The mission of the National Network for Oral Health Access (NNOHA) is to improve the oral health of underserved populations and contribute to overall health through leadership, advocacy, and support to oral health providers in safety-net systems.

September 2019

Note: The information in this document was accurate at the time of this printing. As regulations and information regarding Health Centers are not static, NNOHA recommends readers verify any critical information with different state/federal regulations and changes that may have occurred since printing.
# Chapter Six: Quality

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Executive Summary
Health centers strive to deliver quality care that leads to positive patient outcomes. Health centers play a critical role in the health care system. The Health Resources and Services Administration (HRSA) requires all health centers to regularly measure and improve the quality of care within their programs.

This chapter explores one facet of a quality oral health dental program, quality improvement (QI). QI is needed for health centers to measure success and achieve goals of improving patient health outcomes. While there are several models for quality improvement, this chapter focuses on two utilized by the HRSA Bureau of Primary Health Care Health Disparities collaboratives: The Chronic Care Model and the Model for Improvement.

This chapter also emphasizes the importance of staying up-to-date with electronic dental record developments and emerging health concepts, such as patient-centered health homes and value-based reimbursement. The chapter also reviews other aspects that influence QI like population health and care coordination. Several QI tools and resources are introduced and provided for oral health programs to implement or enhance their QI program including helpful links, case studies, and the NNOHA Health Center Dental Dashboard©.
1. Introduction
The health care delivery system is constantly experiencing major transformations. Clinicians must adapt to changes in payer and information systems, as well as rapid technological advances. The need to achieve and improve quality remains constant regardless of other changes, and in fact, quality is central to health care delivery system reform efforts. Oral health providers, especially those practicing in safety-net settings, like health centers, are not exempt from these pressures. In fact, given their unique program focus, health centers are required to provide data demonstrating their ability to deliver quality health care. This uniquely positions health centers to lead the transformation of the dental care delivery system in patient-centered, high quality ways.

The Institute of Medicine (IOM) defines health care quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”1 The IOM further describes the following six domains as essential standards for the provision of quality health care services:

1. **SAFETY**: Avoid injuries to patients from care that is intended to help them.
2. **EFFECTIVENESS**: Provide services based on scientific knowledge to all who can benefit and refrain from providing services to those unlikely to benefit.
3. **PATIENT-CENTEREDNESS**: Provide care that is respectful of and responsive to individual patient preferences, needs, and values, while ensuring that what the patient values and believes guide all clinical decisions.
4. **TIMELINESS**: Reduce waits and harmful delays for those who receive and give care.
5. **EFFICIENCY**: Avoid waste of equipment, supplies, ideas, and energy.
6. **EQUITY**: Provide consistent quality of care for all patients regardless of gender, ethnicity, geographic location, and socioeconomic status.

The focus on improving quality and defining and setting overarching goals for quality in health care have stemmed from some important insights about how our delivery systems have been performing, particularly over the past twenty years. Dr. Paul Glassman specifies four drivers for the quality movement in health care2, including:

1. Skyrocketing costs unrelated to improvements in outcomes.
2. Profound health disparities in populations in spite of scientific advances in care.
3. Understanding of harm and variability produced by the system.
4. Increased consumer awareness of these problems.

Attention to quality is vital in the current healthcare environment, and dentistry is not immune to the overarching concerns that have led to disparities and inequities in outcomes. Health centers are designed to address these concerns, and oral health programs must engage in leading this work for dentistry and developing the skills to transform and improve systems that will continuously deliver quality. This requires a transition from traditional definitions of procedural quality in dentistry to systems that more broadly incorporate all dimensions noted by the IOM.
2. Learning Objectives

Developed specifically for oral health programs, this chapter provides an overview of quality in health center dental settings and focuses on quality improvement (QI) concepts. Quality assurance (QA) is covered in Chapter 4 of this series, *Risk Management*. The content goals of this chapter are two-fold:

1. Provide tools to assist oral health teams in achieving positive oral health quality outcomes, including improved patient satisfaction; and
2. Describe the role of measurement to improve quality by creating focus through the effective and efficient use of resources.

After reading this chapter, the reader should be able to:

- Define and understand quality improvement.
- Understand basic concepts of population health.
- Understand the use of QI tools and identify opportunities for their use.
- Understand the use of measurement for QI and emerging measures applicable to health center dental programs.
- Understand future influences on quality.

