

CORR Insights®: The EQ-5D-5L is Superior to the -3L Version in Measuring Health-related Quality of Life in Patients Awaiting THA or TKA

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Where Are We Now?

Although patient-reported outcome measures (PROMs) have been a mainstay in orthopaedic surgery and total joint arthroplasty (TJA), several events have prompted the increased use of PROMs in the United States: (1) The widespread adoption of the American Joint Replacement Registry, which promotes

the collection of a subset of PROMs and offers benchmarking against peer groups for measures; (2) the advent of the Comprehensive Care for Joint Replacement model, which mandates bundled payment pricing in 34 metropolitan statistical areas, and offers participants automatic quality points (increasing the likelihood of a rebate or diminishing the potential pain of a repayment) for the routine collection and submission of PROMs; and (3) a shifting attitude toward perceiving value in total joint care.

In my view, total joint surgeons are among the more quantitative and objective of orthopaedists. Dr. Harris's original hip score [6], a noble attempt at incorporating patient satisfaction into an outcome score, still remains the most-cited orthopaedic paper of all time, and by a large margin [8]. Clearly, there is value in the ability to assign a quantitative score to patients' outcomes after TJA. Equally important, of course, is determining the functional changes our patients experience following a joint replacement surgery.

But PROMs have limitations, including dependence on interpretation by the survey respondent; potential lack of complete data; and subjectivity

of response (was the patient having a bad morning? Did (s)he have to walk a long way from an expensive parking lot?). Still, collecting PROMs remain among the most essential ways we, as physicians, can understand our value in the minds of our patients.

In the current study, Jin and colleagues [7] present an important step forward in patient assessment by measuring the health-related quality of life (HRQOL) of patients awaiting hip or knee arthroplasty. The authors found that a five-level instrument offered better discriminatory ability and correlated better with other existing disease-specific PROMs compared to previous three-level versions of the EuroQOL-Five Domain (EQ-5D). By using this more-accurate instrument, we can effectively quantify HRQOL, which could potentially aid economic decisions associated with a medical treatment. For example, we can ask: For a given cost of an intervention, how much improvement in quality of life, particularly in quality-adjusted life years (QALYs), can be achieved [3, 9, 12]? When one intervention is better at improving QALYs per cost, it should (generally) be favored [14]. This type of approach has recently led to the proliferation of decision trees and other cost-effectiveness analyses, which may lead to substantial and long-lasting health policy decisions or changes in public perception of a procedure [10].

This CORR Insights® is a commentary on the article "The EQ-5D-5L is Superior to the -3L Version in Measuring Health-related Quality of Life in Patients Awaiting Hip or Knee Arthroplasty" by Jin and colleagues available at: DOI: [10.1097/CORR.0000000000000662](https://doi.org/10.1097/CORR.0000000000000662).

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Where Do We Need to Go?

As health systems transition to value-based care models, it is important to understand the components of value, which can be defined as the true cost of a health-intervention, and the outcomes it can achieve. Knowing a patient's own perception of their HRQOL is essential to calculating the second half of that equation.

Any physician performing a procedure should have a clear understanding of the patient's preoperative condition, the patient's expected postoperative condition, and the likelihood of achieving the patient's desired outcome. For the patient, publicly available data on treatment outcomes (and perhaps, physician and hospital outcomes, risk-adjusted to their particular condition), would aid considerably in their decision making. Well validated and sensitive PROMs offer an opportunity to have both. Once such data are readily available, value naturally follows; as Michael Porter put it, "measuring, reporting, and comparing outcomes are perhaps the most important steps toward rapidly improving outcomes and making good choices about reducing costs" [11].

There is evidence that certain patient populations are at risk for not improving after a THA or TKA. Berliner and colleagues have shown in separate studies [4, 5] that patients with certain functional and pain scores on preoperative PROMs are unlikely to experience meaningful improvement with TJA. Many surgeons (and patients) have experienced the disappointment of a well-performed TJA that the patient found unsatisfying. Wouldn't it be better to preempt that unfortunate outcome, finding an alternative treatment if necessary?

Although threshold scores may predict who is likely or unlikely to meet a minimum clinically important difference (MCID), that still does not guarantee patient satisfaction, which is a tricky quantity to measure and report [13]. Nevertheless, as clinicians, we certainly owe it to our patients to improve their chances at experiencing a MCID after a risk-filled surgical intervention.

It should also be noted that, as far as I can tell, the literature to date examining the relationship between PROM thresholds and revision surgery is in its infancy. Though we know of surgical and patient factors that may predispose to early revision, our understanding of the role of PROMs in this regard must continue to grow. Such information would be helpful for patient monitoring after surgery.

How Do We Get There?

The creation of a searchable database, available publicly, and risk adjusted, with captured PROM scores comparing pre- and postoperative results for patients undergoing TKAs or THAs is an important next step. Such a database must link these PROM scores to procedural and patient-specific information including demographic and comorbidity data. Ideally, this database would contain not only disease-specific measures, but a general HRQOL measure for aiding economic and decision analysis, such as the EQ-5D. The American Joint Replacement Registry (AJRR) [2] has made substantial steps in this regard, but involvement in the United States is far from complete, and the registry allows different levels of participation. As buy-in increases, the AJRR might mandate full level reporting for all participants, which will aid in this goal.

Measuring true cost continues to be a challenge, but there is a growing movement to utilize alternative cost-accounting measures such as time-driven activity based costing [1], and for health systems to publish charges. Though charges are a poor proxy for cost, increasing the availability of data will aid in improving price transparency.

Surgeons must be willing to acknowledge that some patients, despite radiographic prevalence of degenerative joint disease, are unlikely to experience an MCID after a THA or TKA. Use of preoperative PROMs in the clinic should attempt to identify these patients (those with either extremely high or low preoperative functional scores, for instance) and help guide them toward a different intervention. Though there exist online calculators for perioperative risk, including the AJRR risk calculator (<http://riskcalc.aaos.org/input.html>), these as of yet do not include preoperative PROM scores, and may be modified in the future to do so.

Finally, our understanding of the role of PROMs in predicting early revision surgery should continue to evolve. As registries continue to hold more data and predictive power, future studies should focus on early PROM thresholds that predict early revision surgery, and the ability of other modalities to influence these outcomes. For instance, there are patients with continued knee pain after TKA who may undergo early revision surgery, and then continue to have the same (or worse) knee pain. Some other less risky intervention may serve these patients better (interventional pain therapy, cognitive behavioral therapy, for example). But only when we have made further efforts to understand the role of PROMs after surgery will we be equipped to make clinical decisions based on this modality.

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