INTRODUCTION

In 2001, the Institute of Medicine identified patient- and family-centered care as one of the key components in health care for the 21st century. Measuring and improving patient experience has become increasingly tied to reimbursement models by the CMS as part of their Value-Based Purchasing Program. The integrated role of radiology throughout virtually all aspects of health care delivery makes it a key player in influencing patient experience.

Quality improvement (QI) is a progressive management methodology to engage frontline employees in leading change and re-engineering work systems. Although many QI efforts in health care have traditionally been geared toward improving the safety or efficiency of a clinical environment, QI can be equally as effective at improving the patient experience. At the heart of modern QI techniques is listening to the voice of the customer and removing waste around the process of delivering value.

This paper explores how patient experience is measured and its role in radiology, including its impact on clinical outcomes and reimbursement. Using an established framework, we provide examples of projects that are likely to yield significant improvement in patient experience measures.

MEASURING PATIENT EXPERIENCE

The concept of patient-centered care, initially coined “biopsychosocial” care, originated with the idea that rather than simply treating disease, medical treatment should encompass and integrate the associated psychosocial components of illness, considering the needs, goals, and preferences of the patient and collaborating with both patients and their families in decision making [1]. Gerteis et al [2] later introduced a conceptual framework to understand the different dimensions of patient-centered care and emphasize the role of the organization or institution in the provision of patient-centered care. These elements include (1) respect for the patient’s values, preferences, and expressed needs; (2) coordination and integration of care; (3) communication, information, and education; (4) physical comfort; (5) emotional support; and (6) involvement of family and friends (Table 1).

Patient experience and patient satisfaction are two terms often encountered when discussing patient-centered care. Patient experience can be thought of as...
individual interactions, what actually happened and how often, as opposed to patient satisfaction, which is a subjective assessment of the cumulative quality of individual encounters. These two terms are distinguished from the patient outcome, which is the objective, clinical result of treating medical illness in the original biopsychosocial model. For example, a patient with known terminal illness may be hospitalized in a supportive, patient-centric environment and be left with an overall positive impression despite a poor clinical outcome.

Unlike measuring clinical outcomes, which are generally objective and clearly defined, accurate assessment of the patient experience employs the use of subjective patient satisfaction surveys. Patient expectations vary depending on the type of clinical encounter. For example, a patient presenting to the emergency department for abdominal pain will have different expectations than a patient presenting for hip arthroplasty at an outpatient surgical center. Variable expectations on inpatient, outpatient, surgical, and medical services impact each patient’s experience and require individualized questions to attempt to capture the unique circumstances that affect each encounter.

PATIENT EXPERIENCE AND REIMBURSEMENT

CMS uses a patient experience survey known as the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey to evaluate overall patient experience at an institutional level after hospitalization. The results of this survey are linked to reimbursement through the Hospital Value-Based Purchasing Program. This program couples a portion of CMS reimbursement to performance metrics. Of the metrics employed by CMS, 70% are clinical performance metrics and the remaining 30% are patient experience metrics captured via the HCAHPS survey [3].

Although patient experience is categorically linked to CMS reimbursement via HCAHPS, there is no clear relationship between patient satisfaction/experience and clinical outcomes. Though some studies have shown a correlation between HCAHPS [4] or alternate patient satisfaction surveys [5,6] and clinical outcomes, a growing body of data demonstrates the absence of such a correlation [7], particularly in surgical specialties [8-12]. In fact, one study reported that increased mortality and complication rates were associated with higher patient satisfaction scores [13].

THE IMPACT OF RADIOLOGIC SERVICES ON PATIENT EXPERIENCE

The integrated role of radiology throughout virtually all aspects of health care delivery makes it a key player in influencing patient satisfaction. Radiology is heavily utilized in the emergency department; on the surgical, medical, and pediatric floors; and in outpatient centers. Patients in each of these settings will have diverse expectations that will shape the perception of care. Attempting to isolate and measure the role of radiology within the cumulative patient experience introduces a new level of complexity to the inherent difficulty of accurately measuring patient satisfaction.

Despite these complexities, several attempts have been made to capture the concerns and expectations of patients and assess their satisfaction with radiologic services. These data have been gathered via focus groups [14], analysis of complaint data involving radiology [15,16], and satisfaction surveys with questions specific to the radiology department [14,17]. The results of these analyses share a small number of common themes, including report accuracy, timeliness, safety, comfort, cleanliness, and interaction with staff.

A radiologic adaptation of the above-described framework for patient-centered care has previously been described in detail [18]. We use the Gerteis framework to highlight a number of examples of successful QI projects as well as potential targets that are likely to yield measurable improvement in patient experience. A brief list of potential projects pertaining to each dimension of the framework for patient-centered radiology is provided in Table 2.

A FRAMEWORK FOR PATIENT-CENTERED RADIOLOGY

Respect for Patients’ Values, Preferences, and Expressed Needs

Given the ever-increasing pressure for increased throughput, streamlining processes within the radiology department is essential to increase efficiency and reduce unwanted variability. Although increased standardization
can make it difficult to accommodate differing patient expectations, individual preferences can be incorporated into standardized workflows in a number of ways. Child life consultation for pediatric patients before MRI, for example, has been shown to reduce the number of patients requiring general anesthesia, with its associated risks and cost, by up to 15\% [19]. The desired frequency of verbal feedback and coaching from the imaging technologist during advanced cross-sectional imaging such as MRI or PET can be easily adapted and may provide both anxiolysis and improved image quality through reduction in patient motion. Patients may favor either biopsy or imaging surveillance in cases where widely agreed-upon guidelines do not exist. Though several studies have demonstrated that patients prefer to receive results from their primary physician [20,21], many patients also desire consultation with the radiologist [21-23], and the preferred method of reviewing full reports is highly variable [21]. This is an ideal opportunity for the radiologist to add value, share expertise, and facilitate communication between the patient and referring clinician [24].