3. Relevant Authorities

Specifically, within health centers, a focus on quality is a required part of the design. Having an active quality improvement and quality assurance program is necessary to maintain program compliance with Health Resources and Services Administration’s (HRSA) requirements and organizational malpractice coverage.

HRSA’s Bureau for Primary Health Care (BPHC) outlines quality care as care that is evidence-based, appropriate, well-coordinated, safe, and patient-centered. Health centers must demonstrate compliance in quality improvement. The complete requirements and compliance criteria for quality improvement/assurance can be found in the HRSA Health Center Program Compliance Manual. Follow the link in the Helpful Links Section on page 24.
Section 330(k)(3)(C) of the PHS Act; and 42 CFR 51c.110, 42 CFR 51c.303(b), 42 CFR 51c.303(c), 42 CFR 51c.304(d)(3)(iv-vi), 42 CFR 56.111, 42 CFR 56.303(b), 42 CFR 56.303(c), and 42 CFR 56.304(d)(4)(v-vii)

Health center has an ongoing Quality Improvement/Quality Assurance (QI/QA) program that includes clinical services and management, and that maintains the confidentiality of patient records.

The QI/QA program must:

- Include a clinical director whose focus of responsibility is to support the quality improvement/assurance program and the provision of high quality patient care;
- Include periodic assessment of the appropriateness of the utilization of services and the quality of services provided or proposed to be provided to individuals served by the health center; and such assessments shall:
- Be conducted by physicians or by other licensed health professionals under the supervision of physicians;
- Be based on the systematic collection and evaluation of patient records; and
- Identify and document the necessity for change in the provision of services by the health center and result in the institution of such change, where indicated.

(Section 330(k)(3)(C) of the PHS Act, 45 CFR Part 74.25 (c)(2), (3) and 42 CFR Part 51c.303(c)(1-2))

Additionally, the Federal Tort and Claims Act (FTCA) deeming application process requires the submission of the health center’s board approved QI/QA committee minutes in order to document quality of care activities. Further information regarding FTCA can be found by following the link in the Helpful Link Section on page 24.

3. Quality Assurance and Quality Improvement

QA and QI are two important but distinct concepts for a health center’s performance improvement program. At a high level, the overarching system-based goals for these activities are different; QA benchmarks, while QI transforms and evolves. The message here is not that quality improvement is a better approach; the health center quality team must embrace both concepts to improve outcomes for the patients they are servicing.

<table>
<thead>
<tr>
<th>QUALITY ASSURANCE</th>
<th>QUALITY IMPROVEMENT</th>
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</thead>
<tbody>
<tr>
<td>Delegated to a few.</td>
<td>Embraced by all as everyone’s job.</td>
</tr>
<tr>
<td>Focus on individuals, outliers.</td>
<td>Focus on processes.</td>
</tr>
<tr>
<td>Works towards endpoints.</td>
<td>Has no endpoints (continuous).</td>
</tr>
<tr>
<td>Ensures minimum standard is met.</td>
<td>Assumes/desires maximum potential.</td>
</tr>
<tr>
<td>Retrospective, detection.</td>
<td>Proactive, preventive.</td>
</tr>
<tr>
<td>Function/provider focused.</td>
<td>Customer/population focused.</td>
</tr>
</tbody>
</table>
QA is the traditional approach to monitoring quality and is used to examine a particular procedure or process in order to ensure that procedure or process is up to the expected level of quality standards. If deficiencies are identified, plans of correction are developed to address the problem.3

QA efforts focus on a known problem and retroactively try to fix that problem. Examples of a health center’s QA activities include reviews of adverse outcomes, clinical records by peers, and patient surveys. Although an important and integral part of measuring quality, these activities are not the focus of this chapter. For more information on Quality Assurance, see the NNOHA Operations Manual Chapter 4 on Risk Management by following the link in the Helpful Link Section on page 24.

Quality Improvement (QI) is a systematic, formal approach to the analysis of practice performance and efforts to improve that performance. It is aimed at improvement – measuring where you are and identifying specific changes to improve. It attempts to avoid attributing blame and focuses on creating systems to prevent errors from happening.4 Data is collected to establish a “baseline” for an aspect of the health center’s dental program, and the QI process focuses on developing methods to improve future outcomes of the oral health program derived from the baseline data.

