"Achieving higher quality care at lower cost will require fundamental commitments to the incentives, culture, and leadership that foster continuous ‘learning’, as the lessons from research and each care experience are systematically captured, assessed, and translated into reliable care.” - Institute of Medicine
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The manuscripts in this compendium are based on oral presentations made at the 2013 DQA Conference. The authors expanded the content and added references. All manuscripts were reviewed and approved through a peer-review process.
Defining Quality in Oral Healthcare

The Institute of Medicine defines “Healthcare 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”.

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The Importance and Imperatives of Improving Healthcare Quality

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As a nation, our health outcomes lag behind most developed countries by a wide margin, despite substantially more spending. Additionally, health outcomes vary considerably across the U.S., revealing unacceptable disparities in morbidity, mortality, and risk factors. Over the past several years, mortality rates have worsened in many U.S. communities. In 2006, McGlynn and her colleagues published a landmark study systematically reviewing care against existing standards (acute care, chronic care, care for children) and found that only 55% of patients received recommended care. Furthermore, variation in care is ubiquitous. For example, HbA1C, a test for the control of diabetes, is measured in 87% of those with diabetes in Minneapolis, St. Paul, but only 67% of those with diabetes living in Albuquerque. Variation arises in part from the fact that quality in our professions is assumed once training is completed, boards are passed, and a license to practice is obtained. Ongoing evaluation and feedback of professional performance has been weak and systematic improvement has not been expected. Transforming practices into “learning systems,” has been recommended more than once by the Institute of Medicine as a remedy for this unacceptable situation.

From international comparisons, we know that costs are higher in the United States, while quality of care is poorer when compared with other developed countries. For example, the quality of asthma care as reflected in hospital admission rates (lower is better), are 44/100,000 in France vs. 121/100,000 in the United States. This better asthma care occurs in a country with a life expectancy about three years longer and where costs are about one half of U.S. costs per capita. Unfortunately, in addition to already high cost, those costs are also increasing at an accelerated pace. Health care expenses for U.S. families are expected to grow from $19,393 in 2011 to $41,868 in 2021. That is expected to further encroach on median household income, which is growing at a much slower rate. This significant problem of poor health, poor quality of care, and expensive care must be changed.

Why Is It Important to Improve the Quality of Care?:
Quality of care affects activities of daily living, quality of life, employability, financial strength, and life expectancy. There are at least six reasons for us to care about improving quality of care:

1. The contemporary definition of medical professionalism is evolving from autonomy to accountability, from expert opinion to evidence-based medicine, and from self-interest to teamwork and shared responsibility. The Physician Charter, a document authored by the American College of Physicians Foundation and the European Federation of Internal Medicine, and now endorsed by over 130 organizations across the world, clearly places improving quality of care among the professional responsibilities of physicians.

2. Improving quality of care is a matter of equity and fairness. The Committee on Quality of Care in America asserts “all individuals rightly expect to be treated fairly by social institutions, including health care organizations.” They included equity as one of the six aims that they recommended all health care organizations, professional groups, and private and public purchasers pursue.
3. Poor quality of care contributes to poorer health, which is associated with lost human capital, a situation our nation cannot afford in an increasingly global economy.

4. Poor quality of care and its attendant high costs affect the nation’s economic competitiveness. The indirect costs associated with preventable chronic diseases—costs related to diminished labor supply and worker productivity and the resulting fiscal drag on the national economic output have been estimated at over $1 trillion a year. The nation’s poor health status and the expense of its medical care delivery system place an enormous burden on the recovering United States economy, the deficit-burdened federal budget, and the financial security of many individual households.

5. Improved quality of care benefits National Defense. The unified medical budget as a percent of the Department of Defense的整体预算 has increased from 6% in 2001 to 9% in 2011. This increase has led the military health system to pursue a quadruple aim—simultaneous improvement in readiness of the military force, population health, experience of care, and reduced per capita costs. The military has also been affected by poor health, which results from poor quality of care and other factors that affect incoming new recruits from the civilian population. Fully 27% of young Americans are too overweight to join the military, a figure that is likely to increase. Further, 32% of all young Americans have health problems other than their weight that will keep them from serving in the military, resulting in nearly half of young adults unable to serve because of health issues. Even when recruits qualify, health problems can cause significant military deployment and expense problems later. For example, 20% of the Army’s reservists arrived at mobilization sites with dental conditions that made them non-deployable.

6. Most importantly, working on improved quality of care creates an improved system of health, medical care, and dental care that will benefit future generations.

Can Quality of Care be Improved?
Quality is slowly improving across the country. We know that fewer Americans failed to receive health care services they should have received and that the majority of national measures of quality are gradually improving. Quality is also improving as measured in health plans by the National Committee for Quality Assurance (NCQA). For example, in just one year, NCQA reports an increase in blood pressure control of 2% in Health Maintenance Organizations and 5% in Preferred Provider Organizations. Better blood pressure control means fewer deaths from heart attacks, strokes, and kidney disease. This improvement in quality is the result of purposeful effort to improve quality in health plans and in both large and small practices across the nation.

At HealthPartners, a large, consumer-governed, non-profit health care delivery and financing organization in Minnesota, a focus on improved diabetes care over 10 years shows a dramatic improvement in care and a decrease in complications from diabetes. From 2003 to 2013, ensuring that each patient with diabetes has blood pressure under control, has blood sugar under control, has LDL cholesterol less than 99, is not smoking, and is a regular low-dose aspirin user has resulted in patients with diabetes having one-third the heart attacks, three-fifths the amputations, and two-thirds the rate of blindness from retinopathy. These elements of “optimal diabetes care” are captured in a composite measure, which is used to measure progress and for public reporting.

That composite diabetes measure is also a standard for measuring diabetes care in most practices in Minnesota. The results are better care with fewer complications and lower costs. For each optimally managed diabetes patient participating for 10 years at HealthPartners, the estimated economic value of improved quality of life from reduced complications is estimated to be $31,000. Better diabetes care is associated with lower costs. There are regional differences in care for diabetes. Many organizations across the nation are improving diabetes care for their patients by measuring their own performance with...
standard quality measures and redesigning their care based on the results.

Smaller organizations have seen improvement in quality of care, too. The Ellsworth Clinic in Ellsworth, Wisconsin, was named one of two Health and Human Services Million Hearts 2012 Hypertension Control Champions with control rates improved from 68% to 90% from 2007 to 2012. Better blood pressure control translates to fewer heart attacks, fewer strokes, and less kidney failure. Ellsworth is a town with a population of 3,284 and the Ellsworth Clinic has a staff of 15 with two family physicians.

**How Is Quality of Care Improved?** A key to the success at HealthPartners and in Ellsworth is a commitment to improvement, setting specific goals for improvement, using guidelines based on good science, redesigning practice to implement the guidelines, tailoring the care to meet the needs of the patient, installing and using electronic health record systems, building data systems and analytic capacity, measuring both processes and outcomes of care, and improving process of care based on quality improvement principles. A culture of improvement is a critical foundation and is manifest in these practices and reflected in their leadership. Both of these practices participate in the voluntary reporting of performance and use available standard measures from a regional quality measurement collaborative, Minnesota Community Measurement. This has enabled transparency about performance for the public and enabled comparison with other practices for the purpose of identifying best practices. The improvement in performance at both HealthPartners and the Ellsworth Clinic was also enabled by the use of clinical practice guidelines and technical assistance in quality improvement methods from the Institute for Clinical Systems Improvement, another regional quality improvement collaborative in Minnesota and Wisconsin.

Even greater positive impact on quality of care can be obtained by focusing on those unhealthy behaviors that lead to disease. These behaviors can be addressed by using quality improvement as well. The leading causes of death in the United States are tobacco use, inactivity, poor diet, and the misuse of alcohol. Over more than a decade, constant attention has been directed toward recording tobacco use as a vital sign in the medical record, measuring tobacco “ask and advise” by providers, providing easy referral to counseling quit lines, providing nicotine replacement therapy, measuring process (“ask and advise”), as well as outcomes. In this case tobacco use is measured in the practice as well as the rate of second-hand tobacco exposure in children. Providing financial incentives for improvement, in combination with public health efforts, has resulted in a reduction of tobacco use prevalence in the HealthPartners’ population from 26% in 1998 to 11% in 2010 and the reduction in the exposure of children to second hand smoke from 23% in 1998 to 4% in 2010. This dramatic reduction in tobacco use and exposure will result in fewer cases of lung cancer, fewer cases of chronic obstructive lung disease, fewer heart attacks, fewer strokes, lower rates of asthma, and less vascular disease in the future for patients and their children.

Quality improvement techniques have been demonstrated to improve the quality of care in both large and small practices. They have had impact on the behaviors that cause disease in populations. HealthPartners, in partnership with others in the communities it serves, is now working to influence social and environmental determinants of health for additional impact on the health of those it serves. It is encouraging that quality of care in the nation is gradually improving and that there is prospect for even greater improvement in health. An accelerated pace of improvement is important to address the substantial gaps in health and healthcare in the nation.

**What Do We Need to Improve Quality?** We know much about quality of care and how to improve it. The Institute of Medicine has defined 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.” A number of Institute of Medicine reports further articulate the aims for quality, the need for its systematic improvement, and the need for a “Learning Health Care System.”
We know about quality of care’s relationship to improving overall health in the population\(^2\). Furthermore, Donabedian has given us an insight into how the structure and process of care influence its outcomes\(^3\). The concepts of overuse, underuse, and misuse of care have been articulated\(^3\). Overuse is now the focus of an initiative, Choosing Wisely, of the American Board of Internal Medicine Foundation, which is encouraging physicians, patients and other health care stakeholders to think and talk about medical tests and procedures that may be unnecessary, and in some instances can cause harm\(^4\). More than 50 specialty societies have now joined the campaign, and 30+ societies will announce new lists in late 2013 and early 2014. More than 145 aspects of care that physicians and patients should question are now available from this initiative\(^5\). Patient safety is now better understood and substantial efforts are underway in most health care organizations to improve it\(^6\).

The triple aim of improving the experience and affordability of care, while improving health has been proposed for all health care organizations and many have adopted it\(^7\). As an example, HealthPartners has adopted the triple aim as a framework for its long-term quality and health improvement efforts\(^8\). These three aims are also now the keystone of the Department of Health and Human Services National Quality Strategy for the nation\(^9\). Within this triple aim framework, additional priorities have been identified as part of the National Quality Strategy and by other organizations concerned with improving the nation’s quality of care. The Institute of Medicine has issued reports suggesting what priorities should be addressed to improve the nation’s health\(^10\) and the National Priorities Partnership effort at the National Quality Forum is providing advice on the priorities for the improvement of the nation’s quality of care to the Centers for Medicare and Medicaid Services as well as the private sector\(^11\).

In addition to knowledge about how quality is improved and setting aims and priorities, standard measures of quality of care are required to enable improvement, transparency, and to serve as the measures around which payment incentives may be structured\(^12\). The federal government has funded the development of standard measures of patient satisfaction in many different settings of care\(^13\). Federal financial incentives for the installation and meaningful use of electronic health records are in place\(^14\). Many standard measures are available from the National Quality Forum, a non-profit with a charter from Congress that allows its endorsed measures to be used in government programs as well as by private organizations for quality improvement\(^15\). Standard measures are also available from the National Committee for Quality Assurance for physician practice recognition, for use in patient-centered medical homes, in accountable care organizations, and in the evaluation of health plans. The Joint Commission is also a source for standard measures. Regional collaboratives, such as Minnesota Community Measurement, are also developing measures for use in public reporting as well as quality improvement\(^16\). HealthPartners has developed a standard, open architecture measure of total cost of care that has been endorsed for use by the National Quality Forum\(^17\). This measure enables new accountable care organizations and other health care organizations and practices to have a standard comparable method for measuring costs for the purpose of performance improvement and transparency.

Medicare, many Medicaid programs, and private payers are changing payment systems to incorporate rewards for better outcomes for patients. The Measure Applications Partnership at the National Quality Forum, a group provided for in the Affordable Care Act, is advising the Department of Health and Human Services Centers on the use of measures for incentive payments in more than 20 federal programs. The Centers for Medicare and Medicaid Services is using a set of measures to provide incentives for outcomes for the Accountable Care Organization Program, a significant effort of the federal government to encourage structural as well as payment reform. The intent is to encourage the formation of more integrated care delivery systems that are able to take risk for patient outcomes. In addition, private insurance coverage designs are incorporating value based designs that encourage individuals to seek evidence based care.
that will benefit them, and discourage care that does not. Lastly, there are a number of other private organizations that provide technical and other assistance in quality improvement. The most prominent among them is the Institute for Healthcare Improvement. Over time, this organization through its initiatives, collaboratives, and national meetings has a significant impact on the nation’s capacity for quality improvement.

