

JUNE 2016

Quality Measurement in Dentistry

A Guidebook



DENTAL QUALITY ALLIANCE™

Improving Oral Health Through Measurement

DENTAL QUALITY ALLIANCE

JUNE 2016

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Purpose

This Guidebook was developed by the **DQA Education Committee** and serves as the basis for developing standardized messages regarding performance and quality measurement in dentistry. It can be used as a source document by those developing messages, resources, and tools to educate various audiences about quality measures.

For more information on the DQA, please access www.ada.org/dqa or contact dqa@ada.org

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INTRODUCTION

Continuing rises in national expenditures on healthcare have created an urgent need to accurately assess quality and efficiency of care. Establishing measures to identify and monitor innovative strategies to reduce incidence of oral disease, while simultaneously improving effectiveness and efficiency of care through a focus on prevention, is an important national priority. Data for measurement can be obtained from administrative sources (encounters and claims), patient records, and surveys. In dentistry, data are already being collected through the claims process. Such data are currently proprietary to the payers, who use it to make policy decisions, conduct research, and increasingly to provide performance and quality measurement information to providers, employers, and consumers. Although measuring the health status of a patient based on clinical records is best predictive of quality, administrative and claims data remain the only data that can be aggregated in dentistry today. The ultimate goal of self-evaluation by the profession is to improve oral health and must be undertaken in a collaborative manner by all stakeholders in the dental profession.

The dental profession has a vested interest and activity in self-evaluation, quality assessment, and performance management. Health entities outside of dentistry are now developing programmatic indicators for defining and measuring quality. Group practices, commercial payers, and other dental stakeholder groups are building quality dashboards to address the different utilization and cost parameters in quality measurement. Paramount measures of self-evaluation are needed nationally to assure the quality of oral health care delivery and the appropriateness of the evaluation.

To that end, the Dental Quality Alliance (DQA) has assumed the leadership role in the dental profession through the active collaboration of its many and diverse partners representing its communities of interest within and outside the profession.

WHY MEASURE?

Healthcare providers work hard to deliver skilled, thoughtful care. Measures pave the way for providers, showing where systems are breaking down and where they are succeeding to help patients get and stay well.¹ Measurement forms the basis of evaluation and has become one of the foundations of current efforts to improve healthcare quality. Performance measures are tools to assess healthcare against recognized standards and are of importance to providers, patients, payers and policy makers. The Institute of Medicine (IOM) defines "quality of care" as "the degree to which healthcare services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge".²

Quality measures drive improvement by allowing healthcare providers to review their own performance and make adjustments, share successes and probe for causes when progress comes up short- all on the road to improved patient health outcomes. Quality measures allow us to quantify the care provided to patients and gauge how improvement activities are indeed improving care or outcomes for certain conditions in various settings or during a specific timeframe.¹ When used in healthcare practice or performance improvement activities, measures help determine how well care is provided for certain aspects of care, for certain conditions, or for various populations or communities.¹ There are many forms and functions of measures. Their common feature is that they seek to improve healthcare outcomes by improving quality of care.

NATIONAL INTEREST IN QUALITY MEASURES

As national expenditures on healthcare continue to rise, the need to accurately assess quality and efficiency of care has become more meaningful. The science of measuring healthcare performance

¹ National Quality Forum. The ABCs of Measurement. Accessed from http://www.qualityforum.org/Measuring_Performance/ABCs_of_Measurement.aspx

² Institute of Medicine, 2001; Lohr & Committee to Design a Strategy for Quality Review and Assurance in Medicare, 1990)

has made enormous progress over the last decade, and it continues to evolve. Studies have documented treatment reporting variations across providers, care settings, and geographic regions.^{3, 4, 5, 6, 7} Measuring the quality of healthcare and using those measurements to promote improvements in the delivery of care are now commonplace.⁸

Faced with this national need for change, an IOM Committee on the Quality of Health Care in America released several reports to address quality improvement. One report, *Crossing the Quality Chasm* (2001) focuses more broadly on how the health system can be reinvented to foster innovation and improve the delivery of care. Toward this goal, the committee defined six important aims for quality improvement.⁹

³ Shugars DA, Bader JD. Cost implications of differences in dentists' restorative treatment decisions. *J Public Health Dent.* 1996 Summer;56(4):219-22.

⁴ Shugars DA, Hayden WJ Jr, Crall JJ, et al. Variation in the use of crowns and their alternatives. *J Dent Educ.* 1997 Jan;61(1):22-8.

⁵ Bader JD, Shugars DA. Variation in dentists' clinical decisions. *J Public Health Dent.* 1995 Summer;55(3):181-8.

⁶ The Department of Health and Human Services, Children's Health Insurance Program Reauthorization Act, [2011 Annual Report on the Quality of Care for Children in Medicaid and CHIP, Access at Medicaid/CHIP](#), September 2011.

⁷ Okunseri C, Szabo A, Garcia RI, et al. Provision of fluoride varnish treatment by medical and dental care providers: variation by race/ethnicity and levels of urban influence. *J Public Health Dent.* 2010 Summer;70(3):211-9.

⁸ Chassin MR, Loeb JM, Schmaltz SP, et al. "Accountability Measures - Using Measurement to Promote Quality Improvement." *The New England Journal of Medicine* (2010): 683-88. Print.

⁹ Institute of Medicine (IOM). *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, D.C: National Academy Press; 2001.



Safe — avoiding injuries to patients from the care that is intended to help them.

Timely — reducing waits and sometimes harmful delays for both those who receive and those who give care.

Effective — providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse, respectively).

Efficient — avoiding waste, including waste of equipment, supplies, ideas, or energy.

Equitable — providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

Patient-centered — providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.

Changing regulatory priorities and recent activities of Centers for Medicare and Medicaid Services (CMS) clearly prioritize the need to prove and measure improvements in the quality of health care in both the public and private sectors. Following the IOM's reports, several recent legislative and regulatory actions have promoted the national interest on quality issues. These include:

The Affordable Care Act (National Quality Strategy)

The law requires HHS to establish a National Strategy for Quality Improvement in Health Care (the National Quality Strategy) that will pursue three broad aims including better care, healthy people/healthy communities and affordable care. These aims will be used to guide and assess local, state, and national efforts to improve health and the quality of healthcare.

HHS Strategic Plan 2014- 2018 (HHS Strategy)

Under the broad goal "To transform healthcare", HHS hopes to improve healthcare quality and patient safety specifically by increasing the availability of patient-centered outcomes research to give patients and practitioners evidence on the most effective medical options and implementing payment reforms that reward quality care and work with physicians and practitioners, and across the public and private sectors, in quality improvement efforts.

Children's Health Insurance Program Reauthorization (CHIPRA legislation)

The law called first for the identification of an initial set of core measures to be used to assess voluntarily the state of children's healthcare quality across and within State Medicaid and CHIP programs and then for establishment of the CHIPRA Pediatric Quality Measures Program (PQMP) to improve and strengthen the initial core set of measures and develop new measures as needed.

HiTECH Act (Health Information Technology for Economic and Clinical Health Act)

The Medicare and Medicaid EHR Incentive Programs provide a financial incentive for the "meaningful use" of certified EHR technology to achieve health and efficiency goals. Eligibility for meaningful use of incentives through this legislation is defined by the percentage of provider billing to Medicaid and Medicare. One criterion for eligibility for the incentive is the use of the EHR to report clinical quality measures.

Passage of the Affordable Care Act (ACA) in 2010 has emphasized the importance of the Triple Aim is shifting the focus from volume-based reimbursement to payment models that emphasize quality and value. The National Quality Strategy (NQS) was developed as part of the ACA to "improve the delivery of health care services, patient health outcomes, and population health."¹⁰ A central goal of the NQS is to build a consensus on how to measure quality so that stakeholders can align their efforts for maximum results by improving the overall quality of care, improving the health of the population and communities and making healthcare more affordable. The Strategy also established six priority areas¹⁰ to help focus efforts by public and private partners. These priorities fall under the domains of **patient and family engagement, patient safety, care coordination, population and public health, efficient use of**

¹⁰ National Quality Strategy. <http://www.ahrq.gov/workingforquality/>

healthcare resources, and clinical processes/effectiveness. There is significant movement among the federal agencies to align with the NQS.

PLAYERS IN THE DENTAL QUALITY MEASURES LANDSCAPE

The terms “quality measures” and “performance measurement” have been largely elusive in dentistry. Two IOM reports, have identified a lack of quality measures as a barrier to improving oral health and reducing oral health disparities.^{11, 12} The role of a dental and oral health measure developer has long been occupied by entities that are not traditionally from the dental industry. These activities within dentistry, until recently, have been limited to the federal agencies such as the CMS, Health Resources and Services Administration (HRSA), the Agency for Healthcare Research and Quality (AHRQ), commercial private purchasers/payers, data analytics companies supporting these commercial health plans, and leading health plan accreditation agencies such as National Commission on Quality Assurance (NCQA), which are all engaging in developing measures for the purpose of program management.

As the single largest payer of health services for children in the United States, CMS plays a pivotal role in working with States and other partners in implementing quality measurement and improvement strategies. CMS also is the agency within the Department of Health and Human Services (HHS) that drafts policies for public marketplaces. CMS has added a star rating system to its compare websites such as the [Hospital Compare](#), and [Dialysis Facility Compare](#) websites, which are the official CMS source

¹¹ Institute of Medicine of the National Academies, Committee on an Oral Health Initiative. Advancing Oral Health in America. Washington, DC: National Academies Press; 2011.

¹² Institute of Medicine and National Research Council, Committee on Oral Health Access to Services. Improving Access to Oral Health Care for Vulnerable and Underserved Populations. Washington, DC: National Academies Press; 2011.

for information about the quality of health care providers; and the star rating system is based on established scientific standards for rigor and accuracy. CMS also has launched a [Physician Quality Rating System \(PQRS\)](#) that uses a combination of incentive payments and payment adjustments to promote reporting of quality information by eligible professionals (EPs). Two dental measures are currently included in this system to rate eligible dentists. CMS is currently also working on an [Enrollee Experience Survey](#), that will gauge consumer satisfaction with plans sold on the marketplaces, including dental plans.

The [Health Center Program](#) administered by HRSA, provides a safety net for direct healthcare services and is collecting, analyzing, and benchmarking quality and cost data from health center members at the State level to drive improvement in patient care and outcomes. Currently, HRSA collects data through the Uniform Data System (UDS) system. Health center grantees are required to include one oral health clinical performance measure to be submitted with their annual application for federal funding. In 2015, HRSA adopted the DQA dental sealants for 6-9 year olds eMeasure in the UDS.

