

Making Oral Health Count:

Toward a Comprehensive Oral Health Measurement System

Background

Since the Surgeon General's 2000 report calling oral disease a "silent epidemic," the United States has made significant progress in expanding dental coverage and access to oral health care, especially among children and low-income families.¹ In fact, between 1997 and 2014, the share of children without dental coverage dropped by 58%,² largely as a result of public programs like Medicaid and the Children's Health Insurance Program (CHIP). In addition, the rates of untreated tooth decay have declined among school-aged children over that same period.³ So too have adults benefited in recent years with an estimated 5 million more low-income individuals gaining dental benefits through the Affordable Care Act's (ACA) Medicaid expansion,⁴ and adults represent the largest block of purchasers of dental plans on the health insurance marketplaces.⁵

However, despite recent progress in oral health coverage and access, the oral health community still suffers from a lack of timely, consistent, and readily-available data to adequately describe the

state of oral health across populations, as well as the outcomes of health interventions. To better inform policy and improve accountability, both policymakers and oral health advocates continue to seek a comprehensive and well-aligned system of oral health measurement. In 2012, the U.S. National Oral Health Alliance called for "a standardized core set of key data elements that present a picture of the future of oral health in this country, against which individuals, institutions, and government can measure future outcomes."⁶ Since then, an increasingly cohesive network of oral health stakeholders have rallied around the DentaQuest Foundation's Oral Health 2020 (OH2020) goals, one of which is the development of "a comprehensive national oral health measurement system."

As part of this effort, the Children's Dental Health Project (CDHP) and the Association of State and Territorial Dental Directors (ASTDD) systematically gathered input from oral health advocates, provider groups, and federal agency officials responsible for oral health data in an attempt to

1. Shariff, J. A., & Edelstein, B. L. (2016). Medicaid Meets Its Equal Access Requirement For Dental Care, But Oral Health Disparities Remain. *Health Affairs*, 35(12), 2259-2267.
2. Yu, Z. J., Elyasi, M., & Amin, M. (2017). Associations among dental insurance, dental visits, and unmet needs of US children. *The Journal of the American Dental Association*, 148(2), 92-99.
3. American Dental Association Health Policy Institute. "Untreated Caries Rates Falling Among Low-Income Children." June 2017, available at: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIgraphic_o617_2.pdf?la=en.
4. American Dental Association Health Policy Institute. "Medicaid Expansion and Dental Benefits Coverage." November 2016, available at: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIgraphic_1116_1.pdf?la=en.
5. Naseh, K., Vujicic M. Dental benefits coverage increased for working-age adults in 2014. American Dental Association Health Policy Institute. October 2016, available at: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_1016_2.pdf.
6. U.S. National Oral Health Alliance. "Summary of the Fourth Leadership Colloquium: Metrics for Improving Oral Health." November 2012, available at: <http://usalliancefororalhealth.org/sites/default/files/static/FourthColloquiumSummaryUSNationalOralHealthAllianceNov2012.pdf>.

identify a collective vision for oral health measurement as well as the barriers to achieving such a vision. Common components of stakeholders' ideal measurement system included standardization of data across programs and agencies; sufficient detail; timeliness of data; a centralized oral health data repository; and a focus on oral health outcomes and person-centered measures of good oral health. The identified barriers ranged from lack of appropriate coding and robust electronic health record systems to lack of funding and disparate institutional priorities.⁷