Concluding Remarks: Quality and health in the U.S. is poor when compared with other developed countries and costs are too high. Quality of care is slowly improving. We understand quality of care and how to improve it and have seen many large and small practices settings improve care and the behaviors that lead to poor health. National, regional, professional, and private infrastructure is available to support improvement of care.

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Oral Health in the Era of Accountability

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The U.S. oral health industry is facing tremendous pressure to change. The disparities in access and the resulting health disparities have been well documented. The 2000 report of the U.S. Surgeon General indicated that “Although there have been gains in oral health status for the population as a whole, they have not been evenly distributed across subpopulations. Profound health disparities exist among populations including: racial and ethnic minorities, individuals with disabilities, elderly individuals, and individuals with complicated medical and social conditions and situations”1. In 2011 the Institute of Medicine and the National Research Council of the National Academies of Science issued two reports on oral health, Advancing Oral Health in America and Improving Access to Oral Health Care for Vulnerable and Underserved Populations2,3. Both of these reports describe the significant proportion of the U.S. population that does not have access to oral health services and the disparities in oral health among these groups.

At the same time the general health care system in the U.S. is undergoing profound changes and has now entered the “Era of Accountability.” This is evident in the decade-long journey from “pay-for-performance” experiments to “Accountable Care Organizations” established in the Affordable Care Act (ACA), and the current call for “Value-Based Care”4-11. Many of these efforts have been driven by the need to align incentives with health outcomes. A 2010 Urban Institute report on Moving Payment from Volume to Value highlighted the need to emphasize value for patients22. Donald Berwick, former Administrator of the Centers for Medicare & Medicaid Services (CMS) and former President and Chief Executive Officer of the Institute for Healthcare Improvement has referred to the goals of this journey as the “Triple Aim”23. The three aims are improving the experience of care, improving the health of populations, and reducing per capita costs of health care.

The major drivers of change in the general health care system include:

1) the skyrocketing cost of health care unrelated to improvement in health outcomes,
2) increasing understanding of the harms and unwarranted variability produced by our fragmented health care system,
3) evidence of the profound health disparities that still exist in the population in spite of scientific advances in care, and
4) increasing awareness of these problems in the age of consumer empowerment.

The Skyrocketing Cost of Health Care: There is evidence that as a nation we spend much more per capita and much more of our gross domestic product on health care than the rest of the developed world and in spite of this spending we have poorer health outcomes14-17. In addition the 1999 and 2001 Institute of Medicine (IOM) reports, To Err Is Human: Building a Safer Health System and Crossing the Quality Chasm, highlighted the problems with the U.S. healthcare system in the areas of patient safety, inefficient use of resources, fragmentation of the delivery system, and the need to re-design the way health care is delivered18,19. Finally there is wide evidence that our health care system produces profound inequities in the delivery of care and in health outcomes, with certain populations being less able to access health care services and having significantly poorer health than other segments of the population20,21.

These same issues are evident in the oral health care system. Figure 1 indicates the Center for Medicare and Medicaid Services (CMS) prediction that the total national expenditures for oral health care are expected to almost
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Figure 1: National Dental Expenditures


Source: CMS National Health Expenditure NHE Historical and projections, 1960-2021

Figure 2: Consumer Out of pocket expenses

![Consumer out-of-pocket health care expenditures in 2008](http://www.bls.gov/opub/ted/2013/ted_20130325.htm)

triple between 2005 and 2020, growing by 289%. At the same time oral health care is getting significantly more expensive for the average consumer. Between 2000 and 2011 the consumer price index for dental services (CPI-DS) increased 158%, almost twice the increase in the overall consumer price index (CPI). As depicted in Figure 2, this situation is exacerbated by the fact that as a nation we pay for dental services out-of-pocket more than we pay for any other health service except prescription drugs. One of the impacts of these trends is that people are visiting dental offices less than before. In fact the average visits-per-capita to general dental offices in the US has dropped by about ten percent in the decade from 2003 to 2013. This is clearly unrelated to the 2007-2009 recession and likely related to the increasing out-of-pocket cost of dental care described here.

**Unwarranted Variations in Health Outcomes and Health Disparities Among Populations:** The IOM, in the 2003 report, Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care, demonstrated that racial and ethnic minorities tend to receive lower quality health care than non-minorities, even when access-related factors, such as patients' insurance status and income, are controlled. It has also long been recognized that there are significant variations in the quality and outcomes of oral health care received by populations in various ethnic and racial minority populations. The profound oral health disparities experienced by large segments of the U.S. population described in 2000 report of the U.S. Surgeon General have not changed in the decade since the release of that report and the 2011 Institute of Medicine reports. Bader and others have described the limited evidence that exists for most procedures performed in oral health care. As a result, there are widespread unexplained variations in clinical decisions among dentists. Even when differences in patients are accounted for, variations in dentists' clinical decisions are still widespread.

**The Quality Movement:** The need for major change in the U.S. healthcare system was highlighted by the 1999 and 2001 Institute of Medicine (IOM) reports, To Err Is Human: Building a Safer Health System and Crossing the Quality Chasm. These reports highlighted the problems with the U.S. healthcare system in the areas of patient safety, inefficient use of resources, fragmentation of the delivery system, and the need to re-design the way health care is delivered. They highlight the large cost of medical errors and the inefficient use of resources in our fragmented system. In Crossing the Quality Chasm the IOM called for a national strategy to transform the health care system. The report recommends six aims for creating a health care system which is “Safe; Effective; Patient Centered; Timely; Efficient; and Equitable.”

Ten years after the IOM call for a national strategy, the U.S. Department of Health and Human Services (HHS), as mandated in the ACA, has produced a National Strategy for Quality Improvement in Health Care. The strategy seeks to accomplish three broad aims similar to the Triple Aim:

- **Better Care:** Improve the overall quality, by making health care more patient-centered, reliable, accessible, and safe.
- **Healthy People/Healthy Communities:** Improve the health of the U.S. population by supporting proven interventions to address behavioral, social and, environmental determinants of health in addition to delivering higher-quality care.
- **Affordable Care:** Reduce the cost of quality health care for individuals, families, employers, and government.

**Quality Improvement Activities in Oral Health:** The factors described above are driving the oral health system in the same direction that general health is being driven - toward increased measurement of the outcomes of oral health activities, using data to improve quality and lower costs, and moving incentives from Volume to Value. There are many groups and individuals engaged in developing or using oral health measures and in oral health quality improvement activities.

**Concluding Remarks:** The U.S. health care system has entered the “Era of Accountability.” As described in this article the drivers of change include concern about the rapidly increasing costs of care, concern about unwarranted variability in costs and outcomes, and recognition of the profound health disparities that exist among racial and ethnic minorities, low-income...
These drivers of change apply not only to general healthcare, but oral healthcare as well. The rapidly increasing cost of oral health care, the large numbers of people who cannot or do not take advantage of the current oral health delivery system, unwarranted variability in care, and the existence of profound oral health disparities among segments of the population are attracting increasing attention. Many organizations are beginning to take action.

Figure 3 illustrates steps being followed and the consequences of the movement in oral health care from the current emphasis on volume to an emphasis on value. The diagram in Figure 3 depicts the growing use of electronic systems in oral health care and the increasing ability to collect and manage data and use data to improve care systems, referred to as “meaningful use.” As these processes improve the ability to measure and monitor outcomes, incentive systems based on oral health outcomes are developing and being deployed.

The use of incentives based on oral health outcomes is shifting incentives from those based on volume to those based on value. This shift brings the oral health system squarely into the Era of Accountability. As value-based incentives continue to be employed, this will bring profound change to oral health delivery systems. If value-based incentives are in place based on the oral health of the large numbers of currently underserved people, there will be increasing focus on strategies to improve the oral health of these populations. The IOM proposed a number of recommendations and potential strategies which are depicted in the diagram37.

**Moving Oral Health Care from Volume to Value**

![Diagram of Moving Oral Health Care from Volume to Value](image.png)

*Figure 3: Moving Oral Health Care from Volume to Value*

(Paul Glassman DDS, MA, MBA, reproduced with permission)
Don Berwick, in The Triple Aim: Care, Health, and Cost, indicated that the barriers to achieving the triple aim in the U.S. health care system “are not technical, they are political.” While there may still be technical barriers in moving oral health care toward achieving the triple aim, many of the barriers are also political. The developments described here will take concerted efforts by many individuals and groups. These include government at the federal, state and local levels; organized health professions; individual health care providers; the dental and general health benefits industry; private philanthropy; and consumer groups. The 2000 Report of the Surgeon General, Oral Health in America, elevated the visibility of oral health disparities in America. Now, the pressures and opportunities arising in the “Era of Accountability” will be the road to address these issues.

References:
Patient Centered and Effective Care

The Institute of Medicine defines “Patient-Centered Care” as “providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.”

The Institute of Medicine defines “Effective Care” as “providing services based on scientific knowledge to all who could benefit, and refraining from providing services to those not likely to benefit.”
Defining Effective Care: Evidence-Based Dentistry

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The ideas around evidence-based practice have gained a strong foothold in medicine over the last 20 years and now characterize much of the way medicine is practiced, financed, and assessed for quality. The impetus for the broad uptake of evidence-based approaches to care was, in part, the result of findings from numerous studies over the last 40 years that showed the practice of medicine to be substantially divorced from current best evidence. Wide and unsupported variations in clinical practice were documented, leading the Institute of Medicine (IOM) to describe the nature of the quality defects in medicine as consisting of: “overuse” (of procedures that do not help patients); “underuse” (of procedures that can help) and “misuse” (in execution of care) (IOM, 2001). Treatment was described as being based on personal “opinion”, with much of the blame directed at the nature of medical education. As Eddy stated, “When different physicians are recommending different things for essentially the same patients, it is impossible to claim that they are all doing the right thing.”

Challenges in Use of Evidence in Patient Care: The early pioneers of evidence-based health care (EBHC), such as Cochrane, Guyatt, and Sackett realized that clinical care based on strong scientific evidence derived from well-conducted clinical studies was the best way out of this problem of overuse, underuse, and misuse. To accomplish this, however, two substantial challenges would need to be overcome. The first challenge was a general lack of high quality evidence to support much of what was being done in clinical practice. Although early reports suggested that only 10% to 20% of medical practice was supported by controlled trials, this itself was a conclusion based only on expert opinion. Nevertheless, there was a self-evident need for more research to support much of clinical practice. The remedy to this problem is ongoing with an expansion of the clinical research enterprise in the US and elsewhere, motivated in part by the growing appreciation by physicians and others of the value of well-conducted clinical studies as the best source of evidence of treatment efficacy.

As a result of the Affordable Care Act (ACA) substantial resources are now being invested in generating relevant evidence in support of clinical care. The creation of the Patient-Centered Outcomes Research Institute is an example of one ACA created program that holds a good deal of promise in regard to increased evidence.

The second challenge to the effective use of evidence was to find ways to effectively deliver to clinicians the results of high quality evidence in a way that would lead to improved clinical practice. Two strategies evolved that approached the issue from opposite positions.

Strategies to Increase Use of Evidence: One approach to increasing use of evidence, championed by the early advocates of EBHC at McMaster University and Oxford University’s Center for Evidence Based Medicine was the individual patient decision model. This approach features training physicians to frame clinical questions about individual patient care in a way that facilitates ad hoc searches of the scientific literature for high quality...
evidence. Practitioners using this approach need skill in rapidly finding and evaluating evidence for its validity, relevance, and importance as it relates to the care of individual patients. If the evidence passes validity and relevance thresholds, then clinicians must engage in an informal evaluation of each intervention’s benefits, harms and costs before ultimately deciding how to proceed. One can think of this model as a “bottom up” approach to using evidence in clinical practice, as it is motivated by individual patient encounters and individual provider’s desire to ensure that current evidence is appropriately applied.

The most commonly referenced definitions of evidence-based care describe the individual patient decision model. The definitions are variations on a theme that generally includes the integration of three elements: current best evidence; the clinical judgment of the provider; and the patient’s needs and desires.

Under this model, it is the responsibility of the provider to be familiar with the current best evidence, interpret its relevance to each patient and in collaboration with the patient move forward with the best care option, with “best” being defined uniquely for each patient. The advantages of the individual patient decision model include the engagement of the provider in the evidence search and its patient-centered focus, thus aligning with the recent emphasis on personalized medicine. This approach holds promise for facilitating better decision-making, but can be time consuming and possibly result in a piecemeal approach to patient care. Moreover, the approach requires skill and commitment on the part of the individual provider if it is to be effective. Given the vast amount of new information entering the biomedical literature each month, there is concern that information overload will lead to frustration among busy providers. This is especially true for providers working in health care delivery systems that do not support the time needed to search for evidence. Fortunately, the burden for individual provider searches for evidence has somewhat been mitigated in recent years by improvements in both online access to evidence databases and search filters that permit efficient searching, making this approach feasible in many clinical settings. Nevertheless, it may be asking much of providers to develop optimal evidence-based approaches for all clinical situations.

