller, Kathleen Montgomery, Kevin J. Bozic, "Hip and Knee Implants: Current Trends and Policy Considerations," *Health Affairs*, November/December, 2008; 27(6): 1587-1598.
- ³ Robert E. Mechanic, "Opportunities and Challenges for Episode-Based Payment," *New England Journal of Medicine*, September 1, 2011; 365(9): 777-779.
- ⁴ Wilson et al, *Health Affairs* (2008).
- ⁵ Elizabeth W. Paxton, Maria C.S. Inacio, Tamara Slipchenko, Donald C. Fithian, "The Kaiser Permanente National Total Joint Replacement Registry," *The Permanente Journal*, Summer 2008; 12(3): 12-16.
- ⁶ Kaiser Permanente Surgical Outcomes and Analysis (as of August 6, 2012).
- ⁷ Paxton, et al. 2008; Elizabeth W. Paxton, Maria C.S. Inacio, Mary-Lou Kiley, "The Kaiser Permanente Implant Registries: Effect on Patient Safety, Quality Improvement, Cost Effectiveness, and Research Opportunities," *The Permanente Journal*, Spring 2012; 16(2): 36-44.
- ⁸ Elizabeth W. Paxton, Maria C.S. Inacio, Monti Kahtod, Eric J. Yue, Robert S. Namba, "Kaiser Permanente National Total Joint Replacement Registry: Aligning Operations with Information Technology," *Clinical Orthopaedics and Related Research*, July 20, 2010; 468(10): 2646-2663.