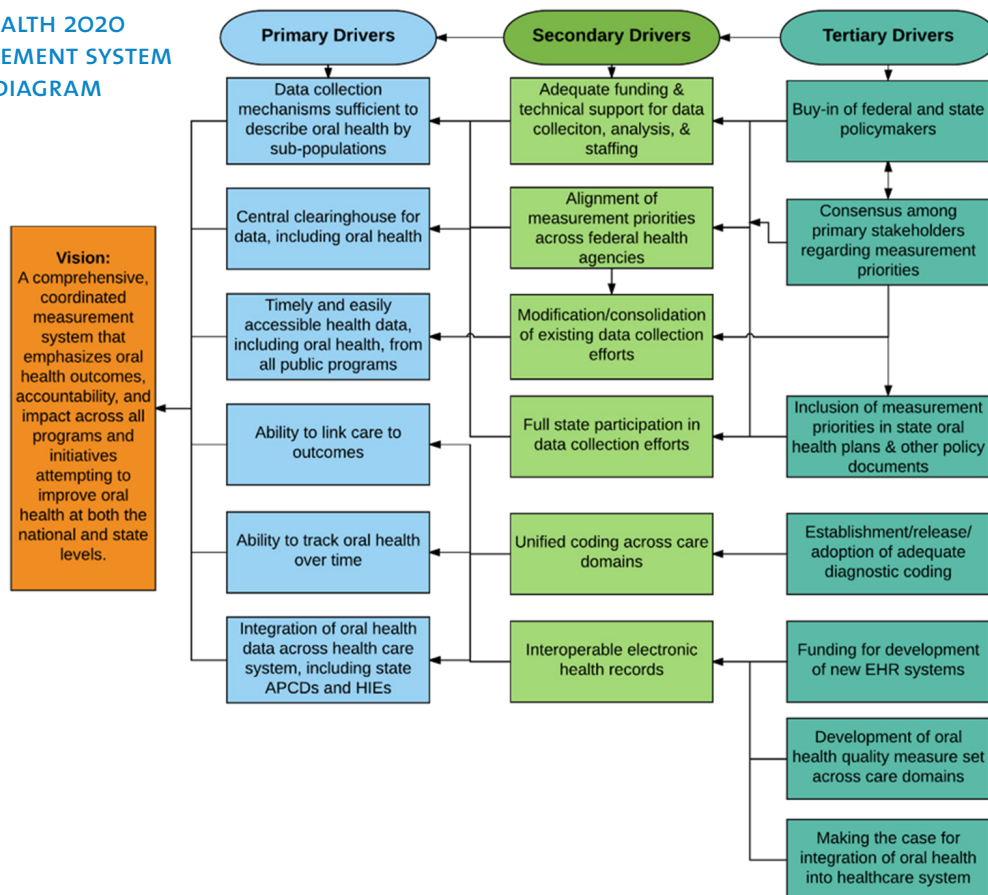
Through subsequent discussions with federal agency officials and a small working group of expert advisers, CDHP and ASTDD developed a matrix of oral health measurement priorities (Appendix A) and a driver diagram outlining factors that may advance progress toward a more ideal oral health measurement system (below).

This brief builds upon those efforts by describing barriers to achieving the OH2020 vision of a comprehensive oral health measurement system and identifying opportunities to achieve the network's collective goal, including:

- Coordinating federal and state efforts as they relate to oral health data collection and measurement;
- Improving the quality and accessibility of oral health data;
- Supporting the development and implementation of oral health outcomes measures;
- Encouraging the development and deployment of health information technology that supports oral health integration and value-based care;

7. DentaQuest Foundation. Improving Oral Health Measurement Systems: Stakeholder Feedback Project Summary Report. April 2016, available at: <https://s3.amazonaws.com/cdhp/DQF+Summary+Report+on+OH+Measurement+Systems.pdf>.

ORAL HEALTH 2020 MEASUREMENT SYSTEM DRIVER DIAGRAM



Aligning measurement priorities

In developing a consensus-based set of oral health measurement priorities, CDHP and ASTDD sought not to prescribe which specific measures should be developed for any given agency, program, or provider. Instead, they wanted to identify a small basket of key oral health indicators that could be used to better describe outcomes, evaluate the impact of interventions, and provide information necessary to drive meaningful change across the oral health care system.

The oral health measurement priorities matrix includes 1-3 high-priority indicators for each age group across the lifespan in the categories of oral health status, utilization, access, prevention, and patient satisfaction. These indicators range from discrete clinical and public health measures such as untreated dental caries and access to optimally fluoridated water to more subjective measures aimed at understanding how individuals perceive their own oral health and the care they receive. While not every indicator listed in the matrix is likely to apply to every program or situation, it is conceivable that the majority of the indicators could be adapted to a wide range of applications whether it be clinical outcomes for state Medicaid programs and participating providers, or state and local public health surveillance aimed at better understanding the oral health needs of at-risk populations.

Although many of the indicators outlined in the matrix have existing mechanisms through which relevant data could be acquired (e.g., claims data, patient questionnaires, and defined measures of tooth decay), the oral health community may need to identify or develop new mechanisms for tracking indicators—such as self-reported oral health status—in a way that appropriately speaks to oral health’s impact on quality of life.

