A Better Practice

Quality measures everywhere

The case for parsimony

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We exist in an era in which quality measurement has received a tremendous amount of attention. In 2008, the Dental Quality Alliance (DQA) was established with the mission "to advance performance measurement as a means to improve oral health, patient care, and safety through a consensus-building process."[1] The 2009 Health Information Technology for Economic and Clinical Health Act includes incentives for the "meaningful use" of certified electronic health records (EHRs) requiring the reporting of clinical quality measures.[2] The 2010 Patient Protection and Affordable Care Act includes payment incentives tied to outcomes.[3] Purchasers and consumers of care also influence the quality of care and, hence, should have an interest in quality measures.[4] The credibility and structure of the dental profession rely on dental professionals to monitor themselves;[5,6] hence, it befits us to encourage a culture of self-evaluation through measurement. As we begin to walk this path, there are lessons to be learned from the health professions that have gone before us in pursuit of quality improvement and the realization of the power of knowledge generation that is an integral part of the practice of care.[7]

We are making the case for parsimony: focusing on a standardized, valid, and meaningful set of core oral health quality measures (understanding that not every dental practice will adopt rapidly the idea of routinely monitoring a standardized set of quality measures). In so doing, we would avoid the quality measure proliferation that has troubled medicine. A 2015 report by the National Academy of Medicine (NAM) noted that

> thousands of measures are in use today to assess health and health care in the United States. Although many of these measures provide useful information, their sheer number, as well as their lack of focus, consistency, and organization, limits their overall effectiveness in improving performance of the health system.[8]

In addition to the obvious burden to capture these measures, there are other downsides to measurement bloat. Comparison across settings and people is a primary use of quality measures, and even slight variations in how a measure is defined can prevent valid comparisons. More fundamentally, having such a wide range of measures means that our quality improvement attention lacks focus. The approach of adding measures also violates 1 of the core criteria of the vision of the continuous learning health system[9] that data need to be generated as part of routine care and not as an additional task to be completed after-hours or in addition to clinicians' already heavy workloads.[10]

We already are heading down the path of too many measures. There is measurement bloat because of a lack of data infrastructure to transmit information seamlessly from 1 dentist-patient encounter through to the top of the health care system. This lack has created a need for multiple levels of measurement. Furthermore, clinical practice guidelines developed by professional dental organizations as well as Healthy People 2020[11] targets form the basis of additional quality measures.

WHY MEASURE AT ALL?

NAM defines health care quality as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."[12] Clinical quality measures are tools to help assess how well we are doing with respect to health care quality. There is all-around agreement that to improve quality, we must measure it. As the Agency for Healthcare Research and Quality (AHRQ) puts it, "The ability to measure the quality of dental care is a key to improving it."[13] We should ensure that the measures we select truly capture what is important rather than narrowly focusing on technical aspects—too often we feel good about having provided more care than in the previous reporting period. However, there is variable evidence for the relationship between measures and meaningful health outcomes.[14] Most importantly, the decision to measure or not to measure must not be driven by the ease of how something can be measured but rather by the relevance to patient health.

WHAT SHOULD WE MEASURE?

The NAM report calls for us to identify a limited number of core measures—the "vital signs"—for the health and well-being of Americans. To decide which dental quality measures (DQMs) should belong to this limited data set, we have 2 principles to adhere to: the DQMs need to cover the full range of measurement domains, and the quality measures must themselves be of high quality. The National Quality Forum (NQF) upholds these principles. The NQF is a coalition of public and private sector leaders that promotes health care quality through measurement. The government and private sector organizations use NQF's endorsed measures to evaluate

Table. Clinical quality measure domains.*

MEASURE DOMAIN	DESCRIPTION	EXAMPLES
Process	■ A health care activity done for or by a patient • Supported by evidence that the process improves outcomes • Usually appears in the form of a fraction, with eligible patients in the denominator and patients who receive the service in the numerator	Children at elevated risk of developing caries who receive a sealant on a permanent molar
Access	■ The provision of correct and timely care to patients ■ Supported by evidence of an association between the measure and outcomes or patient satisfaction	Pregnant women who receive an annual dental examination
Outcome	■ The patient's state of health as a consequence of health care ■ Supported by evidence that the measure validly can help detect the effect of the clinical intervention ■ Should include provisions for risk adjustment	Children who remain caries-free
Structure	■ A characteristic of a clinician or health care institution related to the ability to provide high-quality health care ■ Supported by evidence of an association between the measure and another clinical quality measure domain	Use of electronic health records and computerized clinical decision support
Patient Experience	■ A patient's report of his or her observation of or participation in health care or his or her assessment of resulting changes in health ■ Supported by evidence that the measure is associated with patients' values and preferences or another clinical quality measure domain	Willingness to recommend clinic to others

* Source: Agency for Healthcare Research and Quality.[16]

care performance.[15] The NQF has endorsed a number of DQMs, mostly measures developed by the DQA.

