2018

# It is all about value now: The data you need to collect and how to do it

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AOA Critical Issues

# It Is All About Value Now: The Data You Need to Collect and How to Do It

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**Abstract:** Health care has entered an era where value and quality have become more important than just quantity. Patient-reported outcomes are a critical aspect of the value equation. Orthopaedic surgeons will need to demonstrate that their treatment regimens actually are enhancing their patients' quality of life. In order to do this, the collection of prospective patient-reported outcome data will be critical. For most patients, this will require the use of a general health survey and a disease-specific questionnaire. Currently, most orthopaedic surgeons are not collecting this type of data. The questions are: What types of patient-generated questionnaires can provide the information needed, and how can these data be collected in a cost-effective manner? We will discuss what value means to payers and what the outcome measures are that are selected by various orthopaedic subspecialty societies to evaluate patients who undergo total hip and knee arthroplasty as well as patients with shoulder and knee problems, and we will review potential strategies to collect prospective patient-outcome data in a cost-effective manner in the office.

Currently, we are in an era where value and quality of care trump quantity. Outcomes are a critical aspect of the value equation because "value = outcomes/cost." Orthopaedic surgeons will need to demonstrate that their surgical procedures actually are enhancing their patients' quality of life. Therefore, the collection of patient-reported outcome data is essential. By 2019, physicians who do not track their outcomes will be subject to a 4% penalty on the Centers for Medicare and Medicaid Services (CMS) payments[1-3]. Herein, we will review the outcome measures selected by various specialty societies to evaluate patients who undergo total hip and knee arthroplasty and patients with shoulder and knee problems. In addition, we will review potential strategies to collect data in a cost-efficient manner in the office.

## What Does Value Mean to Payers?

Value in health care is defined as patient-centered health outcomes per health care dollar spent to achieve those outcomes[4]. Therefore, measuring outcomes is essential to improving value in health care. However, given the paucity of information currently available on musculoskeletal outcomes, stakeholders have used other methods to define and measure health-care "quality" and "value." For example, *U.S. News and World Report*

**Disclosure:** On the **Disclosure of Potential Conflicts of Interest** forms, *which are provided with the online version of the article*, one or more of the authors checked "yes" to indicate that the author had a relevant financial relationship in the biomedical arena outside the submitted work (http://links.lww.com/JBJS/E820).

and *Consumer Reports* have developed their own algorithms to assign quality ratings to assess health-care provider performance. The domains used in these rating systems include structural, process, and patient-experience measures. Structural measures, such as adoption of electronic health records (EHRs), are easy to define and measure, but are not easily modified by health-care providers[5]. Process measures, such as administration of thromboembolism prophylaxis, are relatively easy to measure and act upon. However, these measures may not necessarily be correlated with outcomes that are important to patients. Outcome data, such as infection rates and patient-reported outcomes, are the most direct measure of quality. However, measuring health outcomes is associated with its own set of challenges: they can be costly to measure, there is a time lag between the intervention and the outcome, and risk adjustment is necessary when comparing outcomes across providers. Despite these limitations, there is increasing emphasis on using patient-reported outcomes to measure value in health care. Costs are the second part of the value equation, and accurate measurement of costs is crucial to understanding the true value of delivered care. Costs, like outcomes, must be measured at the patient level. The cost should include the total cost of all resources used in treating a patient's full cycle of care for a given condition, including personnel, supplies, equipment, and space[4].

While payers are using a variety of domains to assess quality and value, they are increasingly focused on outcomes. Payers use outcome data in value-based payment models and with benefits design to incentivize higher-value care. The CMS has implemented several value-based payment programs, including the Bundled Payments for Care Improvement (BPCI), which incentivizes all providers involved in an episode of care to optimize patient outcomes while reducing costs; the Hospital Value-Based Purchasing Program, which provides incentive payments to acute-care hospitals based on outcomes; and the Hospital Readmissions Reduction Program, which provides incentives to hospitals to reduce unnecessary hospital readmissions[6-8]. Commercial payers, such as Cigna, are using benefit design to encourage their beneficiaries to seek care from providers with above-average outcomes. Cigna's Centers of Excellence program identifies hospitals that demonstrate excellence in both patient outcomes and cost-efficiency for 18 inpatient surgical procedures and medical conditions[9]. Center of Excellence determinations are made publicly available online for use in patient decision-making, and may be factored into pay-for-performance agreements with some hospitals in the Cigna network.