The matrix itself is a common starting point from which policymakers, providers, payers, federal and state agencies, and public health programs can develop their own tailored approach to collecting and disseminating meaningful data as part of a more coordinated and aligned system. Such coordination, however, will require a concerted effort on behalf of the broader oral health community and federal agencies responsible for setting measurement priorities for the programs they administer.

Opportunities:

- Members of the OH2020 network should seek to incorporate indicators from the measurement priorities matrix into state and local initiatives, including state oral health plans and community needs assessments.
- Through the U.S. Department of Health and Human Services’ (HHS) Oral Health Coordinating Committee (OHCC), federal health agencies should seek and use input from stakeholders on oral health measure development and strive for alignment across HHS agencies.

Improving quality and accessibility of data

Currently, oral health-related data remains scattered across a number of federal agency websites and, in some cases, is only available upon request, is outdated, or is incomplete. The Centers for Disease Control and Prevention (CDC) previously maintained a web-based data portal, providing access to summary information for many of the public health surveillance indicators included in the National Oral Health Surveillance System (NOHSS). However, the scope of information housed on the CDC website has not kept pace with expansion of NOHSS, which now includes more than two dozen oral health indicators. By contrast, the CDC oral health data website only includes readily accessible data for seven child and adult indicators as well as data on community water fluoridation.⁸ While data are available for many of the other NOHSS indicators through other federal agency sites, researchers, policymakers, and others seeking such information would be better served by a “one-stop shop” for oral health data.

In addition, federal agencies could better meet the needs of both academic and non-academic data users by providing data and top-line analyses of national data sets in a timely manner and in accordance with best practices for accuracy. Considerable lag time between data collection and publication is not uncommon, often resulting in gaps of a year or more. In addition, oral health data is not always held to as high a standard

as other health-related data. For example, the Affordable Care Act directs the Agency for Healthcare Quality and Research (AHRQ) to conduct a look-back analysis to verify dental utilization, expenditure, and coverage data—a practice AHRQ implements with other data from the Medical Expenditure Panel Survey (MEPS).⁹ However, the agency has yet to meet this requirement and has received no additional funding from Congress to do so. Furthermore, analysis of dental-specific data does not appear in AHRQ’s annual Insurance Component Chartbook, and the agency has not published a comprehensive report on oral health data since 2007. Similarly, dental-specific data in ACA marketplace enrollment reports does not provide a complete picture of marketplace dental coverage.

At the state level, the availability of oral health-specific data varies, in part because data collection is often voluntary, as in the case of public health surveillance mechanisms like the Basic Screening Survey (BSS) and state synopses which feed the National Oral Health Surveillance System (NOHSS). As a result, the most recent data for some state indicators is more than a decade old.¹⁰ Similarly, robust state-level data on oral health care remains elusive beyond high-level reports on service utilization like the Centers for Medicare and Medicaid Services (CMS) Form 416 report for Medicaid programs. While the ACA resulted in a significant increase in the number of states implementing

8. Centers for Disease Control and Prevention. “National Oral Health Surveillance System.” Accessed 06 June 2017. <https://www.cdc.gov/oralhealthdata/overview/nohss.html>.

9. Patient Protection and Affordable Care Act, Section 4102(d).

10. Centers for Disease Control and Prevention. “Oral Health Data.” Updated 3 August 2017. Available at: <https://www.cdc.gov/oralhealthdata/index.html>. Patient Protection and Affordable Care Act, Section 4102(d).

all-payer claims databases (APCDs) and Health Information Exchanges (HIEs), the inclusion of dental claims in these systems is perceived to be supplementary with fewer than ten states currently including dental claims in their APCD systems.^{11,12} The establishment of such comprehensive databases holds promise for evaluating the oral health care delivery systems in each state but only if the data is able to be used; accessibility of APCD data is highly dependent on state laws and regulations.¹³

Additionally, where oral health status and outcomes data are available, these data lack sufficient detail to target specific subpopulations or small geographic areas. Moreover, advocates and policymakers are increasingly interested in more granular oral health surveillance data to better understand the unique oral health needs of small geographic areas and specific subpopulations. Unfortunately, conducting on-the-ground data collection at this level is cost-prohibitive, but statistical methods like small area estimation can produce reliable models of disease prevalence without the need for expensive large-scale sampling. Still, state, local, or tribal entities need better resources and support to conduct such analyses. Although organizations like the Council of State and Territorial Epidemiologists and ASTDD are well-positioned to provide technical assistance, federal resources would be needed to fund this support.