The [National Quality Forum \(NQF\)](#) is a private, not-for-profit organization, that works towards improving the quality of healthcare by building consensus on national priorities and goals for performance improvement and working in partnership to achieve them, endorsing national consensus standards for measuring and publicly reporting on performance, and promoting the attainment of national goals through education and outreach programs. An NQF endorsement reflects rigorous scientific and evidence-based review, input from patients and their families, and the perspectives of individuals throughout the healthcare industry.

Commercial health plans have long been engaged in developing measures for the purpose of program management and have used administrative data analyses to assess various quality or performance-related aspects of dentists in their network. 48 percent of Americans receive their health insurance through their employers¹³. Large employers purchasing health benefits for their workforce are in a strong position to influence the health care marketplace and routinely make health plan purchasing decisions on measurable quality and member satisfaction. ¹⁴ By making quality of care a purchasing criterion and requiring evidence of quality, large purchasers also can use their power to create competition on the basis of quality and outcomes.

Plans have created various types of provider 'profiles' for internal use. These are now beginning to appear within provider directories to enable consumer choice. Most metrics are based on "out-of-pocket" costs with limited focus on quality. For example, in a pilot program, Delta Dental of Massachusetts (DD of MA) has created "Prevention Report for At-Risk Children" report cards to help providers track children at higher risk for caries and a similar report for adults at high risk for periodontal disease to make sure each group receives adequate preventive care. ¹⁵ Such reports are also being developed for employers, enabling companies to easily track healthcare trends among their employees. DD of MA hopes these efforts will make a significant difference in the quality of healthcare

¹³ Kaiser Family Foundation. <http://kff.org/other/state-indicator/total-population/>

¹⁴ Robst, John and Rost, Kathryn and Marshall, Donna, Do Employers Know the Quality of Health Care Benefits They Purchase?: Factors Related to Employer Knowledge of HEDIS Depression Scores for Health Plans (November 21, 2012). Available at SSRN: <http://ssrn.com/abstract=2179020> or <http://dx.doi.org/10.2139/ssrn.2179020>

¹⁵ Institute of Oral Health Whitepaper on "Critical Issues and Innovative Solutions to Advance Quality in Dental Care Treatment and Delivery" 2009 Conference October 15-16, 2009 - San Jose, CA IOH Whitepaper on November 6, 2011.

by motivating providers and employers to become more active participants.¹⁵ DentaQuest has a program called "Preventistry"¹⁶ that seeks to incentivize providers to place sealants soon after tooth eruption. Similarly, United Healthcare also has a quality improvement program in New Jersey directed towards pediatricians who complete a referral to a dentist for high risk patients.¹⁷ Delta Dental of Arkansas has a pay-for-performance programs that provides financial reward to participating dentists who demonstrate a pattern of delivering appropriate evidence-based preventive oral health care based on certain measures demonstrated to improve oral health.¹⁸ Organizations like National Network of Oral Health Access (NNOHA)¹⁹ as well as multi-site group practices have long been using complex quality measurement programs within their practices and developing "quality dashboards" that are made available to dentists that are sometimes paired with pay-for-performance programs.²⁰

An increasing variety of stakeholders are demanding accurate measures of quality to determine whether high-quality care is being provided consistently across the healthcare delivery system. A 2012 report outlines an approach to expand the oral health quality improvement effort through data collection, accountability, and new ways of delivering oral health care.²¹ A growing number of quality

¹⁶ DentaQuest Preventistry Program. Accessed from <http://www.dentaquest.com/Preventistry/index.asp>

¹⁷ Hunt, R. J. and Aravamudhan, K. Quality Movement in Oral Health Care: Who will lead? JADA 2014;145(5):421-423
10.14219/jada.2013.54

¹⁸ Per email communication with Delta Dental of Arkansas Staff

¹⁹ National Network of Oral Health Access. The Dental Dashboard. Accessed from <http://www.nnoha.org/resources/dental-dashboard-information/>

²⁰ Snyder, John. Quality Measurement Models. 2015 DQA Conference. Accessed from: <http://www.ada.org/en/science-research/dental-quality-alliance/2015-dqa-conference>

²¹ Glassman P, Oral Health Quality Improvement in the Era of Accountability. W.K. Kellogg Foundation and DentaQuest Institute, 2012.

measures and reporting initiatives have resulted in a proliferation of measures that are often duplicative and unduly burdensome on healthcare providers and increase the potential for confusion among the public.²² Measures of the same phenomenon also vary in specification and application, leading to confusion and inefficiency that make health care more expensive and undermine the very purpose of measurement, namely, to facilitate improvement.²³ Not uncommonly, a health care organization delivering primary care to a typical population is asked to report and collect hundreds of measures aimed at dozens of conditions.²³

CHALLENGES FOR MEASUREMENT IN DENTISTRY

Although a wide variety of entities have independently pursued quality measure development in dentistry, an environmental scan conducted by the DQA, demonstrated a significant lack of standardized set of measures between public and private sectors and across communities, state, and national levels.²⁴ The measures that are routinely used are duplicative across different organizations (e.g., risk assessments, treatment planning, sealant and fluoride placement), lacking information on detailed specification with numerator and denominator descriptions and an excess of process measures rather than more outcome focused measurements.²⁴ Further, a balanced approach is needed that evaluates all aspects of care to better understand disparities and adequately plan for

²² CMS Measures Management System Accessed at CMS MMS November 15, 2011.

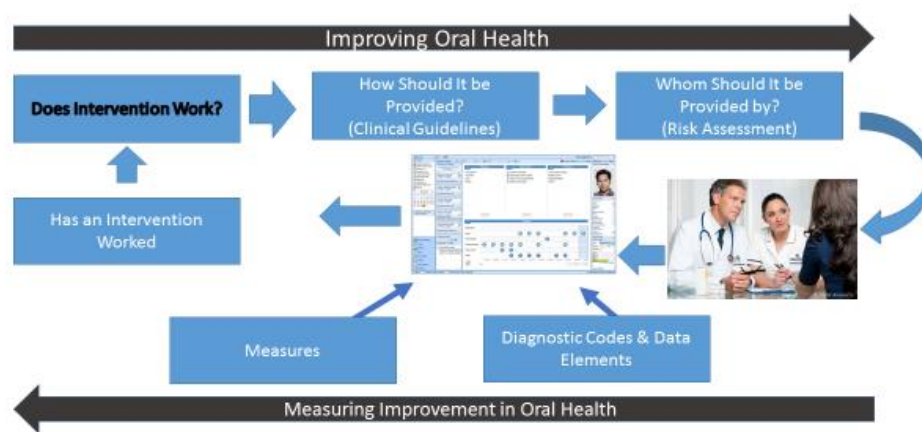
²³ D. Blumenthal and J. M. McGinnis., "Measuring Vital Signs: An IOM Report on Core Metrics for Health and Health Care Progress," Journal of the American Medical Association Viewpoint, published online April 28, 2015.

²⁴ Dental Quality Alliance (2012). Pediatric Oral Health Quality and Performance Measures Concept Set: Achieving Standardization and Alignment. Available at: <http://www.ada.org/en/science-research/dental-quality-alliance/dqa-measure-activities>

QUALITY MEASUREMENT IN DENTISTRY

improved quality.²⁴ The development of and the use of valid, reliable, feasible and useable measures in dentistry remain challenging for many reasons.²⁴

- Limited availability of clear specifications
- Lack of standardization in measurement, with many duplicates
- Limited evidence to support many of the measures currently available
- Limited measurement of all aspects of care
- Lack of an organized system relating disease risk to diagnostic measures
- Limited availability of measures of patient safety
- Limited measures across multiple care delivery systems including medical, dental, and public health
- Limited accessibility of claims data



Although dentistry has recognized the need to adopt evidence based principles in the delivery of care, often they may be of limited value due to insufficient or inconclusive evidence. There are very few high-quality prospective clinical trials on oral health therapies. There is limited knowledge of true oral health outcomes, partly because dentistry does not have a tradition of formally reporting specific diagnoses or associating such diagnoses with specific services,²⁵ especially through the claims process. Further, most dental practices and dental plans lack information systems capable of capturing and

²⁵ Bader JD, Shugars DA. Variation, treatment outcomes, and practice guidelines in dental practice. J Dent Educ 1995, 59: 61-96.

transmitting the information necessary for measurement.²⁶ Although retrospective claims data have many limitations, they continue to be the only data that are aggregated in dentistry today. Yet, limited availability of freely accessible claims data is also a significant challenge in measuring quality and performance.

Ultimately, dentistry needs a cost-effective measurement system that can be easily implemented on a routine basis in small practices, measures factors under the control of the practitioner, and yields meaningful information that can be acted upon for improvement.

SUMMARY

In summary, the need to measure is rooted in the basic responsibility to assure that the public receives optimal benefits from available knowledge and effective care. Steeply rising costs and inconsistent quality of medical care have culminated in the national priority to deliberately seek value from healthcare. To assure that we are providing the highest quality patient-centered dental care, dentistry must measure what works and what doesn't and make changes needed to improve health outcomes. Not only are many measures imperfect, but they are proliferating at a rapid rate, increasing the data burden and blurring the ability to focus on issues most important to better health and health care. In an effort to curb any inappropriate quality measures being implemented across oral health delivery system, the Dental Quality Alliance (DQA) is now leading the dental profession into a paradigm of standardized measuring and reporting for the purpose of quality improvement of oral healthcare.

²⁶ Bader JD, Shugars DA, Hayden WJ Jr., et al. A health plan report card for dentistry. J Am Coll Dent 1996; 63:29-38.

DENTAL QUALITY ALLIANCE

Dental Quality Alliance (DQA) was established in 2008 by the American Dental Association (ADA) upon request from the Centers for Medicare and Medicaid Services (CMS), to have an authoritative leadership role in the development of quality measures. Following input from internal and external stakeholders, the ADA Board of Trustees established the DQA and approved its operating rules in 2010. Many major dental professional societies, payers, educators, and a member from the general public have come together as an Alliance to further the DQA mission. The DQA currently has 35 organizations as its members, including federal agencies who serve as its technical advisors. This strong participation by all stakeholders, in dentistry along with the volunteerism that generates the work products for the DQA, are paramount to its success.