The second approach to fostering the use of high quality evidence in patient care is a “top down” approach whereby policies on patient care are derived from high quality evidence and implemented throughout a health care system (e.g., hospital network). These policies ideally should be based on evidence-based guidelines from reputable and qualified sources. The value of guidelines as conveyors of valid, high quality evidence has improved in recent years as standards have evolved on what constitutes appropriate guideline development and reporting.

Today, for guidelines to be acceptable, they must be evidence-based. This means they are based upon a current systematic review and this review has been conducted by an expert panel that has not only content expertise, but also is proficient in the technical aspects of conducting such reviews. Although there is no limitation on what topics can be selected for guideline development, the process typically focuses on providing the evidence around conditions or interventions that are high risk, high volume, or error prone. How well these types of conditions are managed can have a large impact on system-level quality. In health care systems aiming to maintain evidence-based standards and optimal patient outcomes, guidelines should become part of the overall strategies implemented to manage care.
Both approaches offer the promise of improved patient outcomes, but their different focus can lead to potential conflict. In contrast to the individual patient decision model, which focuses on unique patient factors in an attempt to ensure that each patient is receiving optimal care, guideline-based approaches are generic. Guidelines, being derived from the combined results of many studies and expressed as population-level mean values, are intended to apply broadly to an average patient. Their benefit to patient care is only indirect, as they enable, guide, and motivate specific care in broadly defined circumstances. Conflict can arise, however, when individual patient factors argue for an approach to care that is not guideline supported. Certainly any number of situations can be envisioned where patient factors such as comorbidities, disease stage, allergies, religious beliefs and other factors would require that guideline-based treatment not be followed. In health care systems that emphasize adherence to guidelines and reward providers for compliance, therefore, conflict can be avoided through provisions that allow providers to opt out of the guideline recommendations without penalty, when patient circumstances make that a preferred approach.

Guidelines, being derived from the combined results of many studies and expressed as population-level mean values, are intended to apply broadly to an average patient.

Quality Improvement and Evidence: Quality improvement (QI) programs are often designed to measure adherence to guideline based care at the population level. Glazou et al. noted that QI measures are most commonly used to address areas that are perceived to be recurring problems in a health care system. They referred to a “Know-Do” gap, which is the gap between what is known to be the correct approach to managing care compared to what is actually being done. To increase compliance health care systems may employ strategies such as embedding guideline recommendations in the electronic medical record and financially incentivizing providers for high compliance rates. Structural support for guideline compliance and opt outs can also be important. Another example is educational programs that familiarize staff with the processes to be used to comply with guidelines and when opt out is appropriate. To use a dental example, in a large multi-provider clinic, it may not be sufficient to have a policy that states that all caries high-risk children should receive dental sealants. It may not be clear exactly who (dentists? hygienist?) is to perform the service or when it should be provided (first visit, second visit, etc.), with the result that many patients may fail to receive the service due to confusion about implementation. In a well-functioning health care system there is a complementary relationship between evidence-based guidelines that tell providers “what” to do and QI methods that tell providers “how” to do it.

The slow uptake of evidence-based care in dentistry can be attributed to a number of structural issues including the lack of a strong evidence base. Until recently, the availability of high quality evidence in support of much of dental care was lacking. Bader reported that through 2007, 60 percent of the 80 Cochrane Collaboration reviews in dentistry could not fully answer the clinical question they set out to address due to insufficient or weak evidence. Even when high quality evidence is available, dentistry’s decentralized practice model, dominated by individual operator owned offices, does not lend itself to broad implementation of guideline-based policies.

Support of ad hoc evidence searches also is hampered by a dental education model that emphasizes development of procedural or surgical skills, but not one that is particularly evidence-based. Thus, most dentists graduate without skills in evidence-based searching or an attitude that this is the appropriate approach to patient care. Moreover, as a result of the isolated nature of private practice, many dentists continue to lack access to
the important online resources such as full-text journal articles and the Cochrane Library.

Similarly, dentistry’s approach to quality assessment is hampered by structural and cultural issues. Bader\(^7\) described quality assessment in dentistry as being in a “primitive state and the measures used to define such assessments are little changed in the past three decades”. Much of the evaluation of technical quality is aimed at short-term assessments of restorative procedures. The criteria used to assess technical excellence in the short-term, however, are not linked by strong evidence to long-term patient outcomes. This emphasis on short-term “quality” measures has been attributed to the nature of dental school clinical examinations and dental licensing examinations. It is also further supported by the nature of dental insurance reimbursements, which is strongly procedure-focused.

**Improving Population Health:** Glassman\(^8\) describes the issue by saying that dentistry’s concentration on measuring technical proficiency is misdirected and argues that we should strive to prioritize problems and solutions that impact population health. A first step in this refocusing is the need to develop quality measures that have real meaning for population health.

If we are to accomplish the goal of developing measures that have meaning for population health, we will need to address change at multiple levels. Advances in the dental information technology infrastructure will be important. For example, the typical electronic health record (EHR) in dentistry lacks diagnostic coding capabilities, which handicaps our ability to determine the appropriateness of treatment provided. Similarly, improvement in the dental EHRs to permit tracking of compliance with guideline-based recommendations for appropriate care has the potential to substantially alter provider behavior.

**Concluding Remarks:** Changes in the financing for medical care are occurring as payers begin to explore value-based reimbursement, where value is defined as improved patient outcomes. As efforts progress toward establishing population-based indicators of quality in dentistry, there needs to be parallel changes in the financing of dental care, with a move toward value-based reimbursement.

Underlying these shifts will be a need to address the culture of dentistry. As mentioned above, the focus on short-term indicators of technical quality at the exclusion of more long-term, population-health measures continues to undermine efforts to change the dental education and licensing processes. Additionally, dentistry must confront the extant attitude that arbitrary variations in the approach to treatment, unsupported by high quality evidence, are acceptable. This notion has largely been set aside in medicine and is now considered a marker of poor quality and it is time to do the same in dentistry.

Recently, however, factors have begun to appear that will encourage the delivery of dental services more in line with current best evidence. For example, as seen with medicine, there has been a general improvement in online dissemination of high quality evidence in dentistry (e.g., Cochrane Oral Health Unit, ADA Center for Evidence Based Dentistry, PubMed Clinical Queries, and evidence-based journals and texts). Thus providers should have continually increasing access to high quality evidence. Additionally, the Commission on Dental Accreditation (CODA) now mandates that all dental schools must now provide course work and evaluate competency in evidence-based care. Over time, therefore, we will see an increase in the number of dentists who have the skills to engage in evidence-based searches and hopefully the attitude that this is an appropriate approach to care delivery. There are also likely to be changes in the economic forces that help shape dental practice, as insurers move toward value-based reimbursement models and away from procedure driven models.
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Opportunities to Increase Prevention in Dentistry

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When Congress reauthorized the Children’s Health Insurance Program (CHIP) in 2009 it mandated that measurement of quality and quality improvement be performed for children in CHIP and Medicaid programs. Using this mandate as the lever DentaQuest has successfully created a program to increase use of preventive services.

In 2009 DentaQuest developed its first quality measures focused on increasing preventive care for those patients in its commercial network most at risk for dental disease. Based on the American Dental Association’s (ADA) evidence-based recommendations for professionally applied topical fluoride and the American Academy of Periodontology’s position paper on periodontal maintenance DentaQuest developed one measure each for use with pediatric and adult populations. Although they measure processes of care, both these measures are based on evidence for improved outcomes, so they address quality of care. The Agency for Healthcare Research and Quality defines a “process” measure as “a health care-related activity performed for, on behalf of, or by a patient and is supported by evidence that the clinical process led to improved outcomes”.

Prevention Measure for High Caries-Risk Children: The ADA recommendation for professionally applied topical fluoride provided high quality evidence that moderate and high risk children benefited from having topical fluoride at least every six months. DentaQuest chose the following as the appropriate measure:

The percentage of elevated caries-risk children receiving professionally applied topical fluoride applied during a six month period.

In order to identify children at “elevated risk” given the lack of validated risk assessment tools and lack of implementation of diagnostic codes, DentaQuest chose to use past history of restorations as a marker for elevated risk. Recent experience with active disease has been shown to be the strongest predictor for future disease. Further, the ADA’s risk assessment also recommends including any experience with disease during the prior three years as a risk factor. Given the limitations noted above, this methodology would identify a core group of patients at elevated risk whose care could be improved.

Prevention Measure for Adults with Periodontitis: According to the AAP’s position paper (American Academy of Periodontology, 2003) “Many patients presenting with recurrent gingivitis without additional attachment loss after definitive periodontal therapy may be adequately maintained with PM [periodontal maintenance] performed semiannually. For most patients with a history of periodontitis, however, numerous clinical studies suggest that PM should be performed at intervals of less than 6 months. In general, data suggest that most patients with a previous history of periodontitis should obtain PM at least four times per year, since that interval
will result in a decreased likelihood of progressive disease, compared to patients receiving PM on a less frequent basis.” Based on this evidence, DentaQuest chose the following as the periodontal risk measure:

**The percentage of members age 18 and older with a history of treatment for periodontal disease during the prior three years that received a periodontal maintenance procedure (D4910) or an adult prophylaxis (D1110) during a six month period.**

**Pilot Test Program:** DentaQuest then established a pilot study implementing these quality measures. Collaboration between the payer and the provider was successfully established based on the context of shared responsibility to improve quality of care. Having input from the dental community during the conception and implementation of the pilot through the state dental society and representatives from Pediatric Dentistry and Periodontology Associations provided a strong foundation for the project. DentaQuest then worked with its network dentists to implement the pilot program.

**Summer 2010** - conducted focus groups of dentists and office managers on pilot design

**Fall 2010** - communicated with all network dentists and provided patient education materials with the option to opt out

**December 2010** - mailed each office the names of children at elevated risk for caries that had last visited their offices and requested outreach during the coming six month period (same process for adults with a history of periodontal disease)

**August 2011** - measured performance over the period of January to June 2011 for fluoride and periodontal maintenance and provided a report to each office

In March 2011, the US Department of Health and Human Services (HHS) presented its National Strategy for Quality Improvement in Healthcare to Congress. The report noted the following:

- Payment arrangements with the provider should offer incentives that foster better health and promote quality improvement and greater value while creating an environment that fosters innovation.
- Health care systems should be rewarded for working collaboratively to improve efficiency and adopt evidence-based practices across the spectrum of inpatient and outpatient services.
- Medicare, State Medicaid programs, and many private sector health plans and purchasers are moving rapidly to change payment systems to reward coordination and better outcomes.

In addition, HHS also promoted pay-for-performance (P4P) programs. In order to understand the impact of financial incentives on quality improvement in dentistry, DentaQuest added a P4P component to its pilot tests.

The goals for the fluoride and periodontal incentives were established based on the results for the January through June 2011 period when no incentives were offered. Two goals were established for each measure. The first goal was based on the network average score and the second goal was based on the threshold measurement for providers in the top quartile for each measure. Providers who achieved or exceeded the first period network average score during the second period would receive a bonus.Providers who achieved or exceeded the first period top quartile threshold score would receive an additional bonus. The first and second level goals were set at 45% and 65% for fluoride and at 50% and 70% for periodontal maintenance. DentaQuest implemented this phase of the project in the following manner.

**July 2011** - introduced and communicated P4P component that established goals for both fluoride and periodontal maintenance as well as financial incentives for achieving the goals

**February 2012** - measured the period July to December 2011 for impact of financial incentive on performance and repeated the process for another six month period with the same goals and financial incentives

**August 2012** - measured the period of January to June 2012 for both the fluoride and periodontal maintenance programs.
**Pilot Test Program Results:** The results of these three six-month measurement periods are presented in Figure 1. Following introduction of the financial incentives, the percentage of elevated risk children receiving topical fluoride increased from 46.3% to 59.9% and the percentage of periodontal patients receiving maintenance/prophylaxis increased from 49.1% to 61.8%. This represented a 13.6% percentage point increase for fluoride and a 12.7% percentage point increase for periodontal maintenance/prophylaxis in just six months. Similar results were confirmed when the program was repeated for a second six-month period.