Given limited state and federal resources and competing demands for data collection, oral

health advocates, policymakers, and data users should make their needs known to the agencies and programs for which appropriate or timely data is not available. Helping agency officials understand how data will be used can facilitate the release of useful data.

Opportunities:

- HHS, in collaboration with oral health stakeholder organizations, should dedicate funding for a publicly-accessible central clearinghouse or portal for oral health data collected by all federal health agencies, including all of the NOHSS indicators.
- States should ensure the inclusion of dental claims into APCDs and HIEs while also working closely with state and local health agencies to conduct meaningful analyses of oral health-related claims data.
- The CDC Division of Oral Health should provide funding and technical support to states for small area estimate analyses as well as support for communicating the results of oral health data collection efforts.
- The OH2020 network, through a data and measurement working group is in the process of identifying its needs with respect to oral health data that would help drive progress towards its six goals. Once consensus is reached, the network should communicate its collective needs to agencies that collect and maintain oral health data.

11. Robert Wood Johnson Foundation. The basics of all-payer claims databases: A primer for states. January 2014. Available at: <https://www.nahdo.org/sites/nahdo.org/files/publications/The%20Basics%20of%20All-Payer%20Claims%20Databases.pdf>.

12. All Payer Claims Database Council. "Interactive State Report Map." Updated 2017. Available at: <https://www.apcdouncil.org/state/map>.

13. Harrington, Alyssa. Freedman HealthCare LLC. Releasing APCD data: How states balance privacy and utility. March 2017. Available at: <https://www.apcdouncil.org/publication/releasing-apcd-data-how-states-balance-privacy-and-utility>.

Supporting development and implementation of oral health outcomes measures

Beyond the issue of coordination and data sharing, nearly all agencies with a focus on oral health suffer from a lack of outcomes-focused measures or indicators that serve to ensure the quality of care and determine the effectiveness of clinical and public health interventions.

The call for more meaningful measures of oral health outcomes and quality of care is anything but novel and has been an oft-recommended development within the oral health community and more broadly. In fact, in 2011, the Institute of Medicine (IOM) encouraged Congress, federal agencies, and other actors in the oral health policy arena to be more proactive in advancing oral health measures and supporting technologies to drive, among other things, alternative models of paying for oral health care.¹⁴

While CDC administers the National Health and Nutrition Examination Survey (NHANES), which captures tooth-level data and tracks disease prevalence nationally, programs like Medicaid that provide coverage and oral health care are not able to produce oral health outcomes data, relying instead on utilization and billing data to track access to care.

Considerable progress has been made on this front in recent years, largely as the result of the creation of the Dental Quality Alliance (DQA), an organization created in 2008 by the American Dental Association at the request of CMS. The DQA has worked to develop and submit for approval more than a dozen dental quality measures.¹⁵ DQA sealant and topical fluoride measures for children at elevated risk for caries have been adopted by many state Medicaid agencies as performance measures, replacing less sophisticated measures of preventive services.

If the field is to develop practice- and program-based measures of disease prevalence, severity, and outcomes, the DQA is the obvious steward but would likely need the support and cooperation of agencies like CMS. For example, listed among the high priority measures in CMS' Medicare-focused Quality Payment Program is a dental outcome measure: "Percentage of children, age 0-20 years, who have had tooth decay or cavities during the measurement period."¹⁶ Presumably meant to refer to the Medicaid population, the prevalence measure currently has no data source or apparent active steward; however, as worded, it points to the type of measures that the oral health community is calling for and which the DQA is capable of developing into something useable. However, adoption

14. Committee on Oral Health Access to Services; Institute of Medicine and National Research Council. Improving access to oral health care for vulnerable and underserved populations. July 2011.

15. Dental Quality Alliance. Dental Quality Alliance: 2016 Annual Measures Review. June 2016. Available at: http://www.ada.org/~media/ADA/Science%20and%20Research/Files/DQA_2016_Annual_Measure_Review_Final_Report.pdf?la=en.

16. Centers for Medicare and Medicaid Services, Office of the National Coordinator for Health Information Technology. eCQI Resource Center: "Children Who Have Dental Decay or Cavities." Updated July 2017. Available at: <https://ecqi.healthit.gov/ecqm/measures/cms075v5>.

of such measures by state Medicaid programs, insurers, and providers will almost certainly require encouragement and technical assistance from CMS.