The current members of the DQA are:

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Academy of General Dentistry 2. Adirondack Oral and Maxillofacial Surgery 3. Agency for Healthcare Research and Quality 4. American Academy of Oral & Maxillofacial Pathology 5. American Academy of Oral & Maxillofacial Radiology 6. American Academy of Pediatric Dentistry 7. American Academy of Periodontology 8. American Association of Dental Research 9. American Association of Endodontists 10. American Association of Oral and Maxillofacial Surgeons 11. American Association of Orthodontists 12. American Association of Public Health Dentistry 13. American Board of Pediatric Dentistry 14. American College of Prosthodontists 15. American Dental Association's Board of Trustees 16. American Dental Education Association 17. American Dental Hygienists' Association 18. American Medical Association 19. America's Health Insurance Plans 20. Centers for Disease Control and Prevention 21. Centers for Medicare and Medicaid Services 22. Council on Access, Prevention, and Interprofessional Relations (ADA) 23. Council on Dental Benefit Programs (ADA) 24. Council on Dental Practice (ADA) 25. Council on Government Affairs (ADA) 26. Delta Dental Plans Association 27. DentaQuest | <ol style="list-style-type: none"> 28. Health Resources and Services Administration 29. Managed Care of North America Dental 30. Medicaid and SCHIP Dental Association 31. National Association of Dental Plans 32. National Network on Oral Health Access 33. Public Member 34. The Joint Commission 35. Veterans Health Administration |
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MISSION

The mission of the Dental Quality Alliance is to advance performance measurement as a means to improve oral health, patient care, and safety through a consensus-building process.

OBJECTIVES

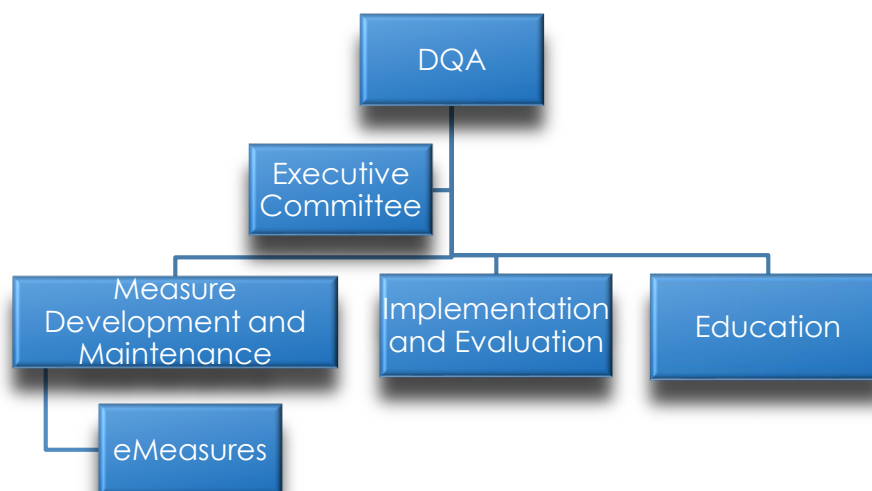
1. To identify and develop evidence-based oral health care performance measures and measurement resources.
2. To advance the effectiveness and scientific basis of clinical performance measurement and improvement.
3. To foster and support professional accountability, transparency, and value in oral health care through the development, implementation, and evaluation of performance measurement.

STRUCTURE AND COMMITTEES

The **DQA Executive Committee** oversees the governance, finance, structure, and operations of the DQA. The Executive Committee is composed of 11 members: one representative each from the ADA Board of Trustees, ADA Council on Government Affairs, ADA Council on Dental Practice, ADA Council on Dental Benefit Programs, ADA Council on Access, Prevention and Interprofessional Relations, the American Academy of Pediatric Dentistry, the Academy of General Dentistry, the National Association of Dental Plans, the American Dental Education Association, Medicaid-CHIP State Dental Association, and the Centers for Medicaid and Medicare Services.

The DQA has three advisory committees that are organized to advance the field of performance and quality measurement by supporting the development, maintenance, implementation of measures as well as educating the different communities of interest.

The structure of the DQA is as follows:



The Measures Development and Maintenance Committee (MDMC) is charged with the development and maintenance of dental performance measures. This includes refining the topic, identifying the availability of published measures related to the topic, the development of the rationale and specifications of the measure, along with the protocol for testing the measures. The Committee will then oversee the testing of the measures to satisfy criteria set forth by the National Quality Forum (NQF) and submit them subsequently to NQF for endorsement.

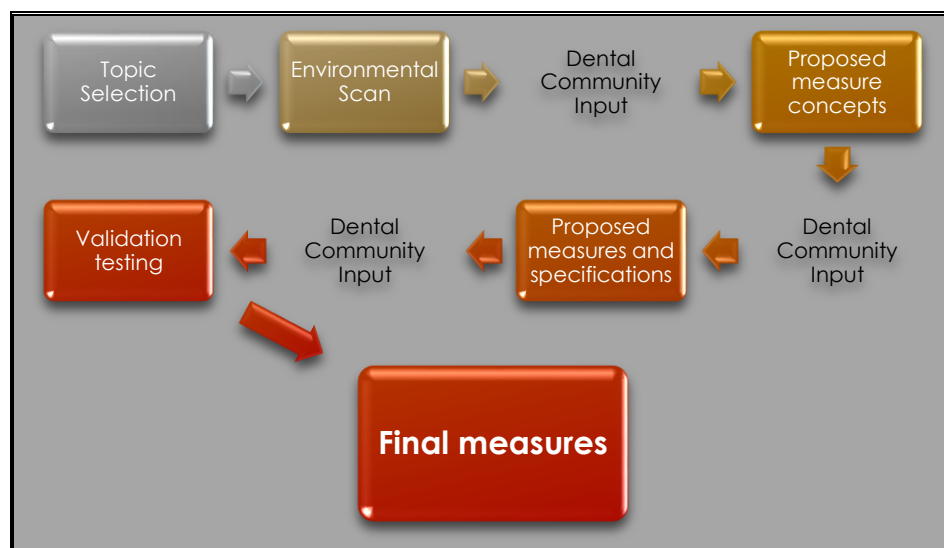
The Education Committee (EC) is charged with identifying objectives and strategies for educating and communicating with the dental profession and other interested parties regarding performance measures and performance measurement. This Committee enables effective communication on quality and performance measures, as well as the DQA and its structure and function.

The Implementation and Evaluation Committee (IEC) is charged with identifying and analyzing current use of performance measures in dentistry. This committee monitors and evaluates the appropriateness and effectiveness of the use of DQA performance measures once the MDMC has recommended measures. It will identify desirable outcomes of performance measures/measurement and plan and

implement outcomes assessment of performance measures/measurement. Lastly, the committee will evaluate a process for ongoing updating of performance measures.

DQA MEASURE DEVELOPMENT

DQA undertakes a comprehensive approach to measure development that is collaborative, transparent, and meaningful. The process entails scanning the environment to identify existing oral health performance and quality measure concepts. The detailed scan is released to the dental community for input. Based on the feedback received, the DQA proposes specific measure concepts and releases those to the dental community for further comment. This transparent approach results in proposed measures and their draft specifications. Following a comprehensive and a competitive Request for Proposal (RFP) process, the DQA selects a capable research team to conduct validation testing. Throughout the testing process, the DQA engages the stakeholders continuously to solicit feedback and input. This process is discussed in detail in the DQA Measure Development Manual.²⁷



²⁷ Dental Quality Alliance (2016). Procedure Manual for Performance Measure Development: A Voluntary Consensus Process.

Available from: <http://www.ada.org/en/science-research/dental-quality-alliance/dqa-measure-activities>

PEDIATRIC DENTAL QUALITY STARTER SET MEASURES

To implement standardized performance measurement that fosters quality improvement and improved health outcomes, feasible, reliable, valid and clearly specified measures are required.²⁴

In order to advance its mission of advancing performance measures and quality improvement in oral health, the DQA has developed and approved to date a total of 14 pediatric measures ([Appendix A](#)), of which 12 are administrative claims-based performance measures. Targeted at the goal of addressing “Dental Caries in Children: Prevention and Disease Management”, these measures fall under the AHRQ’s domains of use of services, process, access, and cost of care and address utilization, cost, and quality of dental services for children enrolled in public (Medicaid, CHIP) and private (commercial) insurance programs. DQA measures have been developed through extensive testing for validity, reliability, feasibility, usability, and clear specification, and with the intent of evaluating dental health services to allow dental plans and programs to monitor these services. These measures have been developed in partnership with the University of Florida with part of the funding for testing of these measures provided by the American Dental Association Foundation (ADAF). Two measures from the Starter Set that were adapted for implementation with electronic health records (EHRs) were developed under contract with the Office of the National Coordinator for Health Information Technology (ONC) as electronic clinical quality measures (eCQMs) for the 2017 edition of the Centers for Medicare and Medicaid Services Medicaid EHR Incentive Program (Meaningful Use). For more information on eMeasures, please access the DQA website:

<http://www.ada.org/en/science-research/dental-quality-alliance/dqa-measure-activities/electronic-pediatric-measures>

MEASURE ENDORSEMENT, IMPLEMENTATION, AND EDUCATIONAL ACTIVITIES

Following CMS guidance, DQA began submitting its measures for endorsement to the NQF, an independent not-for-profit organization that evaluates healthcare quality measures. NQF endorsement is the gold standard for healthcare quality. NQF endorsed measures are evidence-based and valid, and in tandem with the delivery of care and is an important criterion for quality measure selection among many public and private payers.²⁸ DQA currently has **seven** of its quality measures endorsed by the NQF.²⁸ An NQF endorsement is an important criterion for quality measure selection among public and private payers.

As measures are developed and endorsed, the DQA is placing significant focus on their implementation. A User Guide has been developed by the DQA to provide guidance on the appropriate use of the DQA measures.²⁹ To maintain the integrity of its measures as well as to comply with the NQF's endorsement agreement, DQA has established a comprehensive measure maintenance protocol. Per the Annual Measure Review, the DQA measures and the User Guide are reviewed on an annual basis.