Measurement domains

With respect to the first principle (DQMs need to cover the full range of measurement domains), the 5 domains of clinical quality as defined by the National Quality Measures Clearinghouse (NQMC) are process, access, outcome, structure, and patient experience (Table).[16] The NQMC assesses quality measure development, whereas AHRQ's 6 domains of health care quality[17] are an analytical framework for quality care assessment, which may help guide measurement development but does not asses it.

Process- and access-based measures are readily available because they often are used for reimbursement purposes. Examples include the placement of pit-and-fissure sealants on permanent first molars as an evidence-based approach for reducing dental caries in children[18] or annual visits to the dentist for patients with diabetes. Many of the access measures have a clear use component in them. Health outcomes, such as how well we keep patients free from dental caries, are the most effective and often most difficult to measure. Structure measures are less common among DQMs. Using a certified EHR or clinical decision support system in a practice according to the meaningful use[14] incentive program is an example of a structure quality measure. Lastly, we measure how patients rate their health care experiences. Investigators have conducted patient satisfaction studies since the 1960s and 1970s[19] and continue today, often through standardized survey processes.

Because it is easier to track the type of treatments patients receive, the dental profession tends to measure access and process. DQMs in all 5 domains are needed to measure fully a patient's oral health status or a patient's "… ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex."[20]

Quality of the DQMs

To be credible, quality measures must be high quality. The NQMC is a public resource for summaries of evidence-based quality measures and measure sets.[21] As Box 1 shows, the NQMC identified desirable attributes for clinical quality measures. All measures should have been tested within the last 3 years and have accompanying documentation that covers their rationale, definition, specification, and documentation (Box 2). NQF's processes for measures endorsements are even more rigorous than NQMC's. By definition, a quality measure is evidence based, and the NQF has well-established criteria on how to assess whether a measure is feasible, reliable, valid, and usable for it to achieve NQF endorsement.[24]

As a profession, we need to decide what strength of evidence we require for our quality measures. If the criteria are too stringent, we risk not being able to generate important criteria in a timely fashion. If the criteria are too permissive, we risk undermining the credibility of dental clinical quality measurement as a whole.

As a compromise, we advocate for a middle ground in which a minimum level of evidence is maintained and, beyond that, the strength of the evidence is presented with the measure. The strength of evidence would evolve over time. As a minimum, we suggest the NQMC criteria, cautioning against proliferation of measures based on low-quality evidence. Measures should require both pilot testing in a real-world health care setting within the past 3 years and at least 1 of the following: The measure has to have been cited in at least 1 peer-reviewed journal indexed by the National Library of Medicine and has to have applied or evaluated the measure's properties; the measure has to have submission of documented evidence

Box 1. Desirable quality measure attributes as defined by the National Quality Measures Clearinghouse.

Feasibility	■ Explicit specification of numerator and denominator ■ Data availability ■ Adherence to the principles defined by the National Quality Forum's Health Information Technology Expert Panel for high-quality data* ■ Data are available in electronic health records. ■ Data are captured from an authoritative, accurate source. ■ Data are coded using recognized data standards. ■ Method of capturing data electronically fits the workflow. ■ Data are auditable.
Importance	■ Relevance to stakeholders ■ Health importance ■ Applicability to measuring the equitable distribution of health or of health care delivery ■ Potential for improvement ■ Susceptibility to being influenced by the health care or public health system
Scientific Soundness:	In reviewing these measures, we will be guided by the National Quality Forum *Guidance for Measure Testing and Evaluating Scientific Acceptability of Measure Properties* report.†
Measure Properties	■ Reliability ■ Validity ■ Allowance for patient factors ■ Comprehensible
Clinical Logic	■ Explicitness of evidence ■ Strength of evidence

* Source: National Quality Forum.[22] † Source: National Quality Forum.[23]

establishing the measure's reliability and validity; or the measure has to have been developed, adopted, adapted, or endorsed by an institution, such as the DQA, that promotes rigorous measurement in health care.[25] In this latter instance, we likely will have high-quality, evidence-based measures endorsed by the NQF.

HOW SHOULD WE MEASURE?