DentaQuest also compared the network profiles for each of the measurement periods (Figures 2 and 3). The blue lines in each graph represent the network performance profile for the January to June 2011 period before incentives were instituted. The brown lines represent the network performance profile for the July to December 2011 period after the introduction of incentives. The financial incentives appear to have “lifted the curve” for the entire network for both the fluoride and periodontal maintenance/prophylaxis pilots. Repeating the pilots for the January to June 2012 period with the same goals and incentives achieved similar results for the fluoride pilots and slightly better results for the periodontal pilots. Significant variability in treatment within the network was also noted with some providers (left side of each graph) providing preventive care to a significantly lower percentage of their elevated risk patients than other providers (right sides of the graphs).
From this pilot program DentaQuest found that:

- Approximately 60% of the dentists achieved the fluoride goal
- Approximately 75% of the dentists achieved the periodontal goal
- Between the fluoride and periodontal goals 85% of the dentists received a financial bonus
- The largest bonuses were in the $7,000 to $8,000 range for the six month periods
- The average bonuses were in the $500 to $700 range for the six month periods
- The dentists were paid on a fee-for-service basis for all fluoride, periodontal maintenance and adult prophylaxis procedures they provided at the time of billing

**Sealant Measure Pilot Testing:** For its Medicaid/CHIP networks DentaQuest piloted a quality improvement program focused on sealants. The ADA recommendation for sealants presents high quality evidence for the effectiveness of sealants at reducing pit and fissure caries on permanent teeth of children and adolescents. While the program in concept was similar to the fluoride program discussed above, the classification of “elevated risk” was broadened to include all children enrolled in Medicaid/CHIP as being at elevated risk based on socio-economic factors.

Analysis of claims data revealed that the most benefit could be gained if sealants were placed soon after tooth eruption. The measures that DentaQuest implemented included:

- **The percentage of elevated caries-risk children turning 6 - 7 years receiving sealants on the permanent first molar during the reporting period.**
- **The percentage of elevated caries-risk children turning 12 - 13 years receiving sealants on the permanent second molar during the reporting period.**

The results are presented in Figure 4. The children were grouped by age (horizontal-axis). The red bars represent the number of sealants per 100 children for each age group during the six months prior to the start of the pilot. The green bars represent the number of sealants per 100 children during the six months after the initiation of the pilot. The targeted ages of 6 and 7 experienced an increase in sealant utilization of 20.6% and 18.4% respectively. The targeted ages 12 and 13 saw an increase of 20.6% and 24.5% respectively. There also appeared to be a halo effect for the other age groups so that overall there was a 17.7% increase in sealant utilization for all children between 5 and 17 years of age.
**Concluding Remarks:** These pilots allowed DentaQuest to gain experience and insight into the development of performance measures based on evidence of effectiveness and to share that experience. They demonstrated that if framed correctly as an opportunity for both the dental profession and payers to achieve common goals for improved quality care, that measureable improvement is possible in a relatively short time period. They also demonstrated that “carrots” such as pay-for-performance programs can be presented and implemented in a non-threatening and non-punitive manner such that it’s a win-win-win-win for all. The elevated-risk patients win because evidence demonstrates that they benefit from the preventive care. The dentists win because they are able to provide higher quality care and improve their performance on these measures. The plan administrators win because they can demonstrate that they can both measure and improve the quality of care for their members and improve their performance scores if they become reported on public report cards. And payers win because elevated-risk members who consume a disproportionate amount of benefit dollars are receiving preventive care that the evidence indicates will reduce the amount of disease they experience.

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Importance of Patient-Centered Care

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Patient-centered care (PCC) is defined by the Institute of Medicine as care delivery that “is respectful of and responsive to individual patient preferences, needs, and values and that respects the role of family and friends and ensures that patient values guide all clinical decisions”. Patient and family engagement in care also is one of the six goals within the National Quality Strategy. PCC integrates the values, perspectives, understanding, and preferences of patients into the delivery of health care thus paralleling the concept of including patient preference in evidence-based dentistry to ensure effective care.

Patient Centered Medical Homes: PCC is the core care delivery strategy found in the Patient-Centered Medical Home (PCMH), an evolving model of care designed to address disease prevention and chronic disease management. Studies have shown positive effects of the PCMH concept on patient and staff experiences and processes of care, although effects on clinical or most economic outcomes could not be assessed. National credentialing entities, such as the National Committee for Quality Assurance, The Joint Commission, Accreditation Association for Ambulatory Health Care (AAAHC), and URAC, have developed operational standards towards recognition of PCMH and offer accreditation for practices achieving specified levels of performance in patient-centered care.

While the PCMH models have evolved, most of these models or the standards used to accredit these practices do not include oral health. However, while NNOHA supports the concept, this term’s focus on medical care is exclusive of other health care disciplines, such as oral health and behavioral health. As a result, NNOHA has chosen to advocate the more inclusive term “patient-centered health home”. A 2012 report explored the integration of oral health within the PCMH model and identified several case studies from Community Health Centers that have incorporated oral health into the PCMH. Through integration and co-location, these centers offer improved access to all services, including oral health, and ensure continuity of care. This has the potential of achieving the goal of containing health care costs, and as Taylor et al. have shown, accessing dental benefits may lower medical costs.

Providing Patient Centered Care: The provision of PCC requires targeting some key objectives including:

- Access
- Continuity of Care
- Provider communication
- Shared decision-making
- Care Experience
- Cultural Competence
- Health Literacy
- Health IT

Implementation of PCC in medicine begins with the patient/caregivers and providers agreeing on the central problem. Once the core issue is identified, reasonable goals are negotiated and care options are generated. The advantages and compromises of each option are then reviewed with all parties who decide on a mutually
agreeable and feasible plan for health management. The practitioner must obtain an understanding of the individual patient’s needs. PCC also requires patients to achieve a level of health literacy to enable care choices to be reached. Patient knowledge must be tested and then the patient should be screened for readiness prior to delivery of care.

Dentistry traditionally does well in many phases of PCC, where a typical patient encounter includes a review of the patient’s health history and investigation of the chief complaint. Diagnostic services are then provided and the practitioner determines treatment options that are reviewed with the patient. Once the patient is informed of the benefits and risks for each option, a treatment plan is chosen. The involvement of the patient in determining care choices is reinforced by those who practice an “evidence based dentistry” approach, which includes development of the treatment plan using the patient and clinician’s preferences melded with the existing evidence.

As with medicine, the greatest potential effect for PCC in oral health care is to reverse risk factors and improve compliance. This effect requires a structured effort to improve communication and overall health literacy and follow-up to address compliance. PCC strategies that identify and work to reverse patient disease risk factors have shown to be successful in improving outcomes in oral health care. A study by Ng et al. showed a 62 percent lower risk of new cavitation of tooth enamel compared to a control group with early-childhood caries.

The ability to deliver PCC depends upon an effective clinician-patient partnership in which the clinician’s recommendations are informed by an understanding of the individual patient’s needs and life context, such as home life, job, and family relationships AND the patient’s understand the health instructions and are motivated to value their oral health. Low health literacy has been associated with adverse health outcomes. Patients with low health literacy may not understand or appreciate symptoms of early disease or complications of treatment, and may not seek timely treatment. Nearly nine out of ten U.S. adults find it hard to use the health information they get from their dentist’s or doctor’s office, in the media, and even in their communities. This gap in health literacy can greatly impact care outcomes and patient safety. Miller et al. have demonstrated low health literacy to be associated with poorer child oral health status. Communication between the provider and the patient must be accomplished in a culturally competent and linguistically appropriate manner.

**Health System’s Role in PCC:** A PCC goal is the transformation of health care system to better meet patient needs and be more available, more responsive, reliable, integrated, and safe. Advocates for oral health improvement in underserved populations see opportunities in which PCC can increase access to oral health services in community sites where and when these populations are able access them. This care model reflects the concept of taking care to the patient in need. Use of care coordinators trained in patient navigation and case management, who can engage patients in a culturally competent manner, and use of technology to promote “telehealth” are approaches targeted towards improving PCC.

**Measuring Patient Centered Care:** Various methodological approaches have been taken in designing instruments to measure patient-centered care. Many studies have shown that measures of the patients’ perceptions are successful at predicting outcomes. Experts also claim that patient-administered questionnaires are the best way to measure patient-centered care attributes of primary health care. The most widely used instruments today to assess patient-centeredness are the Consumer Assessment of Healthcare Providers and Systems (CAHPS) surveys. These surveys are maintained by the Agency for Healthcare Research and Quality (AHRQ) can be accessed at [http://cahps.ahrq.gov/](http://cahps.ahrq.gov/). The CAHPS Health Plan Survey is a tool for collecting standardized information on enrollees’ experiences with health plans and their services. Since its launch in 1997, this survey has become the national standard for measuring and reporting on the experiences of consumers with their health plans.
version of this survey is conducted in almost every state in the United States. Commercial plans use the survey to gain accreditation by the National Committee for Quality Assurance. The Centers for Medicare & Medicaid Services also administers a version of the CAHPS Health Plan Survey designed for Medicare beneficiaries. The Affordable Care Act mandates that results of the Health Plan CAHPS survey be reported through the Marketplaces. The health plan level surveys address both consumer satisfaction of the plan as well as satisfaction/care experience with the network providers.

The CAHPS system also has surveys for clinician and group level assessment and many supplemental items addressing cultural competency, health literacy, Health IT, and PCMH standards. While many of these surveys can be adapted to dental setting, unique dental plan surveys are available for the adult population. Efforts are underway to address specific dental plan surveys for the child population. In addition, at least one validated instrument to assess oral health literacy of the patient has also been developed by dental researchers18.

Concluding Remarks: The relationship between a patient and the care provider greatly determines both treatment outcomes and a patient’s satisfaction with the care. Studies show that PCC results in increased patient satisfaction and improved patient adherence with recommended care, each of which can improve care outcomes19.

Studies, however, question the impact of PCC in reducing the per capita costs of health care. In the context of the Triple Aim, implementation of PCC strategies within public health delivery models may stretch already limited resources without achieving anticipated reduction in per capita costs. Implementation of PCC for the public pay system must come with appropriate funding and success must be measured through its impact on improving the patient care experience and improving the health of populations. The systemic link between oral health and its impact on chronic medical disease may result in cost savings to the system. Provision of patient centered care is a promising strategy to reach the goals of improving health outcomes. There is a growing need to measure and quantify provision of PCC to build evidence for evolving plan design.

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Equitable and Effective Care

The Institute of Medicine defines “Equitable Care” as “providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.”

The Institute of Medicine defines “Efficient Care” as “avoiding waste, including waste of equipment, supplies, ideas, and energy.”
Oral Health Disparities and Performance Measurement

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Broadly, the term “health disparities” is used to represent a range of different types of inequalities in health status, health care, and health outcomes. Under U.S. Public Law 106-525: “A population is a health disparity population if there is a significant disparity in the overall rate of disease incidence, prevalence, morbidity, mortality or survival rates in the population as compared to the health status of the general population”1. Healthy People 2020 recognizes a wide range of populations who may be affected by health disparities. Healthy People 2020 defines a health disparity as “a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion”2. As these two definitions illustrate, the use of the term “health disparity” varying represents the concepts of inequality and inequity between groups of patients3.

Distinctions are also made between health disparities and health care disparities. For example, the Institute of Medicine (IOM) report Unequal Treatment defines health care disparities as “racial or ethnic differences in the quality of care that are not due to access-related factors or clinical needs, preferences, and appropriateness of intervention”4. Thus, there is a wide range of different conceptualizations of disparities with different implications for performance improvement.

Inequalities in oral health status and the use of oral health care services are well documented and were illuminated in the Surgeon General’s report on Oral Health in America in 20005. More than a decade later, the IOM published two reports focused on oral health, Advancing Oral Health in America and Improving Access to Oral Health Care for Vulnerable and Underserved Populations6,7. Both reports found that many oral health disparities persist with one noting that “little has changed in the intervening years”8. For example, impoverished populations experience higher prevalence of untreated childhood dental caries, lower utilization of dental services, and higher rates of adult edentulism9,10. Poorer oral health and worse access to oral health care among racial and ethnic minorities also persist10,11. Further, there are documented disparities by geographic area, sex, special needs status, and age14.

Progress in reducing disparities has been hampered by a lack of reliable data and measures to evaluate access, assess quality of care, identify disparities, and monitor disparities over time.
Performance Measurement and Disparities: The factors that contribute to oral health disparities are multi-faceted and complex. A broad range of individual, social, economic, cultural, and environmental factors, in combination with care delivery system factors, simultaneously contribute risk and protective factors that underlie oral health inequalities. As a result, the strategies to reduce disparities must be multi-faceted and require interventions at the patient, community, provider, plan, program, and policy levels. Critically important to reducing disparities is the ability to measure and monitor improvement over time, which requires measureable indicators of progress and reliable data for measurement of those indicators.

The lack of oral health quality measures was identified in the two IOM reports on oral health as a barrier to quality improvement. Both reports also noted the establishment of the Dental Quality Alliance (DQA) in 2010 to lead the development of evidence-based oral health care performance measures. The DQA’s initial measure development efforts focused on pediatric oral health performance measures. An environmental scan of existing measures conducted by the DQA revealed not the absence of performance measures, but a lack of standardized, widely adopted, clearly defined, evidence-based measures that allow for assessing and improving performance and quality at multiple levels (e.g., provider, practice, plan, and program).