DQA measures are currently implemented across both public and private sectors. These include marketplaces³⁰ and public entities like the CMS³¹ and HRSA³². As more entities implement these measures across different systems, a standardized, balanced approach towards measurement is

²⁸ National Quality Forum. Health and well-being measures [Internet]. Washington, CC: National Quality Forum; 2015. Available from: http://www.qualityforum.org/Health_and_Well-Being_Measures.aspx

²⁹ Dental Quality Alliance User Guide for Measures Calculated Using Administrative Claims Data. Accessed at <http://www.dqa.org/en/science-research/dental-quality-alliance/dqa-measure-activities/access-to-pediatric-starter-set>

³⁰ Ann Milar. California making strides in dental care measurement. CDA Update. Vol. 27 Issue 9 September 2015

³¹ 2015 Core Set of Children's Health Care Quality Measures for Medicaid and CHIP (Child Core Set). Available from [:http://medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/chipra-initial-core-set-of-childrens-health-care-quality-measures.html](http://medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/chipra-initial-core-set-of-childrens-health-care-quality-measures.html)

³² Health Services and Resources Administration (HRSA), November 2014. Proposed Uniform Data System Changes for Calendar Year 2015. Accessed from: <http://www.bphc.hrsa.gov/datareporting/reporting/index.html>

achievable. In an effort to facilitate implementation, DQA provides technical assistance to users of DQA measures by conducting webinars and workshops, developing technical briefs and reports to educate the dental community at large to facilitate the appropriate implementation of these measures.

As the measure development and implementation activities progress, the DQA is also very sensitive to the fact that all sectors of the profession that impact the oral health of our population must be educated on the need for quality and performance measurement. DQA maintains extensive educational resources on its webpage at www.ada.org/dqa. There are several tutorials posted on this website to help us better understand quality and performance measures. In addition, DQA holds a conference on “quality measurement” every two years with the intent of training thought leaders in dentistry to spread knowledge and information about quality measurement. The DQA is continuously developing educational resources for various target audiences to promote the value of standardized measurement.

SCIENCE BEHIND MEASUREMENT

HISTORY OF MEASUREMENT

More than 40 years ago, a physician named Avedis Donabedian proposed a model for assessing healthcare quality based on structures, processes, and outcomes.³³ He defined structure as the environment in which healthcare is provided, process as the method by which healthcare is provided, and outcome as the consequence of the healthcare provided. Since then, measurement of healthcare quality has evolved considerably and today many organizations, like the Joint Commission and the American Medical Association-convened Physician Consortium for Performance Improvement, lead the way in developing quality and performance measures in medicine. Over the past few decades, providers in the various realms of healthcare have adopted the principles of evidence based care. Evidence based clinical guidelines now form the basis for measures that allow clinicians and programs to identify opportunities for improvement and create performance improvement plans to improve the quality of care.

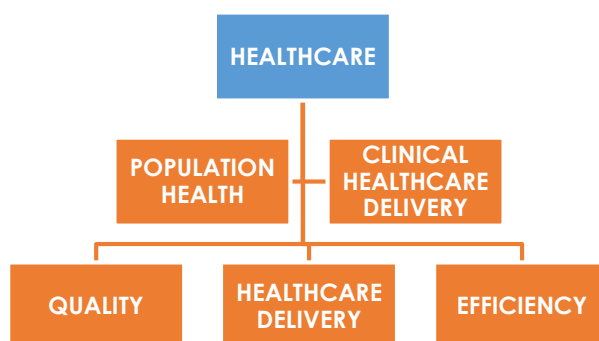


A list of definitions applicable to the field of measurement is available in [Appendix D](#).

³³ Donabedian A. Evaluating the quality of medical care. Milbank Memorial Fund Quarterly 1966;44:166-206.

LEVEL OF MEASUREMENT

Measurement can occur at different levels of healthcare. At the highest level, healthcare can be divided into two separate and different systems. Measures can apply to the population-based health system (e.g., through community-based programs such as water fluoridation, school sealant program, etc.) or to the clinical healthcare delivery system.³⁴ Clinical healthcare delivery measures are applicable to clinicians, clinical delivery teams, delivery organizations, or health insurance plans.³⁴ Health care delivery measures and population health measures can each be classified into three parallel sub-groups: quality measures, related measures and efficiency measures. ³⁴



Clinical quality measures assess the performance of individual clinicians, clinical delivery teams, delivery organizations, or health insurance plans in the provision of care to their patients or enrollees. These measures are supported by evidence demonstrating that they indicate better or worse care.

Related healthcare delivery measures assess the non-quality aspects of performance of individual clinicians, clinical delivery teams, delivery organizations, or health insurance plans in the provision of care to their patients or enrollees. These measures are not supported by evidence demonstrating that they

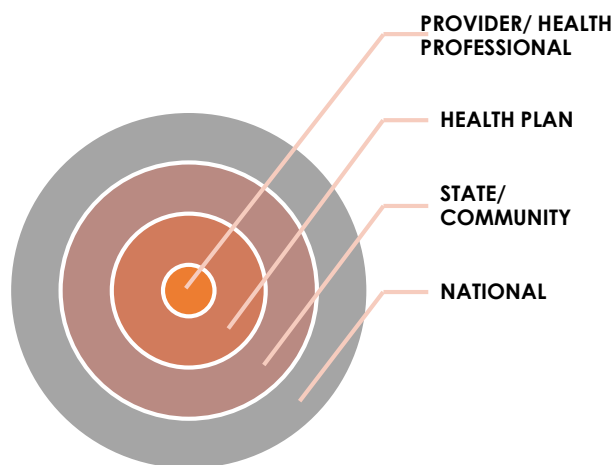
³⁴ National Quality Measures Clearinghouse. Accessed from: <https://www.qualitymeasures.ahrq.gov/about/domain-framework.aspx>

indicate better or worse care. (Note: non-quality refers to aspects of performance that addresses elements other than clinical quality).

Clinical efficiency measures assess efficiency directly (e.g., by comparing a measure of quality to a measure of resource use) or indirectly (e.g., by measuring the frequency with which healthcare processes are implemented that have been demonstrated by evidence to be efficient).

In general, data are collected at the clinician level for any clinical performance measure. The individual performance of clinicians, however, can be aggregated and reported for different accountable entities, such as clinical delivery teams, hospitals, health insurance plans, or other programs associated with healthcare delivery. These aggregated clinical performance measures become programmatic measures for that accountable entity. As part of quality improvement, this entity may provide benchmarks or other targets to encourage individual providers and institutions to

undertake quality improvement.



The level of accountability that an entity should have depends on whether the entity being evaluated has had an adequate opportunity to affect the aspect of quality that is being measured. There is always a shared responsibility for treatment decisions between a doctor and patient. Providers can increase the likelihood that their patients will adhere to clinical recommendations, but there are no perfect interventions, and some patients will always choose not to follow recommendations. In choosing which aspects of quality to measure, which risk factors to adjust for, and which performance benchmarks to set, decisions should be made explicitly about how to distribute responsibility. Information about the disease course or risk-adjustment methods must be used to establish reasonable standards of accountability to distinguish between individual and health system responsibility.³⁵

Besides direct quality improvement, measurement upholds public trust and provides consumer information. The process of developing such transparency should be carefully implemented. The mandate to publicly report quality scores for plans on public exchanges went into effect in 2016. The Quality Reporting System (QRS) proposed for the federally facilitated marketplaces requires qualified health plans that include an embedded pediatric benefit to report on the 'Annual Dental Visit' measure of dental service utilization. Furthermore, greater emphasis on patient-centered, coordinated, and integrated care and accountability form the basis for growing demands for measuring quality, performance, and value pursuant to the Affordable Care Act (ACA). Most Accountable Care Organization (ACO) models that have emerged have largely focused on health care services for the Medicare population with little to no attention to dental services. However, over time, the share of commercial ACO contracts that include dental services has increased.³⁶ Additionally, emerging

³⁵ Health Affairs, 16, no.3 (1997):7-21 Six challenges in measuring the quality of health care. Accessed at Challenges for measurement, 2011.

³⁶ Frazee T, Colla C, Harris B, Vujcic M. Early insights on dental care services in accountable care organizations. Health Policy Institute Research Brief. American Dental Association. April 2015. Available from: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0415_1.ashx

models based on patient-centered dental homes could help bridge the gap between oral and general health care, improve coordination of care, and help reduce overall health care costs.³⁶