An interim step for states is the incorporation of oral health measurement priorities into state-level innovation and reform efforts, including:

- Accountable Care Organizations (ACOs);
- Medicaid redesign efforts through mechanisms like the Delivery System Reform Incentive Payment (DSRIP);
- Medicaid waivers; and
- Implementation of federal regulations aimed at improving accountability and quality.

For example, both New York and Massachusetts are pursuing major Medicaid redesign efforts that are slated to include ACO development; however, it isn't clear whether oral health will be a component of these plans.

Another opportunity is the development and/or implementation of oral health quality measures for Medicaid and CHIP programs through required comprehensive quality strategies. Recent Medicaid and CHIP managed care regulations require states to revise their quality strategies to evaluate and improve the quality of care for enrollees served by managed care plans.¹⁷ While some states like California have developed oral health-focused managed care quality measurement systems,

these new regulatory requirements create an incentive for all states to improve the level of data collected and establish meaningful measures of quality for oral health care beyond utilization.

Opportunities:

- CMS, the Health Resources and Services Administration (HRSA), and other federal agencies with an interest in quality and outcomes measurement should support the stewardship of oral health outcomes measures by the Dental Quality Alliance and provide assistance to state programs to test and adopt such measures.
- States should seek to incorporate oral health quality and outcomes measures in health care system reform efforts, including ACOs.
- State Medicaid and CHIP agencies should incorporate meaningful measures of oral health care quality into required comprehensive quality strategies.

¹⁷. 42 CFR 438.340.

Encouraging the development and deployment of health information technology that supports oral health integration and value-based care

The integration of oral health into the broader health care system is increasingly a priority as reflected in recent policy changes efforts to deliver oral health care in settings beyond the dental office. The ACA required that most private insurers cover certain pediatric oral health services delivered by primary care physicians, including oral health risk assessment and fluoride varnish application, the latter of which was already covered by almost every state Medicaid program.¹⁸ In addition, most Federally Qualified Health Centers provide direct dental services as part of a comprehensive approach to patient care.¹⁹ The co-location of medical and dental services presents an enormous opportunity for tracking patient oral health as a component of overall health and addressing oral health-related co-morbidities for patients with conditions like diabetes.

However, efforts to coordinate oral health care across medical and dental providers or to track oral health-related co-morbidities are frustrated by the fact that medical and dental electronic health records (EHRs) are typically separate systems, often even when dental and medical services are co-located. The lack of a common coding system for medical and dental care further complicates care delivery and tracking across multiple providers, reducing incentives for medical professionals

to provide oral health services and vice versa. In addition, dental coding still lags behind medical coding with respect to widely-adopted diagnostic codes, undermining the implementation of oral health outcomes measures.

For example, the DQA has developed a practice-level measure of cavities at recall which would allow providers and, eventually, payers to track the progression of tooth decay and effectiveness of treatment over time.²⁰ However, the measure currently relies on the use of International Classification of Diseases (ICD) codes, which are diagnostic codes almost exclusively used by medical professionals and hospital systems. Without dental diagnostic codes that are integrated into dental EHRs or, alternatively, the adoption of ICD coding by oral health providers, the implementation of more meaningful oral health quality measures is unlikely.

Federal agencies, Congress, and even insurers could play a significant role in advancing the development of oral health outcomes measures and the technology infrastructure necessary to support their implementation such as diagnostic coding and interoperable electronic health records. Through the “Meaningful Use” initiative, CMS is already supporting and incentivizing the

18. American Academy of Pediatrics. “Medicaid, private insurers paying pediatricians to apply fluoride varnish.” 27 July 2015. Available at: <http://www.aappublications.org/content/36/8/28.1>.

19. Oral Health Workforce Research Center. A national survey of federally qualified health centers (FQHCs): The impact of dental residency programs and student externship rotations on oral health delivery. May 2017. Available at: <http://www.oralhealthworkforce.org/wp-content/uploads/2017/05/052017d.pdf>.

20. Dental Quality Alliance. Practice level measures for quality improvement. 30 September 2016. Available at: http://www.ada.org/~media/ADA/Science%20and%20Research/Files/DQA_2016_Practice_Level_Measures_for_QI.pdf?1a=en.

improvement of EHRs to better capture useful data on diseases, disparities, and clinical outcomes. However, these efforts have been focused on medical EHRs as part of the Medicare program, which does not currently include a preventive dental benefit. As such, oral health is not a significant priority for federal, state, or private entities involved in EHR development.