Challenges in Measuring Oral Health Care Disparities and Performance: At the most basic level, consistent, standardized, and reliable data collection is essential. The IOM report Unequal Treatment identified standardized data collection as “critically important in the effort to understand and eliminate racial and ethnic disparities in health care.” The Surgeon General’s report on oral health similarly underscored the importance of improving data collection efforts in order to better detect, monitor, and reduce oral health disparities.

Lack of Socio-Demographic Data: Although collection of race, ethnicity, and language data has increased in recent years, significant gaps in data collection remain.

The reasons include lack of reliable methods for data collection, costs of data collection, requirements to modify information systems to capture and integrate these data, and misunderstanding of federal law regarding the permissibility of data collection.

Lack of Data Consistency and Standardization: Data collection alone is not sufficient; rather, the data collected should be complete, reliable, and standardized. Lack of standardization makes it difficult to make comparisons across reporting entities (e.g., providers, plans, or programs) and, therefore, across the populations they represent, thereby impeding performance improvement. Federal efforts are underway to promote more complete and consistent demographic data collection.

Limited Adoption of Dental Diagnostic Codes: Lack of widespread adoption of standardized diagnosis codes has been identified as a key limitation in oral health performance measurement to date. This information is critical for assessing disease burden, a patient’s current disease status, and the appropriateness of treatment and; ultimately, for, evaluating oral health outcomes.

Variations in Measuring Disparities: Different definitions of “disparities” have different implications for the measurement approaches used to identify disparities. For example, different definitions have different implications for the reference group (e.g. the historically advantaged group or the best performing group). There also are variations in what quantitatively constitutes a sufficient difference between two groups to be classified as a disparity, such as statistically significant differences or a certain percentage point difference.

DQA Measures to Identify and Monitor Disparities: The first measure set developed by the DQA focused on pediatric oral health care performance measures that can be calculated using administrative enrollment and claims data. The IOM and National Quality Forum (NQF), among others, recommend stratifying performance measures by socio-demographic characteristics that allow for identification and monitoring of disparities where the
appropriate data are available. Once the data are collected and integrated into an organization’s data systems, stratification of measure results is a relatively straightforward process that adds little to measurement complexity. To stratify measure results, the denominator population is divided into various subsets within each stratification category (e.g., age, race and ethnicity, or geographic location), and the measure results (e.g., rates) are reported for each sub-population within that category.

The DQA measure testing explored variation in the measure scores by: age, race and ethnicity, and geographic location. Figures 1-5 illustrate the three stratifications for two measures: Oral Evaluation and Sealants for 6–9-Year-Old Children. Oral Evaluation reports the percentage of children enrolled for at least six months during the reporting year who had a periodic or comprehensive oral evaluation (CDT codes 0120, 0145, or 0150). Sealants for 6–9-Year-Old Children reports the percentage of children enrolled for at least six months, identified as being at elevated risk for caries, who received a sealant on a permanent first molar. Chi-squared tests detected statistically significant differences (p<0.05) for each of the three stratification variables for both measures.

In addition to the observed differences in the measure rates for sub-populations within a program, these stratifications also illustrate that the patterns in disparities may vary for (1) the same performance measure across programs and (2) different performance measures within the same program. Thus, stratification at the performance measure level and at different care delivery system levels (e.g., provider, plan, and program) allows for more effective targeting of quality improvement initiatives.
Interpreting and using data: Stratifying performance measures is a starting point for identifying and addressing disparities. Examining each stratification variable in isolation, however, may be insufficient for understanding the sources of disparities and where to target performance improvement initiatives. For example, at a population level, a substantial portion of observed variation by race and ethnicity may reflect variations in socioeconomic status (SES). Thus, organizations may find it useful to further examine variations in use patterns and quality of care by race and ethnicity within sub-strata of SES.

Performance measurement, particularly for resource use and outcomes measures, frequently provides for risk adjustment of the results to account for variations in patient case mix. Case mix refers to the distribution of various patient types within a particular health care setting (e.g., provider, facility, plan, or program) based on characteristics associated with health status and health care resource requirements. The intention of risk adjustment is to allow for “fairer” comparisons and to avoid favorable selection (i.e., seeking to attract patients or members with better health status and lower expected costs of care).

Rewarding performance that does not take into account variations in the populations served may penalize providers serving more vulnerable populations and widen resource gaps. Conversely, risk adjustment may obscure important variations in access and outcomes and decrease incentives to reduce disparities. Moreover, from a perspective of promoting health equity, the same quality goal should apply to all patient populations. To balance the potentially conflicting goals of controlling for differences in the patient populations that providers serve and promoting higher quality and more equitable care for all patients, stratifying performance results by patient characteristics and evaluating performance within the defined strata has been recommended as an alternative to risk adjustment.

Performance improvement and incentive programs can explicitly incorporate disparities reduction as a quality...
improvement objective. Strategies that promote more equitable care while avoiding unfairly penalizing providers include: (1) establishing baseline rates and then rewarding improvement relative to the baseline rather than basing all performance metrics on an absolute benchmark or comparison; (2) rewarding performance based on reducing disparities; and (3) stratifying performance results to identify sub-populations for whom performance is the poorest to target interventions. Once a performance measurement program is put into place, it should be monitored closely to ensure the objectives of the program are being met and prevent adverse unintended consequences.

Concluding Remarks: Numerous national initiatives focused on more effective data collection and measurement approaches to detect, monitor, and reduce disparities are encouraging. With respect to oral health disparities particularly, there are national efforts to address what have been some of the major persistent barriers, including the development of standardized performance measures and implementation of standardized diagnostic dental codes. Paving the way for effective performance measurement is critical for improving quality of care and reducing disparities.

To effectively address disparities in the context of systems of care, it is important to distinguish what underlying factors (e.g., barriers to accessing care or health behaviors) can be influenced by the health care system. The environments in which disparities exist are varied as are the reasons for identifying disparities; therefore, different definitions and, consequently, approaches for measuring and addressing disparities are warranted. However, the approaches should not be adopted on an ad-hoc basis; rather they should reflect a prospective, thoughtful identification of the organization’s disparities-related objectives, and its operational definition of disparities. The subsequent adoption of measurement methodologies should be consistent with the identified objectives and operational definition.

Acknowledgments: The authors would like to recognize the Florida Agency for Health Care Administration, the Florida Healthy Kids Corporation, the Texas Health and Human Services Commission, and DentaQuest for providing data to conduct DQA measure testing. The authors would also like to recognize the outstanding programming and research assistance provided by Yijun Sun, Howard Xu, Sunil Chilruvi, Deepa Ranka, Alex Craen, Kaitlin Sovich, and Tyler Wildes.

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Better Care at Lower Cost: The Quest for Value

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A growing quest for value has become a dominant focus in efforts to transform and improve healthcare in the U.S.\textsuperscript{1-4} Value in healthcare has been defined using a variety of parameters - e.g., the level of benefits, quality, performance or health outcomes achieved for a given level of cost.\textsuperscript{2,5} Perceptions of value also vary depending upon the perspectives of different stakeholders.\textsuperscript{2,3} In light of these variations and the renewed quest for value in healthcare, the purpose of this paper is to: (i) provide an overview of how value has been conceptualized and assessed within the context of healthcare delivery and policy considerations, (ii) examine challenges to improving value in pediatric oral health care and potential strategies for achieving improvements and (iii) highlight the importance of measurement and recent efforts by the Dental Quality Alliance to develop measures that may contribute to performance assessment and increasing value in the area of pediatric oral healthcare.

The Importance of Value in Healthcare Delivery and Policy Considerations: Value has been viewed as a prominent feature in two commonly cited frameworks that have been used to depict fundamental considerations in healthcare delivery and policy reform efforts. The Iron Triangle of Health Policy identifies access, quality and costs as three core attributes or dimensions of healthcare that generally exist in equilibrium within healthcare systems. As initially conceived, the “iron triangle” means that, in equilibrium, increasing the performance of the health care system along any one of these dimensions can compromise one or both of the other dimensions, regardless of the amount that is spent on health care.\textsuperscript{6} According to this concept, value represents a tension or potential trade-off between cost and quality - i.e., lowering expenditures for care or increasing access to care without increasing the level of program resources may have a negative impact on quality of care. Others have pointed out that such tradeoffs are not always required, noting that tying payments to health care providers to the quality of services provided could improve providers' incentives to contain costs and improve quality.\textsuperscript{7} Better quality also could be achieved at less cost by reducing unnecessary services and managing individuals with chronic conditions more cost-effectively.

Recently, a second framework – The Triple Aim – has received considerable attention as a possible means of improving value in the field of healthcare. As described by Berwick et al.,\textsuperscript{1} the Triple Aim requires simultaneous pursuit of three aims: improving the experience of care, improving the health of populations, and reducing per capita costs of health care.
mandated establishing a National Quality Strategy based on the tenets of the Triple Aim: achieving improvements in population health, providing better care and lowering per capita costs. Proponents of the Triple Aim see it as one of the leading forces in the U.S. to motivate healthcare systems to stretch beyond traditional clinical roles and work towards broad population health improvement.8

Despite the enthusiasm surrounding the Triple Aim, questions and concerns about its application in healthcare also have been voiced.8 Prominent among these are criticisms and concerns that population health outcomes (among populations or individuals) are influenced by multiple determinants including social, economic, genetic and behavioral factors, most of which are beyond the influence of healthcare providers (at least as healthcare is presently organized and practiced) (Figure 1).

Evidence that support these concerns can be found in studies such as that conducted by Larson et al.,9 who analyzed data from the National Survey of Children’s Health and documented cumulative negative influences of multiple social risk factors on various parent-reported aspects of children’s health, including their oral health. Social risk factors examined in the analyses included: having no one in the household with more than a high school education; having a family income less than 200% of the Federal Poverty Level; living in a household without two parents; being Black or Hispanic; being uninsured; living in a household with family conflict; low maternal mental health; and living in an unsafe neighborhood.

At a practical level, the traditional emphasis on achieving value in healthcare has largely been focused on reducing overuse of unnecessary or questionable services, errors, delays in treatment, or inefficient care such as use of emergency room for preventable infections.10 For example, in the field of dental care, several studies have reported on the significant costs incurred in providing advanced treatment for caries-related problems in ambulatory surgical facilities that could be avoided or reduced substantially by the use of lower cost preventive services.11-13 At the same time, issues related to underuse of services by individuals or groups within the population and disparities often receive little attention in discourse about improving value in healthcare.

Adapted from David A. Kindig, MD, PhD, Emeritus Professor of Population Health Sciences & Emeritus Vice-Chancellor for Health Sciences at the University of Wisconsin School of Medicine & Public Health.
Challenges to Improving Value in Pediatric Oral Healthcare and Potential Strategies for Achieving Improvements: Federal and state policy development and implementation regarding dental care provide interesting, but somewhat disappointing insights into the interplay of major contextual influences. At the federal level, efforts to balance accessibility, quality and cost in public programs have been sporadic, modest and uneven in terms of impact. The primary focus has been on providing coverage for children's dental services through Medicaid and CHIP. Medicaid programs, which are highly influenced by program design and administration decisions made by State policy makers, generally provided poor access to dental services for children enrolled in Medicaid prior to the beginning of the 21st century. Since that time, many States have undertaken significant program reforms to expand access which also have resulted in increases in overall program costs, consistent with expectations outlined in the Iron Triangle model. Quality assessment and improvement have only recently begun to receive attention in these programs.

The current situation in California highlights the tensions and potential tradeoffs between access, cost and quality inherent in the Iron Triangle model. Utilization of dental services by children enrolled in the State's Medicaid dental program (DentiCal) has been relatively flat over the past decade and among the 10 lowest utilization rates reported by the Centers for Medicare and Medicaid Services (CMS). Despite the relatively low utilization and reimbursement rates equivalent to approximately 30% of average fees charged by dentists, California State policy makers requested and CMS approved a 10% cut in reimbursement rates to dentists in 2012. At the same time, California's CHIP program which had higher levels of utilization and was viewed more positively by dentists - is being discontinued, resulting in approximately 850,000 additional children being transitioned into the DentiCal program. Furthermore, an estimated 700,000 children are projected to be enrolled in the DentiCal program as a result of expanded eligibility resulting from passage of the Affordable Care Act. While the reduction in reimbursement will undoubtedly reduce costs to the State and federal government - through direct reductions in payments for each covered procedure; however the Iron Triangle suggests that this change may well have a negative impact on access and/or quality of care.

In contrast to the example above, evidence compiled and reported by the Pew Foundation has documented substantial improvements in access/use of dental services by children enrolled in Medicaid in a majority of U.S. states during the decade from 2000-2009. Findings reported by Pew for 2009 indicate that 11 States had dental service utilization rates of 50% or more for Medicaid children ages 1-18 years (compared to a national average of 58% for privately insured children). An additional 30 States had utilization rates between 40%-49% for 1-18 year olds enrolled in Medicaid, a major improvement over the national average of 18% for children enrolled in Medicaid in the early 1990s. Substantive improvements in program performance generally reflect broad-based strategic efforts on the part of States and interested stakeholders to address common administrative, financial and implementation issues that have been identified as barriers to high-level performance and impediments to achieving value for public expenditures.