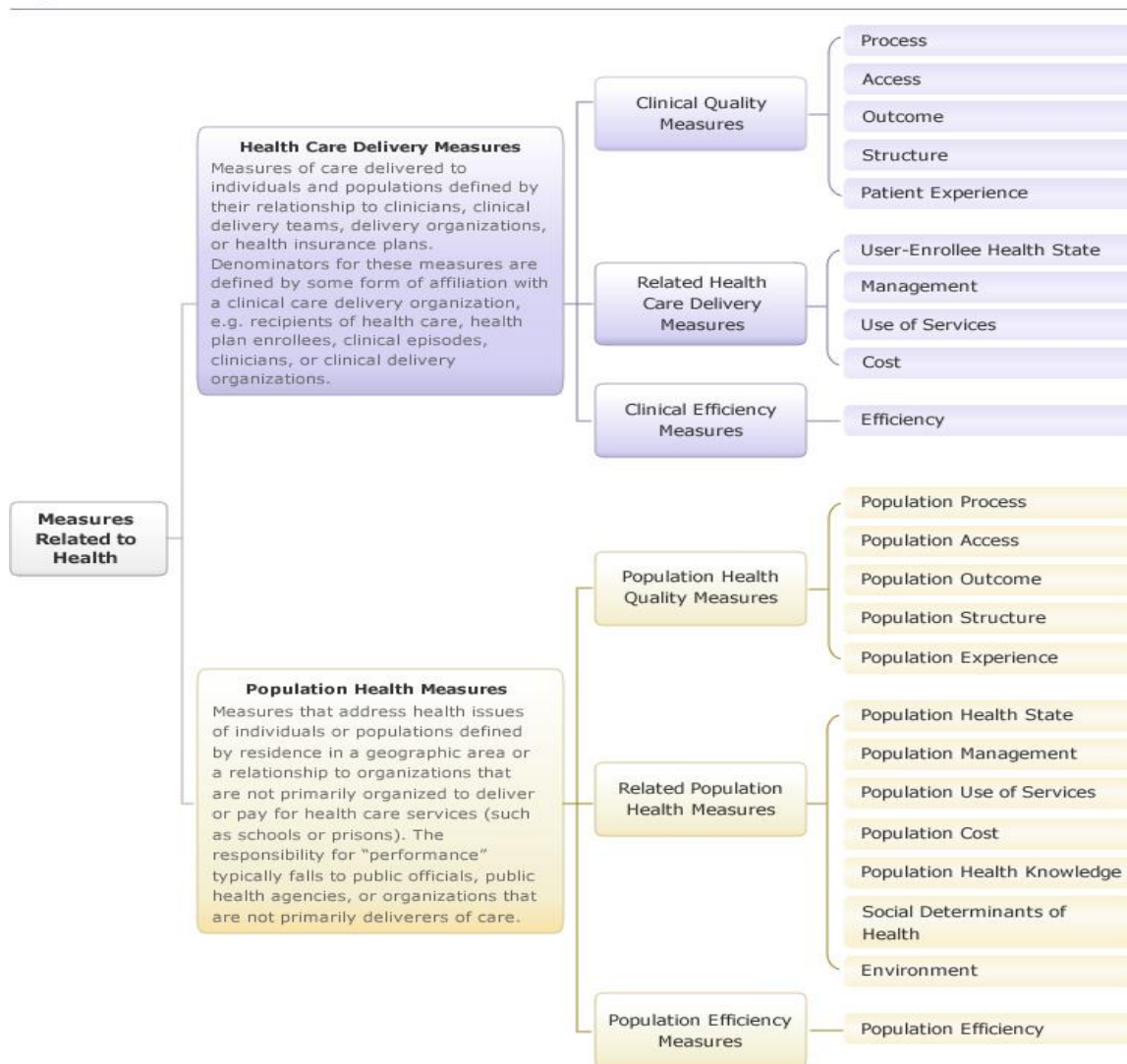
DOMAIN OF MEASURES

There are many dimensions of performance related to clinical healthcare delivery and population health within which measures can be developed.³⁴

This classification of measures developed by the National Quality Measures Clearinghouse (NQMC)³⁴ is based on the following rationales:

- Keep the organization of measures consistent with historical conventions and extend those conventions
- Clarify the purpose and use of measures for developers and users
- Accommodate the expanding range of measure types over time, beyond the common focus on Process, Outcome, Access, and Structure.

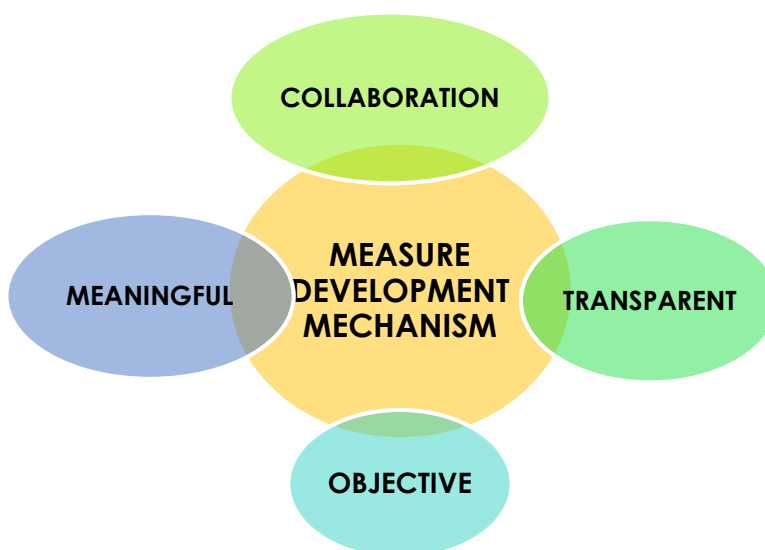
NQMC Domain Framework



The definitions for each of the domains of the “Healthcare Delivery Measures” in the figure above is listed in [Appendix G](#) as well as at the [NQMC Domain Definitions](#) website.³⁴

HALLMARKS OF A GOOD MEASURE

The process of developing measures includes clarifying the purpose of a measure and how it is to be applied; identifying a topic for measurement; writing the measure with its specifications; testing validity, reliability, usability and feasibility of the measure; and supporting implementation. A good measure is developed through a systematic process with input from many collaborators following a transparent, objective, and meaningful mechanism. The details of this process are listed out in the DQA's Measures Development Manual.²⁷ A good measure is one that³⁷:

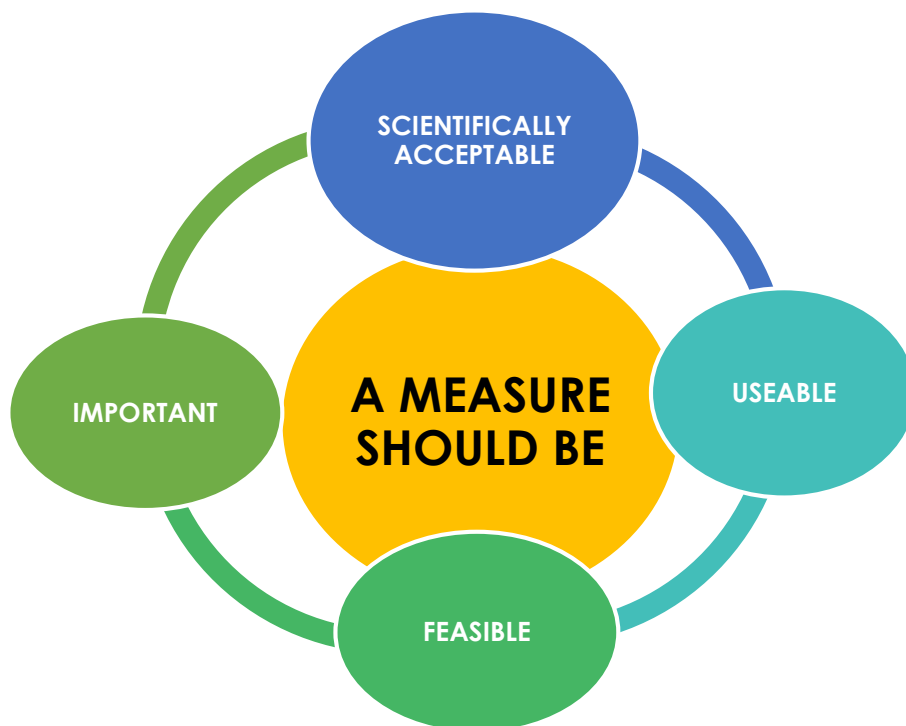


1. covers an important clinical area,
2. is scientifically acceptable (valid and reliable),
3. is useable,
4. is feasible.

³⁷ National Quality Forum. [Measure Evaluation Criteria](#). Accessed April 1st, 2016

Important measures are those that address, for example, unexplained variations in care; known or suspected problems with the quality of care; specific national healthcare goals or priorities; disease that causes high mortality or severe morbidity or affects large segments of the population; clinical processes and outcomes that are supported by strong evidence; or business practices that lead to increased efficiency.

Scientific acceptability includes reliability and validity of a measure. A measure should be well defined and precisely specified so that it can be implemented consistently within and across organizations and allow for comparability. Reliability testing demonstrates the measures results are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period. Validity testing demonstrates that the measure reflects the quality of care provided, adequately identifying differences in quality.



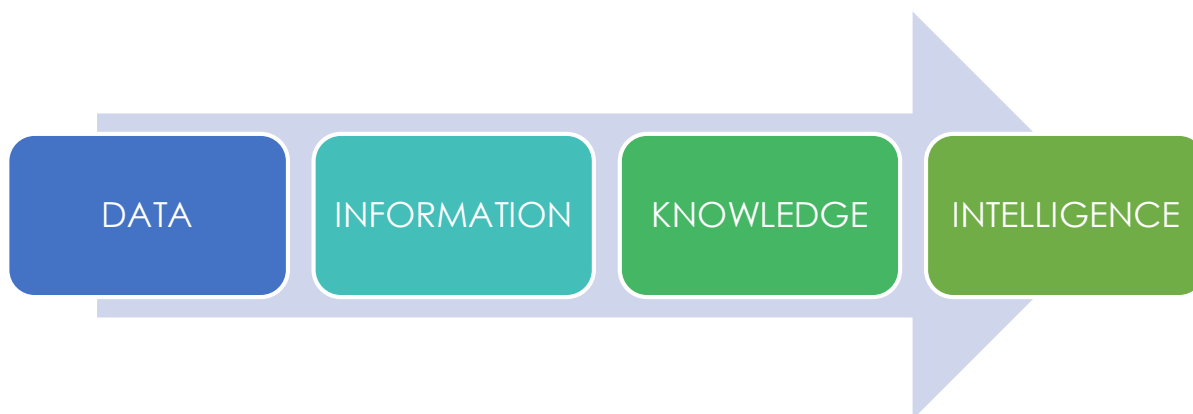
The measure must also be refined so that it is useable and relevant to those who will use the data generated by the measurement process and that those who will use the data can understand the results of the measure.

The measure should also be one for which data can be collected and the required data are readily available, are retrievable without undue burden, and can be implemented for quality improvement i.e. be feasible for implementation. For clinical measures, the required data elements should be ones that are routinely generated during the process of delivering care or as a result of care delivery. Data elements that are already in electronic form or can easily be put into electronic form are preferable.³⁸ In order to successfully measure to improve healthcare, measures need to be easily implemented on a routine basis in practices and yield meaningful information that can be acted upon.

MEASURING FOR IMPROVEMENT

Measures are primarily intended for improving the quality of care, accountability, or research. Data generated through measurement needs to be translated into information and knowledge and then used to make intelligent decisions on improving processes and outcomes of care.

38 Alhaqbani et al. A Medical Data Reliability Assessment Model. Journal of Theoretical and Applied Electronic Commerce Research. Vol 4, Issue 2, August 2009, pp. 64-78.



Improving quality of care can be conducted as either an internal process or through an external process.^{34, 39}

Internal quality improvement is of interest, for example, to an individual practitioner who studies the process or outcome of a particular diagnostic or treatment modality within the practice. Hospitals, health benefit plans, nursing homes, preferred provider organizations, and other systems are similarly interested in doing internal assessment of the quality of care, whether they provide the care directly or are instrumental in its delivery. Using measures for internal quality improvement involves three basic steps: 1) identifying problems or opportunities for improvement; 2) selecting appropriate measures of these areas; and 3) obtaining a baseline assessment of current practices and then re-measuring to assess the effect of improvement efforts on measure performance. Baseline quality measure results can be used to better understand a quality problem, prioritize areas for improvement, provide motivation for change, and establish a basis for comparison over time.