**Coordination and Integration of Care**

Time-related complaints are among the most common levied against radiology [14-17]. Decreased wait times for cross-sectional imaging have a measurable, positive impact on patient satisfaction surveys [25]. These time-related delays may begin during the process of patient scheduling and become further compounded if problems arise during the patient registration process. Integration of best practices to clarify patient procedures or insurance authorization before the patient’s arrival may considerably reduce radiology registration delay times. In fact, even the perception of shorter wait time rather than an actual reduction in wait time is associated with higher patient satisfaction. Simple, inexpensive interventions, such as a patient-centric waiting room with free Wi-Fi, coffee or drinks, and regular progress updates, can reduce the perceived wait time by up to 25 minutes [26].

**Communication, Information, and Education**

Timely access to radiology reports through a patient portal is important to the majority of patients [23,27,28], and increased access is likely to improve patient satisfaction. For example, the Mammography Quality Standards Reauthorization Act of 1998, which mandated written notification of all mammographic results, produced a measurable increase in patient satisfaction and clarity of results [29]. Room for improvement remains, however, as the content of mandated dense breast notifications often exceeds the literacy level of the recipient [30]. The final imaging report is the main product of the radiologist and is often the sole representation of our work. Although the content of the report is primarily directed to the ordering physician, final reports are being made available to patients with increasing frequency, and their content should be clear and accurate. Sloppy,
garbled reports filled with typos and dictation errors will likely be interpreted as laziness or inattention to detail by both the referring clinician and the patient. In many radiologic settings, direct physician–patient communication is rare, further underscoring the importance of report accuracy and clarity. Providing patients with the opportunity to communicate directly with the radiologist about the contents of their report, however, has been met with positive reviews [24]. In one survey of over 4,000 radiology patients, the most important of 20 attributes driving patient experience was “having physicians listen to me and acknowledge my concerns” [14], highlighting the importance of verbal communication. Emphasizing communication skills and encouraging increased teamwork between the radiologist and the technologists who spend more time face-to-face with the patients will likely also yield significant results.

Physical Comfort
Although pain intensity scores do not seem to correlate well with patient satisfaction [31,32], the perception of adequate pain management does have a known positive correlation with HCAHPS scores, increasing the odds of satisfaction by nearly 10 in cases where the patients felt the caregivers did everything they could to control their pain [32]. Perhaps most relevant in interventional radiology, patients experience pain during virtually all types of radiologic procedures, as well as mammography. Therefore, acknowledging discomfort and reassuring the patient of efforts to minimize pain will likely improve the perception of adequate pain management and improve patient experience. Hospitalized patients are frequently asked to fast in anticipation of a radiologic study or procedure. Unanticipated delays can sometimes contribute to prolonged fasting, a source of significant patient discomfort that is likely under-recognized, as the radiologist is remote from the waiting patient. This discomfort could be ameliorated with early notification and effective communication between the radiology staff and floor nurses when a prolonged delay is anticipated.

Emotional Support
Emotional support involves understanding patient expectations and concerns and responding appropriately. Patients should understand the purpose of the information that will be gleaned from an examination. They should have a basic understanding of procedures and appropriate expectations for the associated outcomes. Rather than dwelling on the technical aspects of radiologic studies and procedures, attention should be directed toward understanding patient concerns and alleviating anxiety. Proper training and clear expectations of patient-centered care goals to the imaging staff are integral to success. In one such example, MR staff were trained on communication attuned to patient anxiety and concerns. This resulted in dramatic improvement in patient satisfaction scores, boosting percentile ranking in areas such as “staff concern for comfort” and “friendliness of staff” by greater than 80% [33].

Involvement of Family and Friends
Patients undergoing imaging examinations and procedures are often nervous and fearful. This anxiety may alter the ability to absorb and understand information about procedures, abnormal findings, bad news, or post-procedural instructions. The presence of a caretaker or partner may not only help with emotional support but also facilitate understanding of information, diagnoses, and post-procedural instructions, and ensure appropriate follow-up. Efforts to include family and friends in shared decision making are likely to improve the overall experience for both the patient and those participating in his or her care.

CONCLUSIONS
Measuring patient satisfaction utilizing quality improvement processes in addition to focusing on clinical outcomes is essential to improving patient-centered care in radiology. Although measures for tracking success may differ from those of traditionally centered health care QI projects, the goals and interventions are ultimately validated around the patient’s overall experience. The inclusion of a patient advocate on QI teams may help prioritize and tailor interventions to each group’s particular needs, as well as identify additional areas of high impact. We believe that projects designed around these important aspects of patient experience are likely to improve perception of radiologic services and patient satisfaction.

TAKE-HOME POINTS
- Although data positively correlating patient outcomes with patient experience and satisfaction are decidedly mixed, patient satisfaction is definitively coupled to CMS reimbursement via HCAHPS.
- Radiology is integrated with virtually all aspects of health care delivery and, therefore, is a key player in influencing patient satisfaction.
Quality improvement is traditionally geared toward improving the safety or efficiency of a clinical environment but can be equally effective at improving patient experience and satisfaction.

A framework for patient-centered radiology is useful for identifying potential areas where quality improvement efforts are likely to yield measurable increase in patient satisfaction scores.

ADDITIONAL RESOURCES

Additional resources can be found online at: http://dx.doi.org/10.1016/j.jacr.2016.09.005.

REFERENCES