Several recent studies underscore the importance of preventive dental visits in improving value for healthcare expenditures in children at elevated risk for dental disease. For example, Sen at al. found that children enrolled in Alabama's CHIP program who had more preventive services required fewer subsequent non-preventive dental services. Although per capita cost reductions were not found in this study, the authors pointed to improvements in children's oral health status as an indicator of value from the increased use of preventive services. Another study by Savage et al. highlighted the value of early establishment of a dental home and preventive visits for preschool-age children enrolled in
North Carolina’s Medicaid program. These researchers looked at the cost of dentally related medical and dental care for children enrolled in Medicaid during their entire preschool years, including emergency and hospital-related costs. Their results showed that for those children who received a dental visit by age 1, total costs over their preschool years averaged $262 based on reimbursement rates for North Carolina Medicaid during the period of the study. For children whose first dental visit occurred between 1-2 years of age, the average total cost was $339; for those whose first visit was between 2-3 years of age, the total cost was $449; and respective costs for those with first dental visits at 3-4 and 4-5 years of age were $492 and $546. In addition, children who received care early generally required only evaluation and preventive services as opposed to more advanced restorative care, an indication of better oral health status at lower per-capita cost.

Few studies have documented the long-term health benefits and cost implications of early prevention. However, ongoing studies in New Zealand supported by the National Institutes of Health have analyzed a population cohort for over three decades and tracked trajectories of dental caries (Decayed, Missing, Filled Surfaces index) in these individuals over time. Results suggest that individuals who start on a low trajectory of disease tended to remain on a low trajectory (Figure 1). Similarly individuals who started on a medium or high trajectory remained on these trajectories respectively. Other analyses of the Dunedin data documented the impact of changes in socioeconomic status had an impact on oral health outcomes, noting that changes in socioeconomic advantage or disadvantage between ages 5 and 26 were associated with differing levels of oral health in adulthood. Collectively, these studies suggest that early efforts to prevent or minimize dental disease at an early age may well result in better health over the life course, thereby contributing to value.

A recent initiative in Los Angeles, being carried out by a team at UCLA and several strategic organizational partners and funded by First Five LA, seeks to create a model community-based system of care based on these findings. These projects are focused on increasing the capacity of community-based clinics to serve as high-quality dental homes for children ages 0-5 and pregnant women and increasing parents’ and caretakers’ awareness of the importance of oral health in young children, with a goal of achieving the tenets of the Triple Aim.

The Importance of Measurement and DQA Efforts to Develop Measures to Assess Performance and Value in Pediatric Oral Healthcare: Measures used to assess the performance of Medicaid dental programs have varied over time, but generally have relied on use of service measures (e.g., use of any dental services, use of preventive dental services, and use of treatment services). While limited in nature, measures such as these have proven useful for highlighting differences among State Medicaid programs, as noted above, and for identifying variation in performance within State programs (e.g., among plans when States contract out administration of Medicaid dental benefits to managed care organizations). For example, analyses of data on utilization of dental services by children enrolled in Connecticut’s Medicaid program when benefits were administered by multiple managed care plans demonstrated substantial variation by plan and variations by geographic regions. Forty-eight percent of the children enrolled in one of the contracted plans received dental services in the reporting year, while utilization by children enrolled in four other plans ranged from 1%-14%.

For managed care plans paid on a per-member/enrollee-per-month basis, this variation represents considerable differences in value for public expenditures. The State subsequently moved to contracting with a single vendor to administer Medicaid dental benefits for children and reduced the scope of responsibilities for which the vendor was responsible.

The Dental Quality Alliance has been focused on developing and testing new performance measures and refining existing measures related to pediatric dental care during the past three years. Following testing conducted by researchers at the University of Florida, the DQA has approved an initial ‘starter set’ of measures that include 4
use of service measures (any services, oral evaluations, preventive services and treatment services) plus additional measures that serve as indicators of having a usual source of care and continuity of care along with evidence-based measures of quality.29 Future work in the area of pediatric measures will focus on developing measures that assess patients' experience with care, measures focused on services and costs associated with care delivered in emergency departments or in hospitals for caries-related conditions, and financial resource measures that will contribute to assessments of value (e.g., level of performance for a given level of expenditure). Future efforts also will include development of e-measures that can be generated from electronic health records.

**Concluding Remarks:** The growing quest for value in healthcare, including oral health care, is being driven by a number of forces: unsustainable growth in health expenditures; persistent disparities in access, quality, costs and outcomes within the population at large; and increasing demands for accountability on the part of major stakeholders. Increasing value can be accomplished in a number of ways—enhancing performance/quality/outcomes without increasing expenditures (getting more for the same level of expenditure), achieving a given level of performance/quality/outcomes at lower per capita costs or, ideally, getting improved performance/quality/outcomes at a lower per capita cost (a goal embodied in the Triple Aim).

As Rosenbaum3 recently noted in a commentary on overcoming the blind spots of health care reform, “If we want to simultaneously improve quality and cut costs, we must first stop creating incentives that effectively split patients and physicians onto different teams. We must acknowledge that shared decision making is just that: shared. We must admit that turning health care into a customer-service industry may to some extent undermine the delivery of evidence-based care. And we must admit how little we actually know about patients’ values and about how they should or might influence our decision making, the delivery of evidence-based care, rising costs, and patient outcomes. The coming years will see the implementation of approaches such as patient-centered medical homes, value-based purchasing, pay for performance, accountable care organizations, and the research efforts of the Patient-Centered Outcomes Research Institute. Such reforms emphasize changing physicians’ behavior to eliminate unnecessary care while highlighting patients’ role in determining what care is best for them. Given the expectations for better care at lower cost motivating such changes, the lack of a shared definition of value is potentially destructive. If we can simultaneously improve quality and cut costs, it will first require a look at the whole picture — and then a willingness to believe what we see.”

While the goal of achieving improved performance at lower costs is laudable, care must be taken to ensure that efforts to lower costs do not create untoward consequences that jeopardize access or quality of care. In some instances, the drive to increase value may require additional resources in order to achieve improvements in access to care while maintaining or elevating quality of care beyond current levels. Key to all these efforts is the development and appropriate use of measures, such as those being developed and tested by the DQA, that form the basis of more robust, reliable and objective assessments of important aspects of care delivery and program efficiency.

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17. Data obtained from Dental Dental of California [personal communication]
Safe and Timely Care

The Institute of Medicine defines “Safe Care” as “avoiding injuries to patients from the care that is intended to help them”.

The Institute of Medicine defines “Timely Care” as “reducing waits and sometimes harmful delays for both those who receive and those who give care”.
Transitions in Care: Bringing Patients Back Into the Office

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As we look at the oral healthcare system today, we see evidence that emergency department visits for dental conditions are increasing, driven primarily by a larger share of dental visits taking place in emergency rooms rather than dental offices. This issue lies in the center of achieving higher quality care at lower per capita cost as noted in the Triple Aim of Quality Improvement. Social and financial stressors are by far the most predominant drivers that promote use of emergency rooms for preventable conditions. Helping patients overcome these barriers and empowering them to seek more comprehensive care in a dental office setting was the basis for our quality improvement initiative.

The Problem: In 2005, Battle Creek, Michigan, a small community of 55,000 residents, found that there were roughly 111 visits per month for dental pain in its emergency rooms. This translated to more than 1,300 visits to a sophisticated medical setting, where patients receive relief from dental pain and infection but do not receive any comprehensive treatment for the underlying disease. These visits were costing the hospital system roughly $2 million per year in uncompensated care. Our desire to address this significant issue within the community, led us to seek out data to help understand the extent of the problem and find solutions.

A group of community leaders began meeting in early 2007 to discuss the need for increased access to dental care for those with acute or urgent oral conditions. The group estimated at that time that there were approximately 4,700 individuals in Calhoun County who were living at or below poverty and likely to need urgent dental services in any given year. The patients seeking care were the uninsured. For them, lack of funds meant lack of access.

The Plan: As with any quality improvement plan, we began by learning about the needs of our community and resources that were currently available. In the context of measurement, the population we were focused on posed the most significant challenge, since data neither enters the claims systems nor is recorded in a dental office. The only data available for these individuals is from the hospital records. Thus we began with the evaluation of data from the local emergency departments. The primary metrics that we tracked to monitor progress, and later demonstrate improvement, included:

1. The number of patients seeking care in emergency rooms for dental related reasons
2. The number of patients who were repeat users of the emergency rooms

Through a business associates agreement and a quality improvement plan, hospitals agreed to share this data. In addition to these indicators, we also gathered data from provider and patient interviews. We found the biggest barrier to provision of care to these individuals was too little motivation to seek out care and “show up” at the dental office.
All this information allowed us to establish our goals, baseline, and strategy.

The Process: The program began through a strong partnership with a multitude of stakeholders within Calhoun County. Community dentists, funders, hospitals, local free clinics, Calhoun Health Plan, KCC Dental Hygiene School, and the Federally Qualified Health Centers (FQHCs) committed to forming a truly comprehensive dental safety net. Called the “Dentists’ Partnership”, this program launched in June 2007.

In this era of accountability, wherein programs, payers, and providers are looking at each of their contributions towards a high quality health system, we believed in ensuring that the patients themselves were also part of the accountability paradigm. By requiring community volunteer service at local nonprofit organizations based on the “pay-it-forward” principle, patients played their part in qualifying for better access and quality of care. Patient responsibilities include receiving oral health education, volunteer service in the community, and compliance with dentists’ orders; so patients are heavily engaged in the health care they are receiving.

Apart from treatment services, the Dentist Partnership program allows patients to maintain regular dental care and also offers oral health education and hygiene instruction. A brief description of the program administration process appears below.

1. Patient referred to coordinating agency (Community HealthCare Connections) for help.
2. Patient’s needs discussed and eligibility confirmed.
3. Patient completes enrollment paperwork and has “Enrollment & Counseling Appointment”.
4. Patient attends oral health education class and is given necessary oral health tools (toothbrush, toothpaste, floss).
5. Patient completes four hours of volunteer community service.
6. Patient has appointment with a dental hygienist, where the patient receives one-on-one oral health education, radiographs, and an initial cleaning and screening.
7. Patient receives appointment with an examining dentist, who provides exam and treatment plan.
8. Patient completes additional volunteer service, depending upon the level of dental treatment needed (4 hours for every $100 in treatment needed).
10. Patient matched with appropriate treating dentist to complete treatment plan.
11. Patient connected with any needed post-treatment medications.
12. Patient has access to continuing dental hygiene cleanings for ongoing care.

Results: Between 2006 and 2011 we noted a 72% decrease in use of the emergency room for dental pain (Figure 1). Those numbers remained the same over 2012 and 2013. The average is 31.6 visits per month for dental pain. Not only have the number of people who use the emergency department for dental pain decreased, but the rate of repeat visits is almost zero. The no-show for this program, with a six year average of 2.9%, is significantly lower than commercial insured dental patients.

Aside from health and healthcare metrics, we also looked at community impact. We have approximately 60% (43 dentists) of the private practice dentists in our community who participate including: general dentists, oral surgeons, endodontists, and periodontists. Over 6 years, those 43 dentists have provided 7,163 services that were valued at almost a million dollars. Over 4,000 patients have been helped by those 43 dentists and those 4,000 patients have performed over 58,000 hours of volunteer service, at 72 non-profit organizations in our community.
Concluding remarks: Following launch of this program in a single Michigan county in 2007, the program was reproduced by 2009 in Muskegon, Traverse City, Ann Arbor, Coldwater, Hastings, Jackson, and Lansing. South Bend, Indiana also launched a program. Ideas are now expanding to Missouri and Connecticut. The idea of the Dentist Partnership is not earth-shattering; it’s the reality that remarkable. It’s thousands of people working over a period of six years through change and challenges and struggles to change the way the uninsured access dental care in our community. It changed the outcomes in oral health in our community, for those who otherwise are not touched in the traditional dental care system.

The Community Dental Access Initiative is a dental advisory committee for the community that developed and monitored this initiative. They identify gaps in dental care and oral health, and community resources, for improvement of maternal and infant oral health, urgent dental care services, and services.

References:
Patient Safety in Medicine and Dentistry

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The revolution or evolution in how patient safety is viewed and approached in the health care system began in earnest with the publication of the Institute of Medicine 1999 report, *To Err is Human*. In this report, the IOM defined several key terms. An error was defined as “the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim”, an adverse event (AE) as “an injury caused by medical management rather than the underlying condition of the patient”, and safety as “freedom from accidental injury”. More importantly, this report called for the establishment of safety systems in healthcare that have led to system-wide changes that incorporate a team approach to patient care and safety.