External quality assessment is of interest to organizations that are accountable for the quality of care delivered across systems of care, such as the Centers for Medicare & Medicaid Services (CMS) interest in assessing care that is delivered under the Medicare and Medicaid programs. The assessment is

³⁹ Medicare: A Strategy for Quality Assurance, Volume I (1990) Institute of Medicine (IOM).

generally done as part of a routine reporting and analysis schedule. As part of quality improvement, the organization sponsoring the assessment program usually provides benchmarks or other targets to encourage individual providers and institutions to undertake internal quality improvement.

Besides direct quality improvement, measurement is done to uphold public trust, provide consumer information, and account to policy makers, payers and others who purchase care. It is done to demonstrate that funding provided for healthcare services is being used for its stated purpose and is producing effective results. Accountability often is done as part of external quality improvement. These organizations collect performance data, verify the accuracy of it, and report the performance results to providers of care.

APPENDICES

APPENDIX A: LIST OF DQA PEDIATRIC MEASURES

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Evaluating Utilization

Measure Name	Description	NQF #	Data Source	Measure Domains	Level(s) of Measurement
Utilization of Services	Percentage of all enrolled children under age 21 who received at least one dental service within the reporting year.	2511	Administrative enrollment and claims	Access/ Process	Program, Plan
Preventive Services for Children at Elevated Caries Risk	Percentage of all enrolled children who are at “elevated” risk (i.e., “moderate” or “high”) who received a topical fluoride application and/or sealants within the reporting year.	N/A	Administrative enrollment and claims	Related Health Care Delivery: Use of Services	Program, Plan
Treatment Services	Percentage of all enrolled children who received a treatment service within the reporting year.	N/A	Administrative enrollment and claims	Related Health Care Delivery: Use of Services	Program, Plan

Evaluating Quality of Care

Measure Name	Description	NQF #	Data Source	Measure Domains	Level of Measurement
Oral Evaluation	Percentage of enrolled children under age 21 who received a comprehensive or periodic oral evaluation within the reporting year.	2517	Administrative enrollment and claims	Process	Program, Plan
Topical Fluoride for Children at Elevated Caries Risk	Percentage of enrolled children aged 1–21 years who are at “elevated” risk (i.e., “moderate” or “high”) who received at least 2 topical fluoride applications within the reporting year.	2528	Administrative enrollment and claims	Process	Program, Plan
Sealants for 6–9 Year-Old Children at Elevated Caries Risk	Percentage of enrolled children in the age category of 6–9 years at “elevated” risk (i.e., “moderate” or “high”) who received a sealant on a permanent first molar tooth within the reporting year.	2508	Administrative enrollment and claims	Process	Program, Plan
Sealants for 6–9 Year-Old Children at Elevated Caries Risk	Percentage of enrolled children in the age category of 6–9 years at “elevated” risk (i.e., “moderate” or “high”) who received a sealant on a permanent first molar tooth within the reporting year.		Electronic Health Records	Process	Practice
Sealants for 10–14 Year-Old Children at Elevated Caries Risk	Percentage of enrolled children in the age category of 10–14 years at “elevated” risk (i.e., “moderate” or “high”) who received a sealant on a permanent second molar tooth within the reporting year.	2509	Administrative enrollment and claims	Process	Program, Plan
Care Continuity	Percentage of all children enrolled in two consecutive years who received a comprehensive or periodic oral evaluation in both years.	N/A	Administrative enrollment and claims	Process	Program, Plan
Care Continuity	Percentage of all children enrolled in two consecutive years who received a comprehensive or periodic oral evaluation in both years.	N/A	Electronic Health Records	Process	Practice

QUALITY MEASUREMENT IN DENTISTRY

Usual Source of Services	Percentage of all children enrolled in two consecutive years who visited the same practice or clinical entity in both years.	N/A	Administrative enrollment and claims	Access/ Process	Program, Plan
Ambulatory Care Sensitive Emergency Department Visits for Dental Caries in Children	Number of emergency department visits for caries-related reasons per 100,000 member months for all enrolled children	2689	Administrative enrollment and claims	Outcome	Program
Follow-Up after Emergency Department Visits for Dental Caries in Children	Percentage of ambulatory care sensitive Emergency Department (ED) visits for dental caries among children 0–20 years in the reporting period for which the member visited a dentist within (a) 7 days and (b) 30 days of the ED visit.	2695	Administrative enrollment and claims	Process	Program

Evaluating Efficiency and Cost

Measure Name	Description	NQF #	Data Source	Measure Domain	Level of Measurement
Per Member Per Month Cost of Clinical Services	Total amount that is paid on direct provision of care (reimbursed for clinical services) per member per month for all enrolled children during the reporting year.	N/A	Administrative enrollment and claims	Related Health Care Delivery: Efficiency and Cost	Program, Plan

APPENDIX B: USEFUL LINKS & RESOURCES

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Below are some links that provide more detailed information on measurement.

[NQMC Tutorials on Quality Measurement](#)

This link from the NQMC website provides a series of tutorials on quality measures.

[NQMC DQA: Dental Caries in Children: Prevention and Disease Management](#)

This link from NQMC provides details on the DQA measures listed on NQMC website.

[International Journal for Quality in HealthCare](#)

This link from Oxford Journals describes the current state of quality in healthcare.

[Oxford Journal Method to Develop Measures](#)

This link from Oxford Journals describes the methods to develop measures.

[National Quality Forum](#)

This link from NQF provide details on the NQF endorsed DQA measures.

[Longwoods State of Science](#)

This link from Longwoods provides a review of the Concepts and Trends from a State of the Science Review

[AHRQ Child Health Toolbox](#)

This link from AHRQ provides information on concepts, tips, and tools for evaluating the quality of health care for children.

QUALITY MEASUREMENT IN DENTISTRY

Institute of Oral Health

The link to the Institute for Oral Health is a webpage that focuses on education and collaboration resources for advancing dental care innovation. A number of white papers on Defining Quality of Care from 2009 are a good resource.

[Institute for Healthcare Improvement Educational Resources](#)

This link to the Institute for Healthcare Improvement website offers tools, change ideas, measures to guide improvement, IHI white papers, audio and video, improvement stories, and more to help with improvement efforts.

Donabedian Paper on Quality

This is the original publication by Avedis Donabedian defining quality.

[HRSA Oral Health IT Toolkit](#)

This is the HRSA Oral Health IT Toolkit link

Dental Quality Alliance

Provides a link to the DQA website that includes all of its measure development, maintenance, implementation and educational activities.

APPENDIX C: FREQUENTLY ASKED QUESTIONS

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1. **Why should the dental profession measure quality?**

The need for measurement is rooted in the basic responsibilities to assure that the public receives optimal benefits from available knowledge and effective care. Changing regulatory priorities set forth by the Affordable Care Act (ACA) and ongoing activities of the Centers for Medicare and Medicaid Services (CMS) clearly prioritize the need to improve the quality of health care in both the public and private sectors. To ensure that the profession is providing the highest quality patient-centered dental care, dentistry should be able to measure what works and what doesn't in terms of a patient's health and make changes needed to improve the outcomes of care. Establishing measures to identify and monitor innovative approaches to reduce incidence of oral disease, while simultaneously improving effectiveness and efficiency of care through a focus on prevention, is an important national priority. The ultimate goal for measurement is to improve; and measurement must be undertaken in a collaborative manner by all stakeholders in quality within the profession.

2. **Why is it important for the dental leadership to support and advocate for quality measures?**

As policy decisions in the payer and regulatory community take root, it is important for the dental leadership to engage with all stakeholders to provide feedback into these decisions, i.e., what should be measured and how the results should be interpreted so as to positively and meaningfully influence change. The profession should be the entity that informs these decisions, since they are the most knowledgeable regarding clinical care, technical ability, and most effective delivery models.

3. **What are the implications of measurement?**

The ultimate goal of measurement is to improve the quality of oral healthcare. Creating, measuring, and analyzing the resultant data serves as a powerful tool to identify areas for quality improvement. Besides direct quality improvement, assessment upholds public trust and provides consumer information and

accountability to policy makers, payers, and others who purchase care. Measurement further demonstrates that funding provided for healthcare services is being used for its stated purpose and is producing effective results. Thus, measures are intended to improve quality of care, accountability, or program management.

4. What is the potential burden for introducing measurement into a practitioner's day to day activities?

Data for measurement can be obtained from administrative sources (encounters and claims), patient records and surveys. In dentistry, data are already being collected through the claims process. Such data are currently proprietary to the payers who use it to make policy decisions, conduct research, and increasingly to provide performance and quality measures information to providers, employers, and consumers. In the future, dentists may be required to report diagnostic codes and other data elements required for specific measures, either on a claim form or through a medical record. Quality measurement does not place an additional burden beyond reporting these additional data elements.

5. What is "quality of care" and a "quality measure"?

The Institute of Medicine (2000) defines "quality of care" as "the degree to which healthcare services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." The IOM defines quality measures as "the mechanisms that enable the user to quantify the quality of a selected aspect of care by comparing it to an evidence-based criterion that specifies what better quality is." (NQMC).

6. What is "performance measurement"? Why should my performance as a provider be measured?

Performance measures help identify the areas that can be improved to achieve goals for optimum health. Dentists often think measuring their performance is the same as determining the quality of the restoration's margins or the technical excellence of the crown. However, as a measure, those qualities tell very little about the impact of the restoration or crown on the actual health of the patient. Instead,

performance measures are those supported by evidence that the subject of the measure has led to improved outcomes.⁴⁰ For example, measuring whether sealants have been provided to a patient at high-risk for caries to reduce the incidence of caries or if surgical instruments have been autoclaved prior to each use to prevent infections is indicative of performance.

7. Is there evidence for improved oral health based on existing quality measures?

Although there are a number of randomized controlled trials that demonstrate the efficacy of preventive services such as fluoride and sealants, there are only a few peer-reviewed studies^{41,42,43,44,45,46,47,48} that document treatment outcomes following provision of these services. Payers with access to claims data have demonstrated these improvements in health (e.g., fewer restorations needed for children who received sealants). Limited availability of such data to health service researchers, however, hinders their progress in the quality measurement field. To gather such evidence, all stakeholders must embrace transparency and accountability in helping overcome these challenges.