Among outcome measures, patient-reported outcome measures (PROMs), which include assessments of symptoms, function, and quality of life reported directly by patients, increasingly are being used in both clinical decision-making and value-based payment models. PROMs are especially important for assessing outcomes from treatments for which the primary goal is to reduce pain and improve function and quality of life, and are thus increasingly recognized as the most relevant measure of value in orthopaedic surgery. CMS's Comprehensive Care for Joint Replacement (CJR) model, a mandatory bundled payment model for hip and knee replacement, sets the stage for the use of PROMs in payment[10]. Hospitals that voluntarily submit preoperative and postoperative general health and condition-specific PROMs data can receive points toward their composite quality scores, which may increase their financial opportunity under the model[11]. The PROMs data also will be used to finalize and test a hospital-level, risk-adjusted PROMs performance measure for primary total hip and knee arthroplasty, which may be used for value-based payment in the future. Additionally, PROMs can inform the patient-physician shared decision-making process by comparing a patient's baseline pain and function to that of similar patients who are considering a given treatment option. PROMs also have been used to predict whether patients will achieve clinically meaningful improvement in function and quality of life after total joint replacement[11,12].

## Total Hip and Knee Arthroplasty: Outcome Measure Selection in the Bundled Payment Era

Original data collection strategies for patients who undergo total hip and knee arthroplasty involved the surgeon's assessment of a patient's overall pain and function. A variety of physician-generated forms have been used, including the Harris hip score, the Knee Society Score, the Merle d'Aubigné score, and the University of California at Los Angeles (UCLA) Activity Score[13-16]. Data collection in this manner is subject to surgeon detection bias; with all of these measures, there is limited patient input.

PROMs allow patients to regularly report their outcome without physician interpretation or bias. The patient can evaluate pain, function, and overall quality of life. The CJR model is a mandatory bundled payment program that holds participant hospitals financially accountable for the cost and quality of the 90-day episode of care[10]. This is a 5-year program that commenced in April 2016. The CJR program incentivizes care coordination by evaluating the costs and the quality of care that are associated with both inpatient and outpatient activities. There will be winners and losers in the CJR model, and although some hospitals will receive reconciliation payments from CJR if certain cost and quality metrics are realized, other hospitals will have to make reconciliation payments to CMS if the cost and quality goals are not met. PROMs are being used to evaluate and monitor the quality of care. In years 4 and 5 of the program, the use of PROMs reporting will be mandatory. Data collection with respect to PROMs usually includes a general health survey and a disease or condition-specific survey.

There are a number of different general health surveys that can be used to assess a patient with hip or knee arthritis, including the National Institutes of Health (NIH)-funded Patient-Reported Outcomes Measurement Information System (PROMIS); the Short Form-36 (SF-36) health survey; the Veterans RAND 12-item (VR-12) health survey; and the EuroQol 5 dimensions (EQ-5D) measure[17-19]. There are also a number of different patient-generated disease-specific surveys that can be used to evaluate hip and knee patients, including the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), the Oxford Hip and Knee Society Scoring System, the Hip Disability and Osteoarthritis Outcome Score (HOOS), and the Knee Injury and Osteoarthritis Outcome Score (KOOS)[20-24]. Both the HOOS and the KOOS include 42 items.

As part of the CJR process, PROMs need to be collected both preoperatively and postoperatively. The question is, what is the best outcome measure to use for the collection of these data? The HOOS and the KOOS were obvious potential choices. However, surgeons were concerned that 42 items would be too much for many patients to manage in an office visit, and could hamper flow in the surgeon's office. There were also some concerns that some of the questions in the HOOS and the KOOS were more appropriate for patients with sports injuries rather than those undergoing total hip or knee arthroplasty. Orthopaedic surgeons were searching for a more user-friendly questionnaire that could provide the appropriate data. Therefore, Lyman et al. developed the KOOS, JR and the HOOS, JR[24,25]. The KOOS, JR is a validated scoring system that has 7 items for assessing stiffness, pain, and function. The HOOS, JR is also a validated scoring system that has 6 items for assessing pain and function. The advantages of these scoring systems are that they are validated and user-friendly because there are a limited number of questions. The weakness of both scoring systems is that they do not assess rigorous activity, and more data may be needed if patients are being evaluated for a research study. However, most patients can fill out these forms on digital tablets in <5 minutes.