Measurement of health care quality occurs at different levels. At the highest level, we can assess the health or sickness of the people in our country. For example, population-based measures in dentistry have shown us that 46% of the US population older than 30 years have periodontal disease[26] and that 37% of children aged 2 through 8 years have caries in primary teeth.[27] At a slightly lower level, state Medicaid programs may have DQMs to determine the health of their beneficiaries and the effectiveness of their programs; for example, Oregon measures dental sealant rates for children.[28] Similarly, payers of commercial health plans should have a vested interest in measuring quality. At an individual level, there should be a focus on measuring the quality of care provided by dental practices and clinics.[29,30]

Dental practices often lack the tools to monitor continually the quality of care they provide. It is much easier to aggregate administrative and claims data in dentistry, although we know that we can do much better to predict patients' health statuses by using clinical records.[14] Although lack of infrastructure is largely the case in dental private practices, in which EHRs are adopted more slowly and siloing of data is de rigueur, this is not the circumstance among several academic dental centers. We have overcome this substantial hurdle by creating the BigMouth data repository.[31] BigMouth contains data from more than 2 million patients and is updated twice a year. An example of how BigMouth has been used for discovery and improvement of care is the development of triggers for discerning potential adverse events.[32]

Data used for quality measurement need to be of high quality. Data for quality measurement must be available, complete, accurate, and consistently collected. It is not enough, however, simply to amass relevant high-quality data in a database. Practices and practitioners also need to have easy access to meaningful displays of evidence-based, useful quality measures so that this information becomes part of a virtuous cycle of discovery and improvement. Data entry will be truly meaningful only if the person who enters the data gets something in return rather than secondary users such as a

Box 2. Measure documentation required by the National Quality Measures Clearinghouse.

- Rationale:
  - A description of the specific aspect of health care and the people to whom the measure applies
  - The evidence base for the measure
  - Instructions for how to interpret results
- Measure definition:
  - A description of the denominator and numerator of the measure
  - A description of specific inclusion and exclusion characteristics for any component of the measure
- Specification of data sources for the measure
- Documentation of evidence supporting the measure and the criterion of quality, including at least 1 of the following:
  - Clinical team member experience
  - Specific variables for inclusion or exclusion of cases or events from either the denominator or the numerator
  - A continuous variable statement (for example, "time to thrombolysis") may be an acceptable alternative, and measures whose metric is other than a rate or percentage will be considered on an individual basis. If structure measures lack a numerator or denominator, evidence must be provided that an association exists between the structure measure and 1 of the other 4 domains of quality (that is, process, access, outcome, and patient experience)
  - Data sources for the measure
  - Documentation of evidence supporting the measure and the criterion of quality are required for quality measures and for the quality component of efficiency measures
  - Any related measures must be part of a set or collection that includes quality measures to be considered for inclusion

researcher or the billing office. This is not often the case with EHRs.[33] One solution may be the development of customizable quality dashboards that can empower dental practitioners to make better and faster data-driven decisions.[34] Dashboards are highly valued in medicine because of their ability to synthesize management information and condense large amounts of quality and performance data into a limited number of key indicators.[35]

WHO SHOULD KEEP THE MEASURES?

We clearly need a coherent and objective process and infrastructure to curate DQMs. Having a one-stop shop for DQMs facilitates identifying high-quality measures, reduces the risk of measure proliferation, and allows curation of evidence into a standardized format. Previously, the NQMC might have served in this capacity. However, because of recent budget cuts, the NQMC is limited to developing content and updating only cancer-related measures. We suggest that the DQA is well positioned to take on this task. In 2008, urged by the Centers for Medicare & Medicaid Services, the American Dental Association stepped up with the formation of the DQA. The DQA is a collaborative approach to developing oral health quality measures with its mission "to advance performance measurement as a means to improve oral health, patient care, and safety through a consensus-building process."[36] The DQA has published several documents, including *Adult Measures Under Consideration*[37] that proposed 13 high-priority adult measures and the starter set of pediatric measures[38] with 2 pediatric electronic measures validated for EHRs. The DQA includes empowered external stakeholders and uses a transparent process to ensure that DQMs are perceived as unbiased.

The DQA notes that the key to fostering the best health care for dental patients, ensuring transparency of health care quality, and maintaining the credibility of the dental profession is to encourage a culture of self-evaluation through measurement.[36] Let us set lofty goals for ourselves and move toward them deliberately. Let us envision a world in which every dental practice routinely monitors a standardized set of quality measures and take steps to make it so.

CONCLUSIONS

The dental profession has a duty to monitor itself. DQMs can serve as tools for evaluating and improving care and should include measures for process, access, outcome, structure, and patient experience. At the same time, dentistry should avoid an overproliferation of DQMs. DQMs should be developed according to credible frameworks and criteria. The DQA is a multistakeholder organization that has developed measures by

using processes recommended by the NAM and AHRQ, several of which are endorsed by the NQF. Future development of DQMs should continue to follow this process. The DQA and their constituents are well positioned to provide oversight on the development and maintenance of dental DQMs. ■

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