⁴⁰ Institute of Oral Health Whitepaper on "Critical Issues and Innovative Solutions to Advance Quality in Dental Care Treatment and Delivery" 2009 Conference October 15-16, 2009 - San Jose, CA

⁴¹ Weintraub JA, Stearns SC, Rozier RG, et al. Am Treatment outcomes and costs of dental sealants among children enrolled in Medicaid. *J public Health*. 2001 Nov;91(11):1877-81.

⁴² Dasanayake AP, Li Y, Kirk K, et al. Restorative cost savings related to dental sealants in Alabama Medicaid children. *Pediatr Dent*. 2003 Nov-Dec;25(6):572-6.

⁴³ Bhuridej P, Kuthy RA, Flach SD, et al. Four-year cost-utility analyses of sealed and nonsealed first permanent molars in Iowa Medicaid-enrolled children. *J Public Health Dent*. 2007 Fall;67(4):191-8.

⁴⁴ Bhuridej P, Damiano PC, Kuthy RA, et al. Natural history of treatment outcomes of permanent first molars: a study of sealant effectiveness. *J Am Dent Assoc*. 2005 Sep;136(9):1265-72.

⁴⁵ Gale TJ, Hanes CM, Myers DR, et al. Performance of sealants applied to first permanent molars in a dental school setting. *Pediatr Dent*. 1998 Sep- Oct;20(5):341-4.

⁴⁶ Dennison JB, Straffon LH, Smith RC. Effectiveness of sealant treatment over five years in an insured population. *J Am Dent Assoc*. 2000 May;131(5):597-605.

⁴⁷ Robison VA, Rozier RG, Weintraub JA, et al. The relationship between clinical tooth status and receipt of sealants among child Medicaid recipients. *J Dent Res*. 1997 Dec;76(12):1862-8.

⁴⁸ Pabel BT, Rozier RG, Stearns SC, et al. Effectiveness of preventive dental treatments by physicians for young Medicaid enrollees. *Pediatrics*. 2011 Mar;127(3):e682-9.

Note: In efficacy trials (explanatory trials), researchers aim to determine whether an intervention produces the expected result under ideal circumstances. In effectiveness trials (pragmatic trials), researchers measure the degree of beneficial effect in real-world clinical settings. Analysis of retrospective claims data has the potential to provide some evidence to this effect.

8. How are measures developed and evaluated?

Measurement always starts with an established goal for quality improvement. Once a goal for improvement, e.g., “reduce caries among all school children” has been identified, there are some standard steps to develop measures. These steps include activities such as developing specifications, identifying data sources, addressing data quality issues, sampling, and testing for validity and reliability, followed by field testing to ensure meaningful use of the measure to help identify areas for quality improvement. Data for measurement are usually obtained from dental encounters or claims, patient records, and surveys. Thus, the process of developing and testing is rigorous and can take significant time before a measure can be implemented.

9. Who will “measure” and “report”? How will they do it?

Quality assessment is of interest to organizations that are accountable for the quality of care delivered across systems of care, such as the CMS interest in assessing care that is delivered under the Medicare and Medicaid programs. All health delivery organizations whether direct providers like the hospitals, medical and dental practices, or indirect providers like the health/ dental plans, preferred provider organizations, and other systems may be interested in doing internal assessment of the quality of care..

The assessment is generally done as part of a routine reporting and analysis schedule. As part of quality improvement, the organization sponsoring the assessment program usually provides benchmarks or other targets to encourage individual providers and institutions to undertake internal quality improvement.

10. **Who will use the results and for what?**

The results can be used by the profession itself, government programs, and third party payers to better assess the value of oral health care and how it can be improved. Results are also useful to employers who manage wellness programs for their workforce and to consumers to make educated choices in their own healthcare. The ultimate goals of measurement are quality improvement, accountability, and program management. Payers and regulators have started paying attention to evidence-based interventions to determine which population is better served when deciding how to spend limited healthcare dollars. Plans have created various types of provider 'profiles' for internal use. It is anticipated that practice-level or clinician-level measurement will be used increasingly by payers to create 'selective' or 'high-value' networks.

11. **What is the role of the Dental Quality Alliance in the field of measurement?**

In recent years, a growing number of quality measure and reporting initiatives have resulted in a proliferation of measures that are often duplicative and unduly burdensome on healthcare providers. In an effort to curb any inappropriate quality measures being implemented across oral health delivery system, the DQA, established by the ADA, through the active collaboration of its many and diverse partners representing its communities of interest within and outside the dental profession, is now leading the dental profession into a paradigm of standardized measuring and reporting for the purpose of quality improvement of oral healthcare. The DQA has developed a complete set of twelve pediatric measures for evaluation of programs and plans. Of these, seven measures have been endorsed by the National Quality Forum (NQF). NQF is the gold standard for quality measure development and attests to the caliber of the DQA's measurement development process. The credibility that the DQA has established for itself, guarantees that at least for the foreseeable future any government agency looking for program/plan level measures will turn to the DQA.

12. What are the difference between ICD and SNODENT codes? How do these codes relate to performance/quality measures?

The World Health Organization's International Classification of Diseases or ICD is universally accepted as a codified system used to describe diagnosis of disease. Code sets such as SNOMED-CT (Systematized Nomenclature of Medicine–Clinical Terminology), and its subset of dental terminology, termed SNODENT, are designed to codify the clinical information captured in an electronic health record during the course of patient care. For more information on Snodent, please access the following link:

<http://www.ada.org/en/member-center/member-benefits/practice-resources/dental-informatics/snodent>

In terms of quality, recording diagnostic codes can prevent miscommunication on diagnoses and provide the ability to compare the specific treatments and the outcomes of these treatments in patients with similar diagnoses. In 2009, HIPAA regulations designated ICD-10 as the official transactional code set for medical/dental claims adjudication. More information on ICD can be found here:

<http://www.who.int/classifications/icd/en/>

However, as of now, the validity of reporting these codes across delivery systems is yet to be determined so the current quality measures are still dependent upon CDT procedure codes rather than any diagnostic codes.

13. What is the difference between “programmatic” and “clinical” measures?

Clinical healthcare delivery measures are applicable to clinical delivery teams, delivery organizations, clinicians or health insurance plans.³⁴ In general, data are collected at the clinician level for any clinical performance measure. The individual performance of clinicians, however, can be aggregated and reported for different accountable entities such as clinical delivery teams, hospitals, health insurance plans, or other programs associated with healthcare delivery. These aggregated clinical performance

measures become programmatic measures for that accountable entity. As part of quality improvement, this entity may provide benchmarks or other targets to encourage individual providers and institutions to undertake quality improvement.

14. What is the link between evidenced-based dentistry and quality measures?

Evidence-based care recognizes a continuum of increasing rigor of scientific evidence in which randomized controlled clinical trials provide the highest level of evidence of clinical efficacy of a certain treatment. A recent study published in the Journal of the American Dental Association demonstrated sealant effectiveness using the Iowa Medicaid claims data by showing that children who received sealants received less subsequent restorative treatment than did those without sealants.³⁵ The Institute of Medicine defines quality measures as "the mechanisms that enable the user to quantify the quality of a selected aspect of care by comparing it to an evidence-based criterion that specifies what is better quality."

Quality measurement employs outcomes data secondarily from dental claims, medical/dental records, or patient surveys to determine whether evidence-based interventions, when implemented at the clinician or program level, are effective in improving oral health of patients. For example, many randomized controlled trials have demonstrated the efficacy of sealants under controlled conditions.

15. What is still needed in dentistry to implement meaningful measurement and improve quality?

Even today there remain very few evidence-based guidelines on which measures can be based. There is a lack of knowledge of true health outcomes, which occurs in part because dentistry does not have a tradition of formally recording specific diagnoses or associating such diagnoses with specific services.³⁶ Further, most dental practices and dental plans lack information systems capable of capturing the information necessary for measurement.³⁷ Lastly, limited availability of freely accessible claims data is a significant limitation for health service researchers to track progress on oral health quality.

APPENDIX D: DEFINITION OF KEY TERMS

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The DQA Education Committee searched for a standard glossary of terms but could not find a comprehensive glossary. Below are some of the definitions the committee was able to locate from different sources. Some terms have multiple definitions.

Quality of Care: “The degree to which healthcare services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” (IOM)
According to the [HRSA Office of Health Information Technology and Quality](#), “Quality healthcare is the provision of appropriate services to individuals and populations that are consistent with current professional knowledge, in a technically competent manner with good communication, shared decision-making and cultural sensitivity. (HRSA)

Quality Management: “A body of coordinated activities designed to direct and control an organization with respect to quality. Such activities typically include establishing quality policies, quality objectives, quality planning, quality control, quality measurement and quality assurance and quality improvement.” (IHI)

Quality Improvement – “A set of techniques for continuous study and improvement of the processes of delivering healthcare* services and products to meet the needs and expectations of the customers of those services and products. It has three basic elements: customer knowledge, a focus on processes of healthcare delivery*, and statistical approaches that aim to reduce variations in those processes”. (IOM)

**Note: “Process” does not refer to “quality of the margins of a restoration” or the “quality of the cavity preparation”. A “process” at the clinician level refers to the care that the provider chooses to deliver based on his or her clinical evaluation of the patient. Such care should be consistent with the current knowledge for effectiveness. For example, the “process of care” for a patient with a history of treated chronic periodontitis would be provision of periodontal maintenance service for those at risk for chronic*

periodontitis. Note that a “process” of care can also apply to system level processes that could affect the delivery of care. For example, within a system, a child who received emergency care must then be successfully placed into follow-up care by a dentist.

Quality Assessment: “Is the measurement of the technical and interpersonal aspects of healthcare and the outcomes of that care. Assessment is expressly a measurement activity.” (IOM)

Quality Measurement: “The use of tools that help us measure or quantify healthcare processes, outcomes, patient perceptions, and organizational structure and/or systems that are associated with the ability to provide high-quality health-care and/or that relate to one or more quality goals for healthcare”. (CMS)

Quality Measures: “The mechanisms that enable the user to quantify the quality of a selected aspect of care by comparing it to an evidence-based criterion that specifies what is better quality.” (NQMC)

Performance Measure: “A mechanism for assessing the degree to which a provider competently and safely delivers the appropriate clinical services to the patient within the optimal time period”. (NQMC) A performance measure describes a patient need that, when successfully addressed, can lead to a better health outcome within a specific time frame. (MCHB).