The American Association of Hip and Knee Surgeons (AAHKS) convened an outcomes summit in August 2015 that included the American Association of Orthopaedic Surgeons (AAOS), The Hip Society, The Knee Society, the American Joint Replacement Registry (AJRR), the Yale Center for Outcomes Research and Evaluation (CORE), the CMS, and various payers to select potential outcome measures to be used for the CJR program. After this meeting, the orthopaedic organizations sent a joint letter to the CMS recommending that either the VR-12 or the NIH PROMIS be used as the general health survey and that the HOOS, JR and the KOOS, JR be the disease-specific surveys for the PROMs for the CJR program. These recommendations were accepted by the CMS to use as the outcome measures for the CJR program.

As part of the CJR program, both cost and quality are being assessed and are being used to determine eligibility for reconciliation payments to hospitals. Three aspects of quality are being evaluated, including risk-stratified complication rates (RSCRs), patient satisfaction scores (the Hospital Consumer Assessment of Healthcare Providers and Systems [HCAHPS] survey), and the prospective collection of PROMs. Hospitals must clear a quality threshold to receive reconciliation payments. When assessing the overall hospital quality level, there is a weighted formula where the RSCR counts for 50%, the HCAHPS survey counts for 40%, and the PROMs data count for 10%. The CJR model uses a composite quality score (CQS) to link quality to payment to the hospital. The CQS is determined by performance improvement on 2 quality measures. In addition, the submission of PROMs by hospitals to the CMS can enhance the hospital's overall financial payments from the CJR program.

## What Outcomes Tools Should Be Used to Assess the Shoulder, the Elbow, and the Knee?

In 2013, the American Shoulder and Elbow Surgeons (ASES) established a value committee to determine which outcome instruments should be used to evaluate shoulder and elbow disorders. Both quality-of-life and anatomic outcome instruments were selected as primary measurement tools, and instruments for disease states were chosen for research consideration. The following criteria were used to choose outcome instruments: (1) PROMs; (2) ease of use for providers; (3) ease of use for patients; (4) inexpensive or free and readily available to providers; and (5) documented and known metrics, including reliability, validity, and MCIDs (minimal clinically important differences).

Because the ASES overlaps by anatomic region with the American Orthopaedic Society for Sports Medicine (AOSSM), the Arthroscopy Association of North America (AANA), and the American Society for Surgery of the Hand (ASSH), it was important to meet with these groups to try to reach a consensus so that the different groups would not be recommending different outcome instruments. Both the AOSSM and the AANA formed committees to assess various outcome instruments. The 4 organizations had 3 meetings between July 2015 and March 2016.

The groups recommended the VR-12[18] and the ASES score[26] to evaluate shoulder disorders. For research purposes, the ASES recommended use of the WOSI (Western Ontario Shoulder Instability Index)[27], WOOS (Western Ontario Osteoarthritis of the Shoulder Index)[28], and WORC (Western Ontario Rotator Cuff Index)[29] instruments. For the elbow, the ASES and the ASSH recommended the DASH (Disabilities of the Arm, Shoulder and Hand) score[30].

For sports knee problems, the AOSSM committee recommended use of the IKDC SKF (International Knee Documentation Committee Subjective Knee Form)[31] and the Marx Activity Scale[32], while the AANA committee recommended either the IKDC or the KOOS and the Marx Activity Scale.

Certainly, there are multiple outcome instruments that can be used for shoulder, elbow, and knee injuries, and the various society committees recognized this. The use of the NIH PROMIS was discussed at length because it uses computer-adaptive technology (CAT), which allows hundreds of possible questions; the specific questions are tailored based on earlier responses[33]. Although the PROMIS has been developed by the NIH and may become a de facto standard, the committees of the various societies did not believe that, at this time, there was sufficient documentation of known metrics to recommend PROMIS for shoulder, elbow, and knee disorders.

The need to use different outcome instruments places another burden of documentation on health-care providers. Therefore, the instruments selected to measure outcomes will have to become embedded within existing EHR systems or the required documentation will become overly burdensome. Furthermore, in a recent article, Duncan et al. noted that the cost of meeting various quality payment program standards is likely greater than the potential penalties that will be imposed, so surgeons may choose not to collect and track these data[34].