The ADA has made efforts to put forth a dental diagnostic coding vocabulary that can be incorporated into EHR systems,²¹ but, without financial incentives to do so, neither medical nor dental providers will be quick to adopt additional codes.

Opportunities:

- CMS should emphasize oral health as a component of “Meaningful Use” and incentivize parallel efforts to improve dental EHRs and the interoperability of medical and dental EHR systems.
- HRSA should encourage adoption of unified coding for oral health services across medical and dental care delivery, especially FQHCs
- Payers of medical and dental care should test and incentivize the use of dental diagnostic coding and interoperable EHR systems.

21. American Dental Association. Newly approved standard enables electronic capture of patient diagnoses. 7 December 2016. Available at: <http://www.ada.org/en/publications/ada-news/2016-archive/december/newly-approved-standard-enables-electronic-capture-of-patient-diagnoses>.

Conclusion

Our ability to improve the oral health of children and adults depends significantly on having robust, accurate and updated data. Achieving a comprehensive and coordinated measurement system that emphasizes oral health outcomes, accountability, and impact across the myriad state and national programs can help us assess progress and craft new solutions. However, achieving this measurement system is a complex task. The policy and advocacy opportunities outlined in this brief cover only a fraction of the strategies necessary to realize such a vision. Yet, in combination with the driver diagram and measurement priorities matrix, these opportunities may serve as a starting point for the OH2020 network as we continue to build consensus toward this goal.

The Oral Health 2020 network can take a number of action steps to address these opportunities and demonstrate progress on the tertiary drivers of the OH2020 measurement goal. Such action steps include:

- Utilizing the network’s data and measurement group to identify the oral health data needs of network members as they relate to the OH2020 goals;
- Incorporating opportunities outlined in this document into the network’s policy agenda through the policy working group;
- Establishing relationships with federal and state agency officials to communicate opportunities for administrative and regulatory action aimed at making oral health data more timely, accessible, and meaningful;
- Sharing best practices across the network for oral health data collection, data analysis, measure development and implementation, and use of data to drive policy change; and
- Identify and cultivate new oral health champions within Congress and state legislatures so that policymakers are well-educated on the need for improving oral health data and measurement.

Appendix A – Measurement Priorities Matrix

Key Oral Health Measures Across the Lifespan								
Age in years	0–5	6–9	10–15	16–25	26–34	35–64	65+	
	Prevalence/ Severity of Caries							Untreated Caries
Oral Health Status	Parent-reported oral health status	Parent-reported oral health status	Parent-reported oral health status	Self-reported oral health status	Self-reported oral health status	Self-reported oral health status	Self-reported oral health status	Self-reported oral health status
Utilization	Annual use of dental/oral health services	Annual use of dental/oral health services	Annual use of dental/oral health services	Annual use of dental/oral health services	Annual use of dental/oral health services	Annual use of dental/oral health services	Annual use of dental/oral health services	Annual use of dental/oral health services
Access	Usual source of oral health care	Usual source of oral health care	Usual source of oral health care	Usual source of oral health care	Usual source of oral health care	Usual source of oral health care	Usual source of oral health care	Usual source of oral health care
Prevention	Dental insurance coverage by source	Dental insurance coverage by source	Dental insurance coverage by source	Dental insurance coverage by source	Dental insurance coverage by source	Dental insurance coverage by source	Dental insurance coverage by source	Dental insurance coverage by source
	Topical fluoride application & frequency	Dental sealants on first permanent molars Topical fluoride application & frequency	Dental sealants on second permanent molars	Tobacco counseling	Periodontal evaluation services for diabetics	Periodontal evaluation services for diabetics	Tobacco counseling	Tobacco counseling
Patient Satisfaction	Access to optimally fluoridated water	Access to optimally fluoridated water	Access to optimally fluoridated water	Access to optimally fluoridated water	Access to optimally fluoridated water	Access to optimally fluoridated water	Access to optimally fluoridated water	Access to optimally fluoridated water
	Patient satisfaction	Patient satisfaction	Patient satisfaction	Patient satisfaction	Patient satisfaction	Patient satisfaction	Patient satisfaction	Patient satisfaction