In the subsequent 2001 publication, *Crossing the Quality Chasm*, the IOM suggested that “healthcare should be, safe, effective, patient-centered, timely, efficient, and equitable”. Medicine has made significant strides in establishing reporting systems and methods to reduce errors and adverse events in health care. Nevertheless, there has been little research into the culture of patient safety or its relationship to decreasing adverse events (AEs) in dentistry.

Although it may seem apparent that safety is important in many organizations, including health care, it must be recognized as well that healthcare can be dangerous. Despite the advances since these two landmark publications, more than 10 years later the rate of medical errors remains high. In a study of the incidence of adverse events in three large U.S. tertiary care hospitals, adverse events occurred in 33.2% of hospital admissions.

In a study of hospitalized Medicare recipients, one in seven patients had complications from medical errors. In contrast, scheduled airline traffic is considered ultra safe with less than one death per 100,000 encounters.

Medicine has adopted techniques used in aviation to improve safety that have been applied in healthcare, including checklists, teamwork training, briefing/debriefing/timeout, incident reporting, simulator training, and standardization.

The implementation of electronic health records (EHRs) has been seen as a way to impact patient safety by improving quality of care, accuracy of diagnoses, as well as care coordination and communication. Additionally, the many medical oversight bodies (e.g., payers, Centers for Medicare and Medicaid Services, The Joint Commission, HealthGrades, Leapfrog, etc.) have helped promote and monitor patient safety issues in medicine. In contrast, far fewer such organizations and systems exist for oral healthcare and, therefore, it is not surprising that dentistry lags behind medicine in establishing a comprehensive approach to patient safety and elimination of AEs.

The setting for dental care is very different than that for most medical care. Rather than the hospital or large group practices under the oversight of hospital boards and the like, the majority of the more than 160,000 dentists practicing in the United States still provide dental care in private practice settings with 80% of all dentists reporting as the sole dentist in the office. Despite these...
differences, just as do physicians, dentists routinely perform highly technical procedures in complex environments, in a team setting. Reports of adverse events in dentistry are less common than in medicine, probably at least in part due to the absence of reporting systems for dentistry. Although dentistry has incorporated alerts and recommendations on pharmaceutical products, dental materials, and clinical procedures, there are few system-wide initiatives organized specifically for promoting patient safety in dental healthcare delivery. In order to make dental care safer, it is imperative to first examine factors affecting the patient safety culture within dental settings.

The Importance of a Positive Patient Safety Culture: A "culture of safety" is described as demonstrating several key features. The Agency for Healthcare Research and Quality (AHRQ) Patient Safety Network describes these as: "acknowledgment of the high-risk nature of the organization's activities and the determination to achieve consistently safe operations; a blame free environment in which individuals report errors or near misses without fear of repercussion or punishment; encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems." The central concept of a blame free culture recognizes that most errors are a result of system failure rather than individual's wanton acts. In a "just culture," there is not a rush to judge and punish individuals, rather a recognition that most errors are a result of system failure rather than individual wanton acts. Individuals are still accountable for their actions, but the analysis of the event focuses on all the elements of the system.

Barriers to reporting incidents and adverse events have been investigated in several studies. The primary reason reported is fear of blame, particularly reluctance by more junior team members to report errors of superiors in the health care system. Other reasons for failure to report are the lack of realization that the incident/event warranted reporting or not knowing how to report and concern that reporting will increase regulation and administrative duties. Establishing a positive culture of safety requires first identifying the presence and magnitude of these barriers, and then working to change the culture and impact patient safety within the organization.

Can an Organization's Safety Culture Be Measured?: Several instruments have been developed to assess the safety culture. Organizational and managerial factors impacting the capacity to assess and improve patient safety culture include knowledge of quality and patient safety, measurement of quality and patient safety, interpersonal relationships, creating and executing a safety plan, and effective oversight. The Medical Office Survey on Patient Safety Culture (MOSOPSC) was sponsored by the Agency for Healthcare Research and Quality (AHRQ) in 2008 and was designed specifically for the outpatient medical setting in order to survey perceptions of providers and staff regarding health care quality and the culture of patient safety in outpatient medical offices. The dental profession can benefit from the utilization of the MOSOPSC, as dentistry is performed in individual outpatient clinics, similar to medical outpatient practices.

The survey instrument assesses team member perceptions of the organization's performance in 12 dimensions. As depicted in Figure 1, the 12 basic dimensions are: 1) patient safety and quality issues, 2) information exchange and communication, 3) teamwork, 4) work pressure and pace, 5) staff training, 6) office processes and standardization, 7) communication openness, 8) patient care track/follow-up, 9) communication about errors, 10) leadership support for safety, 11) organizational learning, and 12) overall perceptions of patient safety and quality. Additionally there is a category of overall rating. Within these dimensions are 52 items that are rated to indicate organization performance within concepts of the dimension. Although this survey was written for medical outpatient offices, the application to dental practice is evident.

Research has shown that the culture of the organization has an impact on improving patient safety. The Veterans Health Administration (VA) established a National Center for Patient Safety in February 1999 and
began adverse event and close call analysis later that same year. In the intervening years, the VA administered a patient safety cultural survey (2000), conducted training on safety improvement methods for lead workers (2000), deployed and tested root cause analysis software (2001), and made available a toolkit for improving patient safety (2002). Continued and focused development over the years has resulted in measured improvements. Data from 74 VA facilities that implemented medical team training showed a 15% reduction in morbidity rate as compared to those facilities that had not implemented the training.

Creating a Patient Safety System in Dentistry: An argument might be made that there are few adverse events in dentistry and that there is not the same level of need to establish a culture of safety in dental settings. Very few dentists practice in large health care systems—the majority are solo practitioners in offices with a small team of staff. Without a system to report errors and adverse events in dentistry, however, it is difficult to determine the real impact of these events on patient care and to develop mechanisms to improve patient safety.

Some preliminary work has been done to assess the patient safety culture in dental schools. In a pilot study of attitudes toward patient safety in U.S. dental schools, Leong and colleagues? administered a modified-for-dentistry AHRQ medical office survey to faculty, students, and support staff in seven U.S. dental schools. Data from the dental school surveys were compared to available data for employees at 20 hospitals. Seventy-seven percent of the dental respondents rated their organization’s overall patient safety as very good or excellent as compared to the national benchmark of 62%.

Figure 1. Agency for Healthcare Research and Quality Medical Office Survey on Patient Safety Culture Dimensions: 12 Dimensions and Overall Rating of Quality
http://www.ahrq.gov/legacy/qual/patientsafetyculture/mosurvindex.htm
The dental school respondents rated their organizations lower than the medical employees when it came to proactive activities for patient safety such as feedback and communication about errors and teamwork. Frequency of adverse events reported was 10% lower in the dental schools than the benchmark from hospitals. This perception could be due to a lack of recognition that an event should have been reported or knowledge of a reporting system, which are known barriers to reporting.

Additional studies are underway to assess the patient safety culture in additional dental schools and in private practice settings. One study, currently underway, is administering the MOSPSC to a large group practice for comparison to dental school and medical office data. It is anticipated that information from this study will provide additional insight into the patient safety culture in dentistry.

Besides shifting the culture from blaming or shaming to understanding why we make mistakes and improving our systems, we need to know what type of adverse events exist in dentistry in order to address patient safety comprehensively. To date the dental profession has relied on case reports as a means to informing its constituencies of calamities or unusual occurrences. No systematic inventory or classification exists of dental adverse events.

In contrast, our medical colleagues have developed various classifications to categorize and better understand medical adverse events. Why does dentistry need its own system? Why not just use the existing medical reporting systems? Some of these medical classifications may not be a good fit for dental errors and adverse events, resulting in classifications that are off in scope, severity, or specificity. For example, a wrong-site surgery in osteopathic surgery and a wrong-site dental restoration are the same classification, but quite different in severity.

In an effort to fill this classification void, four dental schools (University of Texas-Houston, Harvard University, University of California-San Francisco, and Oregon Health & Science University) are collaborating in a multi-center research project funded by the National Institute for Dental and Craniofacial Research (R01DE022628) "Developing a Patient Safety System in Dentistry." The three major aims of this project are to: 1) develop the tools to document dental adverse events, 2) generate a classification scheme and repository to organize adverse events, and 3) enable dental organizations to systematically collect and analyze adverse events. This study, and possibly others, strives to establish a usable system to classify dental adverse events and build the infrastructure that will allow development of systems to prevent dental adverse events.

**Concluding Remarks:** A positive patient safety culture has been shown to be a critical first step toward improving patient safety in health care organizations. Dentistry lags behind medicine in developing patient safety reporting and prevention systems. Further research, particularly in relating the culture of patient safety in a dental healthcare setting with prevalence of AEs, is necessary to better understand how to promote a culture of safety in dentistry. As a critical first step, understanding the culture of safety in dental settings will help reduce barriers to reporting and improving the safety of patient care.

**Acknowledgments:** The authors would like to recognize the contribution of all of their colleagues on the grant team in reviewing and advising on the presentation of this material at the Dental Quality Alliance program July, 2013 and preparation of this manuscript – in particular, Dr. Muhammad Wajj, PI of the grant at University of Texas Health Science Center San Antonio, Dr. Rachel Ramoni, Harvard University School of Dental Medicine, and Dr. Karla Kent, Oregon Health & Science University School of Dentistry.

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Promoting Quality

“Failure is not fatal, but failure to change might be.”

— John Wooden
Promotion of Change: Becoming Ambassadors

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As we move into the era of accountability, the practice model established within HealthPartners Dental Group (HPDG) serves to highlight challenges and set an example for promotion of change through the oral healthcare delivery system. HPDG’s goals for achieving better quality are closely nested within the HealthPartners broader mission of providing care, coverage, research, and education to improve the health of our members, patients, and the community. Activities and goals run parallel to and are influenced by quality and accountability initiatives in other areas of the organization.

Organizational Background: Founded in 1957, HealthPartners is a Minnesota-based consumer-governed medical and dental collaborative organization including a medical group and comprehensive medical plan, and a dental group and dental plan. Also part of the HealthPartners family is pharmacy, a hospital system including a Level I trauma center, an independent HealthPartners Research Foundation, the Institute for Medical Education, and Journey Well Health Promotion.

Berwik et al. refer to the organizational “integrator,” one that “accepts responsibility for at least five components: partnership with individuals and families, redesign of primary care, population health management, financial management, and macro system integration1. The HealthPartners family of companies is well-suited for an approach of this design and has made significant efforts to impact the quality of care delivery by enacting a multifaceted definition and approach. While the larger HealthPartners organization has been a leader in the development of policy regarding quality and accountability in medical care, this is a newer initiative in dentistry.

Pursuing a vision for the highest quality in healthcare provision, affordability, and patient experience, HPDG has established many innovative programs and initiatives in line with quality aims. These initiatives stand to benefit a sizeable population of patients. HPDG consists of 21 HealthPartners dental clinics across the seven-county greater Twin-Cities metropolitan area as well as 2,200 dentists in the HealthPartners Preferred Provider Organization network who practice throughout Minnesota, Wisconsin, North Dakota, South Dakota, and Iowa. HealthPartners dental clinics serve more than 100,000 patients.

The HealthPartners Dental Group prioritizes “four C’s” of patient care to support this exercise in balance, which is at the core of organizational quality and accountability:

‘Consistency’ in approach supports reliable processes that help systematically deliver the best care. Individual provider’s clinical judgment is important. Informing that clinical judgment, HPDG values the development of consistent processes that move providers’ treatment decisions toward the evidence. Risk assessment contributes to this goal, as does the involvement of providers in the development of clinical guidelines (validated with systematic reviews) for caries, periodontal risk assessment, oral cancer, endodontic treatment, third-molar care, and treatment planning. HPDG’s guidelines are made publically available by the Agency for Healthcare Research and Quality (AHRQ) on a searchable database of clinical practice guidelines2.
Within HPDG's clinics, practitioners' review of and adherence to the established guidelines are reflected in their compensation, with the belief that an organization that values evidence-based guidelines as a standard for promoting safe and effective care should measure utilization and reward providers for practicing in keeping with those guidelines.

'Customization' or personalized care that accounts for patients' individual needs and values is a top priority, as it underpins both the 'health' and 'experience' dimensions of the Triple Aim. HealthPartners serves a large and diverse patient population. Again, risk assessment of all patients informs both patient education and treatment decisions. Without an understanding of risk, providers and patients may feel limited by available benefits and resources. Risk assessment helps to prioritize needs in the context of overall oral health in a way that is personalized for each individual. While dental insurance is a useful tool, coverage should not drive treatment decisions. For example, an adult with high risk for caries should be advised on the benefits of regular remineralization and encouraged to consider both at-home and professionally applied fluoride regardless of coverage for that intervention. Risk drives the discussion of treatment options and the subsequent patient-approved treatment plan.