## Data Collection in the Office in a Cost-Effective Way

The decision to collect PROMs involves the entire practice, including the administration, the front-desk staff, the nursing staff, and the physicians. The implementation of an effective process for PROMs collection requires group agreement,

capital (upfront and continuing), and ongoing staff time. Before embarking on the process, the group must make difficult decisions, including which PROMs to utilize, how the data are to be utilized (research, patient care, or both), the timing of data collection, and a PROMs collection strategy.

A few general strategy points are relevant for successful implementation. First, useful PROMs data require, at a minimum, baseline (preintervention) and timely postintervention data. If PROMs are used for patient care, data are collected at each patient visit and potentially at regular intervals outside of such visits (e.g., annual PROMs administration for patients with total joint replacement). The mechanism of data collection is irrelevant as long as questionnaires are completed in their entirety and a high percentage of patients complete the questionnaire at each time point. Finally, there must be seamless integration into office flow without disrupting the overall patient experience or the doctor-patient relationship. Appropriately utilized PROMs data will complement and may even enhance the doctor-patient relationship and increase patient satisfaction.

PROMs may be collected either electronically or via pen and paper. However, traditional pen and paper is probably not cost-effective. There is a cost associated with transferring the data to the EHR, and missed questions, data-input errors, and lost questionnaires are practical limitations. Electronic completion includes in-office completion via tablet or desktop computer, or completion outside the office via text, e-mail links, or a patient portal. The in-office tablet completion option is increasingly popular given its relatively low upfront cost and captive audience, which generates high test completion. The format is familiar to patients, and the process can be applied without slowing patient flow in the clinic. Furthermore, the tablet option may, depending on the PROMs capability, utilize CAT to allow smart logic minimization of the number of questions in order to shorten PROMs completion. Completion via text or e-mail link is an effective option as well, but compliance may be affected by patient familiarity with such technology[35]. The patient portal is a part of the Merit-Based Incentive Payment System (MIPS), and its growing adoption provides an increasingly relevant means for PROMs completion.

The implementation of PROMs has both upfront and continuing costs for the practice. These costs include hardware (tablet computers) and software to establish the PROMs and manage the link to the EHR, as well as data analysis. Personnel time is another cost center that includes establishing the information flow from data capture to the EHR (primarily an upfront cost) as well as the ongoing time required for management and day-to-day administration of the data collection. The office staff will require training to teach some patients how to use the tablet or a computer and, in some cases, may need to help patients fill out the forms. One reason for physician-practice consolidation is the need for capital for projects exactly like this in modern health care. Large groups may internally establish and maintain a PROMs process that ensures that institutionally owned data are readily accessible for immediate patient care and research. There are a number of commercial vendors providing turnkey operations that can effectively provide this service and allow easy comparison of data to national benchmarks and data from other groups.

Perhaps the most notable challenge in the implementation is choosing a tool that is ideally suited to the practice type. PROMs vary in purpose, including those designed to assess general health, those for a particular anatomic region, and those designed for particular diagnoses. Multispecialty practices face a greater challenge concerning physician agreement as to the ideal tool. Some PROMs are ideally suited for data collection at every visit, especially those that utilize CAT to minimize time requirements, making them ideal for patient-care use. Others may be better suited for limited use (preintervention and at selected intervals postintervention) because they are more time-consuming to complete. As stated previously, the NIH PROMIS is a broadly applicable system with numerous modules, some of which are appropriate for orthopaedic surgery patients. PROMIS offers CAT to speed test completion, and it has become increasingly accepted for both research and clinical care by funding agencies and journals alike. While performance assessment of PROMIS continues, in general, it has performed well when compared against historical, region-specific PROMs[36-38].

As the U.S. health-care system continues its shift to a system that rewards value delivered to patients, measuring outcomes (specifically patient-reported outcomes) is imperative. Integrating routine collection and use of PROMs into the clinical workflow is the first step, and necessitates both health-informatics expertise and a shift in culture to emphasize the relevance and use of patient-reported outcomes in optimizing patient care. Patients and providers must understand the value of using PROMs to inform the shared decision-making process around which treatment is best for a given patient. Finally, PROMs will increasingly be used by payers and patients to hold providers accountable for outcomes, although additional research is needed to understand how to appropriately incorporate PROMs into provider accountability programs. ■

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