Reducing variation in total knee replacements

A new study in the journal Health Affairs of total knee replacement (TKR) confirms that wide variations in care exist among hospitals based on factors such as geographic location.

The High Value Healthcare Collaborative found significant variations in TKR among the 5 participating health care systems. Among these were length of stay (LOS), where patients were discharged after surgery, and complication rates (side-bar).

The study also reports 3 practices for managing variability:

• a multidisciplinary approach to preop preparation, used by the hospital with the lowest in-hospital complication rate
• dedicated OR teams for TKRs, used in hospitals with the fastest operating times
• managing patient expectations by engaging them in discharge planning even before admission, which started after the data were analyzed, has reduced LOS.

Best practices
Variation, particularly in where patients are discharged after surgery, is “not that surprising,” says Mark Froimson, MD, an orthopedic surgeon at the Cleveland Clinic who is also president and CEO of Euclid Hospital in Ohio and one of the study’s co-authors.

Differences include cultural, personal, and professional preferences in various regions.

The collaborative, “helps to ferret out those differences,” he says.

All 3 practices for managing variability are at “various stages of development” in the Cleveland Clinic system, Dr Froimson says. He adds that care is “highly personal with patients and professionals,” which is a factor when working on “more uniform acceptance of practices.”

Multidisciplinary preop approach
At the Cleveland Clinic, the preop assessment/preparation team includes the physician, outpatient and inpatient nurse, physical therapist, anesthesiologist, pain management specialist, and an internal medicine physician. Much of this work is done in a classroom setting.

Preop information should be organized and comprehensive, says Amy Storsveen, RN, orthopedic surgery nurse manager at the Mayo Clinic, a founding member of the collaborative. At the Mayo Clinic, patients receive information about what to expect before, during, and after surgery.

“Patients are offered assistance from social services if needed, and social services will work closely with the patients and their families,” Storsveen says. Details are important; an example is a patient making sure a walker will fit through his front door at home.
The study collaborative

The study included a wide age range of patients, not just those eligible for Medicare, from various locations, allowing the researchers to evaluate practices throughout the country.

Eligibility criteria included:
- single (left or right) primary total knee replacement (TKR)
- age 18 to 89 as of January 1, 2008
- discharged after TKR in 2008 or 2009
- principal diagnosis of osteoarthritis.

Findings
- Surgeons who performed more TKRs tended to have shorter lengths of stay (LOS), shorter operating times, and fewer complications.
- LOS was longer if the surgery was later in the week.
- Operating time was 80 to 105 minutes; longer time was associated with longer LOS, and operating time trended lower with high surgeon caseloads.
- The mean complication rate was 0.8% (range 0.2% to 1.6%).
- LOS was longer for older patients, men, those with more comorbidities, the morbidly obese, and Medicare enrollees.

About the collaborative
The High Value Healthcare Collaborative supports a distinct type of collaboration.

The authors say the most important strength is open dialogue among experts who can look at variation in the data and come up with hypotheses to explain it.

According to the authors, the collaborative’s methodology has advantages over traditional research methods, including more insight into clinical practice; identification of low and high care value processes; and findings that can be rapidly determined, exported, and studied.

Founding members
- Cleveland Clinic
- Denver Health
- Dartmouth-Hitchcock Medical Center
- Dartmouth Institute for Health Policy and Clinical Practice
- Intermountain Healthcare
- Mayo Clinic

Power of a dedicated team
“It’s a challenging balance to have dedicated OR teams and have OR personnel who can be cross-functional,” Dr Froimson says. “It requires a sufficient case volume.”

Storsveen credits a team approach for high efficiency in the 10 ORs dedicated to the adult orthopedic reconstructive practice at the Mayo Clinic. She hires staff specifically for the area, giving candidates a clear picture of roles and responsibilities. “I stress that there are a lot of instruments to put together,” she says. “It’s like a puzzle and takes a lot of specialization.”

Because team members know the surgeons they work with so well, they can “anticipate the next step,” Storsveen says. A surgeon may finish a surgery in one OR while another team sets up in another, further gaining time.

The team approach is also used in other areas of the Mayo Clinic’s ORs. If necessary, staff may work in other operative areas within the Mayo Clinic.

“We don’t think in silos,” Storsveen says. “We take care of every patient.” She notes, however, that the staff spend most of their time working within the reconstructive orthopedic specialty.

Other benefits of a dedicated team are staff and surgeon satisfaction. “Everybody likes to be part of a team,” Storsveen says, which may be why many staff have stayed in orthopedic surgery for 15 years and longer.

‘Rapid recovery program’
Dr Froimson says engaging patients in discharge planning before admission is based on a “defining principle...that we share the same goal, which is to discharge them
safely back to their home.” Once the mutual goal is established, patients are ready for education.

The Cleveland Clinic uses a “rapid recovery program,” which includes a nurse who sets up the first postoperative home or outpatient physical therapist visit before the patient’s admission.

“It gives patients the confidence they need,” says Dr Froimson. “They know they have someone to contact. Patients want to go home but are apprehensive.”

Extensive preoperative preparation and planning mitigate that apprehension.

Education at the Mayo Clinic includes a booklet with instructions such as when to resume driving, postop pain medication management, physical therapy exercises, incision care, sexual activity after surgery, and when to contact a health care provider.

If a patient needs extended care after hospitalization, it’s important to evaluate the best location for that care, as Storsveen learned first hand when her mother had joint replacement surgery at the Mayo Clinic. Social services was able to locate a rehab facility in her mother’s hometown, 2 hours away, to provide the best care in a familiar environment.

“My mother was not able to care for herself after surgery and probably wouldn’t have done the exercises needed to recover if someone was not right there to help her,” says Storsveen.

Orchestrating success

One of the collaborative’s strengths is its ability to dig into the complex health care system by looking at multiple variables, Dr Froimson says.

Creating the change needed to reduce variability and improve care delivery requires a conductor’s skill to integrate approaches.

For example, “It’s not just dedicated OR teams, it’s how those teams are integrated into the system,” Dr Froimson says. “The complex variables have to be orchestrated to ensure success.”

The collaborative plans to study other conditions: diabetes, heart failure, asthma, weight loss surgery, labor and delivery, spine surgery, and depression.

—Cynthia Saver, MS, RN

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References