On a patient level, consistent risk assessment contributes to increased health literacy and satisfaction. In 2008, HPDG introduced the Personal Care Report, a patient-friendly, one-page after-visit summary given to patients that highlights their levels of risk (low, moderate, or high) for caries, periodontal disease, and oral cancer, and provides recommendations on reducing risk in any category of concern. The Personal Care Report has been enthusiastically received by patients, reinforcing the patient's sense that a high-quality practice includes patients in the management of their oral health and helps to provide suggestions for doing so in a consistent format designed especially for them.

System wide, risk assessment is reported regularly. Consistently, 90% of HPDG patients in a category of moderate or high risk for caries, periodontal disease, and/or oral cancer are provided appropriate
interventions to mitigate this risk. Monitoring of this process of assessment and intervention is conducted in an ongoing fashion and providers are kept abreast of expectations regarding this measure.

‘Convenience’ means clinics are accessible in many locations and with hours that work for a variety of individuals and families, including evening and Saturday appointments. HPDG includes specialty care: pediatric dentistry, prosthodontics, periodontics, oral surgery, TMD/orofacial pain, and most recently, orthodontics. Endodontics and oral medicine are a part of general services. Most HPDG clinics are in facilities shared by medical clinics and pharmacies, which helps to provide a welcoming healthcare home that conveniently meets patients’ whole-person needs at one location.

Information about oral health (e.g., printed handouts, chair-side patient educational modules) is made readily available, with resources on the web as well as in the clinics and is designed by experts in health promotion to be understandable for specific populations including those with a primary language other than English. Social media tools such as Facebook have been harnessed by the organization to help patients and members connect with HealthPartners and receive helpful information from a trusted source in a way that fits into their lifestyle.

‘Coordination’ ensures a consistent vision for quality, effective collaboration and communication across a large multi-specialty group practice. The HPDG Electronic Dental Record is the central source for clinical, scheduling, and administrative data. Patient records are readily accessible by another provider or even another clinic if appropriate (e.g., in the event of an emergency, a referral for specialty care, or a simple clinic change). Medical providers historically have left oral disease, including the oral manifestation of many chronic systemic diseases, to the purview of dentistry and oral medicine. This pattern is changing as evidenced in the HealthPartners system and others. Primary care providers have become involved in basic preventive screening and services such as fluoride varnish application for at-risk children. Knowledge of how periodontal disease impacts risk for systemic disease has become more commonplace among medical providers as evidence becomes increasingly available, especially with regards to diabetes.

Developing New Knowledge Through Measurement
HealthPartners works diligently to include the highest quality evidence when available including that from provider experience. Admittedly, many of the questions faced daily in busy clinical practice cannot yet be answered by the current scientific literature. Additionally, new clinical questions arise daily. That said, HPDG is actively participating in expanding the knowledge of the profession, and in a way that is transferable to the care we provide and the patients we serve. Much of what is achievable in oral health research and evaluation of quality measures within the HealthPartners Dental Group is made possible by a comprehensive Electronic Dental Record (EDR) installed in 2003. Data are kept on patients’ risk level and risk factors, risk reduction interventions, and diagnosis codes related to all dental procedures. This type of data collection is not readily available in most dental databases and provides a unique opportunity for both retrospective and prospective evaluation.

The EDR captures all encounter, procedure, diagnosis, and claims data. In order to fulfill the dental group’s quality reporting needs, the EDR has undergone rigorous testing and validation. Because the dental and medical groups share a common membership system, the patient identifier within the EDR system is the same as that within the medical utilization system. This common membership makes it possible to link experience from both medical and dental records. A comprehensive electronic record is critical as organizations implement systems for evaluating and improving quality and accountability of care. Even the EDR, built for clinical care and business administration, will require continuous adaptation to support evaluation and clinical decision support.

As electronic health information becomes more ubiquitous to all care settings, health information exchanges have the potential to enable better collaboration among the team of individuals involved in
patient care—the patient no doubt lies squarely within that team and is an active participant in discussions of disease prevention and management. That said, patients will likely continue to rely on providers to help them navigate fragmented and/or complex care delivery models. The increasing utilization of electronic records for clinical data in both medicine and dentistry as well as the development of Health Information Exchange platforms appears promising.

Concluding Remarks: HealthPartners Dental Group envisions a future in which the patient’s dental and medical providers view oral health as an integrated part of the patient’s health and wellbeing. HPDG can serve as an example to promote change within the practicing community.

References:
Activities of the Dental Quality Alliance

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Over the past decade, the U.S. Centers for Medicare & Medicaid Services (CMS) looked for measures to assess the effectiveness of its Medicaid and Child Health Insurance Program (CHIP). In 2008, CMS approached the American Dental Association (ADA) and asked the ADA to take the lead in establishing a quality alliance that could develop measures to assess dental programs.

**Genesis of the DQA:** Because the ultimate goal for measurement is improvement, and must be undertaken collaboratively by all quality stakeholders within the profession, the ADA envisioned a multi-stakeholder, collaborative, voluntary organization that could develop measures for use by CMS or other entities. The ADA then lead the establishment of a Dental Quality Alliance with a mission to advance the field of performance measurement to improve oral health, patient care, and safety through a consensus-building process. This Alliance aspires to become the primary source for the advancement of performance measurement in Dentistry and be the “go to” body for expertise in and testing of dental quality measures.

**DQA Operations:** The Dental Quality Alliance members are organizations, associations, ADA groups, and the public. The Dental Quality Alliance membership is comprised of organization including practitioners, payers, and other interested parties. (Figure 1) Four governmental agencies within the U.S. Department of Health and Human Services serve as technical advisors. The current members are listed on the DQA website at [http://www.ada.org/5105.aspx](http://www.ada.org/5105.aspx).

The DQA conducts its work through an Executive Committee (also serving as the Governance and Finance Committee), and advisory committees for Research and Development; for Education and Communication; and, for Implementation and Outcomes Assessment.

**DQA Measures: Claims Data:** To begin its measure development efforts, the DQA initially focused on CMS’s request for a pediatric oral health measure set. Through an environmental scan the DQA identified several existing measures and concepts. This review of measures led to a report entitled Pediatric Oral Health Quality and Performance Measures Environmental Scan. This scan revealed there had been a proliferation of measure development activity that was often duplicative and not standardized.

Based on the results of the environmental scan the DQA approved a starter set of pediatric oral health measure concepts feasible through administrative (e.g., claims and enrollment) data. The DQA defines a “concept” as a broad description of what should be measured, with some basic information on the measure’s numerator (e.g.,
percent of children who receive a service) and denominator (e.g., all children enrolled in a program). A fully specified “measure,” however, is more granular than a “concept” and is specific to the data source and populations to be measured.

The DQA described the genesis and nature of the starter set of concepts in a document entitled Pediatric Oral Health Quality & Performance Measure Concept Set: Achieving Standardization & Alignment. The starter set, which is posted on the DQA website, identifies concepts for use with administrative data sources (dental claims and encounters) and potential concepts for use with dental electronic health records (EHRs). This document also laid the foundation for the guiding principles of the work of the DQA: Standardization and Alignment. The DQA then developed specifications for each of the concepts to create well-defined measures for use at the programmatic level (programs and health plans).

The initial set of DQA measures address the following topic areas:

<table>
<thead>
<tr>
<th>DQA Pediatric Starter Set of Measures</th>
<th>Operational Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilization Concepts</strong></td>
<td><strong>Operational Definitions</strong></td>
</tr>
<tr>
<td>Utilization of services</td>
<td>Received at least one service</td>
</tr>
<tr>
<td>Utilization of preventive services</td>
<td>Topical fluoride applications or sealants</td>
</tr>
<tr>
<td>Utilization of treatment services</td>
<td>Received at least one treatment service</td>
</tr>
<tr>
<td><strong>Quality Concepts</strong></td>
<td><strong>Operational Definitions</strong></td>
</tr>
<tr>
<td>Usual source of services</td>
<td>Same source of care for two consecutive years</td>
</tr>
<tr>
<td>Care continuity</td>
<td>Oral evaluation in two consecutive years</td>
</tr>
<tr>
<td>Oral evaluation</td>
<td>Oral evaluation in reporting year</td>
</tr>
<tr>
<td>Topical Fluoride</td>
<td>Intensity of fluoride application</td>
</tr>
<tr>
<td>Sealants in 6 - 9</td>
<td>Sealant, first permanent molar in 6 - 9 years</td>
</tr>
<tr>
<td>Sealants in 10 - 14</td>
<td>Sealant, second permanent molar in 10 - 14 years</td>
</tr>
<tr>
<td><strong>Cost Concepts</strong></td>
<td><strong>Operational Definitions</strong></td>
</tr>
<tr>
<td>Per member per month cost of clinical services</td>
<td>Total amount paid on direct provision of care per enrolled child per month within reporting year</td>
</tr>
</tbody>
</table>

Continuing its work, the DQA is pursuing additional measures for the pediatric population as well as new measures for the adult population. The DQA will ensure that these new measures go through a similar process of rigorous validation before they are finalized. The DQA recognizes the limitations of current measures and the lack of robust outcome measures, and will play its part in helping the field move forward in this regard.

**DQA Measures: Other Data Sources**: To enable comprehensive measurement, the DQA recognizes the need for a broad set of standardized measures that draws from a range of relevant data sources. As depicted in Figure 2, apart from claims databases, quality measures can be based on data derived from electronic systems used to store patient health information. These include emerging EHR's, registries and databases capturing and storing patient reported information.

In 2012, the DQA produced the document entitled Pediatric Oral Healthcare, Exploring the Feasibility for E-Measures. This document describes the current status of eMeasures in dental electronic systems. The DQA is now collaborating with the Office of the National Coordinator for Health IT to develop measures for use within the Meaningful Use Stage 3 program.

With regards to patient reported data, the DQA is exploring the field of patient-reported outcomes (PROs) through collaboration with the Children Hospital of Philadelphia. The DQA is also beginning preliminary assessments of the status of the dental Consumer Assessment of Healthcare Providers and Systems (CAHPS).
surveys maintained by the Agency for Healthcare Research and Quality.

Educational Activities: The Dental Quality Alliance strives to operate transparently and recognizes the importance of making DQA information available to the profession, the payer community, and the public. To help achieve these results, the DQA maintains web content under the auspices of the ADA that can be accessed at http://www.ada.org/dqa. The DQA webpage contains announcements, educational materials, and measurement documentation about dental quality measurement and quality improvement.

In early 2012 the DQA published a resource document entitled Quality Measurement in Dentistry: A Guidebook to serve as a tool to educate various audiences on the basic purpose, importance, and scope of quality measurement within Dentistry. This Guidebook supplies the basis for understanding quality measurement in dentistry, and provides an overview of the current status of measurement, the science behind measurement, as well as the role of the DQA. The DQA also has developed a series of brief online video tutorials to help explain the topic of quality measures. The videos, accessible on the website, run two to four minutes in length. Titles include:

- About the DQA
- What is Quality?
- How is Performance Measured in Dentistry?
- What is a Measure?
- Process for the Starter Set

The DQA organized the 2013 DQA Conference: Improving Dental Quality through Measurement and secured grant funding for the conference from the federal Agency for Healthcare Research and Quality and corporate support from United Concordia Dental. This two-day conference aimed to inform a cohort of over 100 potential “ambassadors” for the DQA and advocate for quality improvement in dentistry. Encouraged by the inaugural conference’s success, the DQA aims to develop future conferences that build on the DQA’s continuing work.

Concluding Remarks: The Dental Quality Alliance is emerging as the dental profession’s leader in quality and performance measure development. The DQA is actively pursuing measure development for use in evaluating dental programs and aggressively seeking to inform its stakeholders of its work. The strong support, extensive expertise, and active collaboration of its member organizations, their representatives, the representatives’ employers, and other volunteer experts, make the DQA’s continuing work possible.

References:
Acknowledgements

Sponsorship for Conference

Funding for this conference was made possible [in part] by R13HS021842 from the Agency for Healthcare Research and Quality (AHRQ). The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services, nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

The DQA wishes to thank United Concordia Dental for their contribution in sponsorship of this conference.

The DQA wishes to thank the following individuals for their effort in organizing the 2013 DQA Conference titled “Improving Quality Through Measurement” and their effort in preparing these proceedings.

Ronald Hunt, D.D.S., Associate Dean for Academic Affairs at the Midwestern University College of Dental Medicine – Arizona

William Kohn, D.D.S., Vice President of Dental Science and Policy at the Delta Dental Plans Association

Allen Moffitt, D.D.S., Orthodontist Practitioner

W. Ken Rich, D.M.D., Medicaid Dental Director, Kentucky, General Practitioner

David Schirmer, D.D.S., General Practitioner

Marie Schweinebraten, D.M.D., Periodontist Practitioner

Ralph Cooley, D.D.S., General Practitioner

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Final Version Published November 2013