Note: Dentists often think measuring their performance is the same as determining the quality of the restoration's margins or the technical excellence of the crown. As a measure, however, these qualities tell us very little about the actual health of the patient.³⁸ Instead, performance measures are those supported by evidence that the subject of the measure has led to improved health outcomes. For example, if sealants have been provided to a patient at high-risk for caries to reduce the incidence of caries or if surgical instruments have been autoclaved prior to each use to

An extended glossary is available at [AHRQ Glossary](#) and [NQMC Glossary](#).

Note on some common terms:

“Metrics”: Attribute being measured; e.g., “quality of care” is a metric.

“Measure”: Operation of assigning a number to a metric; e.g., “the percentage of higher risk kids in the Medicaid program that received dental sealants” is a measure of “quality”.

“Measurement”: Resultant number after analysis of the data; e.g., “30%” is the measurement. “Domain”:

Metrics can be further divided into domains to classify measure

APPENDIX E: COMMONLY USED ACRONYMS

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CAHPS: Consumer Assessment of Healthcare Providers & Systems is a public-private initiative to develop standardized surveys of patients' experiences with ambulatory and facility-level care. (AHRQ)

CDT: Current Dental Terminology is the ADA reference manual that contains the Code on Dental Procedures and Nomenclature and other information pertinent to patient record keeping and claim preparation by a dental office; (ADA)

CPT: Current Procedural Terminology is a listing of descriptive terms and identifying codes developed by the American Medical Association (AMA) for reporting practitioner services and procedures to medical plans and Medicare. (ADA)

HEDIS: Healthcare Effectiveness Data and Information Set is a tool used by more than 90 percent of America's health plans to measure performance on important dimensions of care and service. This measure set was developed and is maintained by NCQA. (NCQA)

HIPAA: Health Insurance Portability and Accountability Act of 1996 is a federal law intended to improve the portability of health insurance and simplify healthcare administration. HIPAA sets standards for electronic transmission of claims-related information and for ensuring the security and privacy of all individually identifiable health information. (HRSA)

HIT: Health Information Technology is the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of healthcare information, data, and knowledge for communication and decision making. (HRSA)

ICD-10: International Classification of Disease- 10th Revision is an international disease classification system developed by the World Health Organization (WHO) that provides a detailed description of known

diseases and injuries. The classification system is used worldwide for morbidity and mortality statistics, reimbursement systems, and automated decision support in medicine. (HRSA)

SNODENT: Systematized Nomenclature of Dentistry is a tool for capturing detailed diagnostic information in a dental EHR environment; clinical findings, anatomic sites, morphologies, etiologies, and diagnoses are encoded and organized in hierarchies for purposes of data capture, aggregation, and analysis designed to support quality assessment, quality improvement, evidence based practices, public health, and patient safety

APPENDIX F: ACRONYMS FOR ORGANIZATIONS

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[ACHS](#): The Australian Council on Healthcare Standards is a private, non-profit organization that is the leading accreditation body in Australia. It provides quality assessment for healthcare organizations such as hospitals, ambulatory care clinics, specialty services, and other provider organizations.

[AHRQ](#): Agency for Healthcare Research & Quality is a US federal agency charged with improving the quality, safety, efficiency, and effectiveness of healthcare for all Americans.

[ASQ](#): American Society for Quality is the global quality leader that offers memberships, tools, training, certifications, books, and more on topics around quality assurance and improvement.

[CAHMI](#): Child and Adolescent Health Measurement Initiative is a group based in the Oregon Health and Science University Department of Pediatrics, dedicated to advancing consumer-centered healthcare for children, youth and families.

[CMS](#): Centers for Medicare and Medicaid Services is a US federal agency which administers Medicare, Medicaid, and the Children's Health Insurance Program.

[HRSA](#): Health Resources and Services Administration is the primary US federal agency for improving access to healthcare services for people who are uninsured, isolated, or medically vulnerable.

[IOM](#): Institute of Medicine is an independent, nonprofit organization that works outside of government to provide unbiased and authoritative advice to decision makers and the public.

[MCHB](#): Maternal and Child Health Bureau provides a foundation for ensuring the health of the Nation's mothers, women, children and youth, including children and youth with special healthcare needs, and their families.

NCQA: National Committee on Quality Assurance is a non-profit organization dedicated to improving healthcare quality, and a central figure in driving improvement throughout the healthcare system, helping to elevate the issue of healthcare quality to the top of the national agenda. NCQA accredits and certifies a wide range of healthcare organizations.

NQF: National Quality Forum promotes change through development and implementation of a national strategy for healthcare quality measurement and reporting. It builds consensus on national priorities and goals for performance improvement and working in partnerships to achieve them; endorses national consensus standards for measuring and publicly reporting on performance; and promotes the attainment of national goals through education and outreach programs.

NQMC: National Quality Measures Clearinghouse is a database and Web site for information on specific evidence-based healthcare quality measures and measure sets. NQMC is sponsored by AHRQ to promote widespread access to quality measures by the healthcare community and other interested individuals.

APPENDIX G: DEFINITIONS OF THE DOMAINS OF QUALITY

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Clinical Quality Measures

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A **process of care** is a healthcare-related activity performed for, on behalf of, or by a patient. Process measures should be supported by evidence that the clinical process that is the subject of the measure has led to improved outcomes. These measures generally are calculated using patients eligible for a particular service in the denominator, and the patients that either do or do not receive it in the numerator.

Examples: The percentage of patients with chronic stable coronary artery disease (CAD) who were prescribed lipid-lowering therapy.

Percentage of patients with chronic periodontitis who receive periodontal maintenance services at least three times in the past year.

Access to care is the attainment of timely and appropriate healthcare by patients or enrollees of a healthcare organization or clinician. Access measures should be supported by evidence that an association exists between the measure and the outcomes of or satisfaction with care.

Examples: The percentage of members 12 months to 19 years of age who had a visit with a primary care practitioner in the past year (based on evidence that annual visits lead to better health outcomes for children and youth).

Percentage of children aged 12-15 who had a dental visit in the past year.

An **outcome of care** is a health state of a patient resulting from healthcare. Outcome measures should be supported by evidence that the measure has been used to detect the impact of one or more clinical interventions. Measures in this domain should be attributable to antecedent healthcare and should include provisions for risk-adjustment.

Examples: The risk adjusted rate of in-hospital hip fracture among acute care inpatients aged 65 years and over, per 1,000 discharges.

Percentage of children aged 15-18 who are caries-free.

Structure of care is a feature of a healthcare organization or clinician related to its capacity to provide high quality healthcare. Structure measures should be supported by evidence that an association exists between the measure and one of the other clinical quality measure domains. These measures can focus on either healthcare organizations or individual clinicians.

Examples: Does the healthcare organization use Computerized Physician Order Entry (CPOE) (based on evidence that the presence of CPOE is associated with better performance and lower rates of medication error)?

Percentage of dental offices equipped with autoclaves to ensure proper infection control.

Experience of care is a patient's or enrollee's report concerning observations of and participation in healthcare. Patient experience measures should be supported by evidence that an association exists between the measure and patients' values and preferences or one of the other clinical quality domains. These measures may consist of rates or mean scores from patient surveys.

Examples: The percentage of adult inpatients who reported how often their doctors communicated well.

Percentage of enrollees reporting unmet dental care needs.

Related Healthcare Delivery Measures

A **user-enrollee health state** is the health status of a group of persons identified by enrollment in a health plan or through use of clinical services. By definition, a user-enrollee health state is not known to be the result of antecedent healthcare.

Examples: Prevalence of diabetes among health plan enrollees (inclusion in the denominator is based on membership in a particular health plan, however the measured health state is not a result of that membership).

Prevalence of complete tooth loss (edentulism) among dental plan enrollees.

QUALITY MEASUREMENT IN DENTISTRY

Management of care is a feature of a healthcare organization related to the administration and oversight of facilities, organizations, teams, professionals, and staff that deliver health services to individuals or populations. Management measures assess administrative activities important to healthcare but not part of the direct interaction between individual patients and healthcare professionals.

Examples: Whether a practice has a policy to ensure the prevention of fraud and has defined levels of financial responsibility and accountability for staff undertaking financial transactions.

Use of services is the provision of a service to, on behalf of, or by a group of persons identified by enrollment in a health plan or through use of clinical services. Use of service measures can assess encounters, tests, or interventions that are not supported by evidence of the appropriateness of the service for the specified individuals.

Examples: The percentage of patients in a health plan with an inpatient admission in the prior twelve months.

Percentage of enrollees who received oral prophylaxis.

Costs of care are the monetary or resource units expended by a healthcare organization or clinician to deliver healthcare to individuals or populations. Cost measures are computed from data in monetary or resource units. Costs may be reported directly (i.e., actual costs) or estimated based on the volume of resource units provided and the charges for those units.

Examples: Hospital net inpatient revenue per discharge.

Average dental office net revenue per patient visit.

Clinical Efficiency Measures

Efficiency of care is the propensity of a healthcare organization or clinician to maximize the number of comparable units of healthcare delivered for a given unit of health resources used. Efficiency measures must be linked to evidence supporting one of the five clinical quality domains.

Examples: Percentage of gastric ulcers treated with omeprazole (based on evidence that this is lower cost and at least equally effective as surgery).

Percentage of patients with chronic periodontitis treated with scaling and root planing.

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Dr. Marie Schweinebraten, DMD, Periodontist, Chair, DQA Education Committee, Chair-elect, Dental Quality Alliance

Dr. Ronald Hunt, DDS, Associate Dean for Academic Affairs at the Midwestern University College of Dental Medicine - Arizona

Dr. Ralph Cooley, DDS, Associate Professor, Dept. of General Practice and Dental Public Health University of Texas School of Dentistry

Dr. Jess Ruff, DDS, Chief Professional Officer, American Dental Partners

Mr. Thomas Meyers, Vice President, America's Health Insurance Plans

Dr. Shelly Jones, DDS, General Practitioner

Dr. Christopher Bulnes, DDS, General Practitioner

Dr. Linda Vidone, DMD, Periodontist, Senior Dental Director, Delta Dental of Massachusetts

Dr. Michael Breault, DDS, Periodontist Chair, Dental Quality Alliance

The Committee was assisted by:

Dr. Krishna Aravamudhan, BDS, MS, director, Center for Dental Benefits, Coding and Quality, American Dental Association

Dr. Diptee Ojha, BDS, PhD, sr. manager, Office of Quality Assessment and Improvement, American Dental Association

Ms. Jameca Routen, MPA, BS, coordinator, Office of Quality Assessment and Improvement, American Dental Association

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