QI processes require the following basic concepts5:

- **Establish a culture of quality in your practice**: An effective QI plan provides a roadmap for health centers, focusing their efforts on specific quality goals. It shows the health center’s passion for improving care provided to patients. The QI team should include staff members from all areas within the health center, including administrative departments, providers, executive leadership and support staff. 
- **Determine potential areas of improvement**: Improvement decisions are influenced by numerous variables in health centers including resources, talent, motivation, Board preferences and population needs. QI plans should directly align services with program goals, provide specific measurable milestones and identify timelines. Health centers can use established quality measures to help set specific priorities. 
- **Collect and analyze data**: Developing a baseline is critical for all QI projects. Starting from that baseline, health centers can set QI goals and work within the health center to reach those goals. 
- **Communicate your results**: Successes and failures should be shared throughout the health center. 
- **Commit to ongoing evaluation**: QI focuses on continuously increasing quality standards. QI efforts do not stop, but new goals are set to constantly focus on improving patient care. 
- **Spread your successes**: Best practices should be shared with other organizations or other relevant authorities.

The same tools are often used for both QA and QI. Common QI tools and practices are addressed later in this chapter; for more on QA tools, see the NNOHA Operations Manual on Risk Management. (A link to the Operations Manuals is in the Helpful Links Section on page 24). A health center dental program should utilize a combination of QA and QI tools to effectively monitor and improve the quality of care delivered.
Quality Improvement Plans

QA and QI should complement each other. The benchmarks set through QA may reveal gaps for which a health center might need to put a QI plan in place to address. An effective QI plan should:

- Directly align services to program goals.
- Provide specific measurable milestones or targets.
- Identify timelines.
- Make improvement decisions influenced by numerous variables including population needs, resources, motivation, and Board priorities. A sample quality improvement plan is included below.

### SAMPLE PROJECT-SPECIFIC QUALITY IMPROVEMENT PLAN

<table>
<thead>
<tr>
<th>Project Goal:</th>
<th>By the end of 2020, increase the number of patients completing Phase 1 treatment within 12 months of initiating a treatment plan from 40% to 50%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Team Leader:</td>
<td>Dr. Green or Ms. Brown (QI Director)</td>
</tr>
<tr>
<td>Project Team:</td>
<td>Dr. Blue, Ms. White (dental assistant), Ms. Red (dental hygienist), Mr. Black (administrative assistant).</td>
</tr>
<tr>
<td>Baseline:</td>
<td>To be determined</td>
</tr>
<tr>
<td>Project Timeline:</td>
<td>One year (include tasks, completion dates, and staff assigned to tasks)</td>
</tr>
<tr>
<td>First Team Meeting:</td>
<td>2-3pm on December 2, 2019</td>
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</tbody>
</table>

### 2020 Project Timeline and Task Assignment

<table>
<thead>
<tr>
<th>TASK</th>
<th>MONTH</th>
<th>RESPONSIBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate data collection</td>
<td>January</td>
<td>Red and Black</td>
</tr>
<tr>
<td>Compile results</td>
<td>February</td>
<td>White and Red</td>
</tr>
<tr>
<td>Analyze data</td>
<td>March</td>
<td>White</td>
</tr>
<tr>
<td>Present results at staff meeting</td>
<td>March</td>
<td>Group</td>
</tr>
<tr>
<td>Develop improvement plan</td>
<td>April</td>
<td>Green, Blue, White</td>
</tr>
<tr>
<td>Implement plan on pilot basis</td>
<td>May-September</td>
<td>Group</td>
</tr>
<tr>
<td>Evaluate plan/collect &amp; analyze data</td>
<td>September</td>
<td>Red, Black, White</td>
</tr>
</tbody>
</table>
4. Population Health

By the nature of designation as a federally qualified health center and requisite focus on a medically underserved population, health centers must be invested in the practice of population health. Kindig and Stoddart defined population health to refer to the “health outcomes of a group of individuals, including the distribution of such outcomes within the group.” By this definition, health centers must transition from care paradigms that focus on the care of individuals that are common in dental education and dental practice to one that focuses on the improvement of health for populations of people; this requires understanding the risk factors and determinants that create the pattern of disease seen in the communities we serve. Reference the social determinants of health diagram below.

Because population health is not a static achievement (i.e. it is a continuous process), success in this area requires a learning perspective and adaptability. This includes understanding how to apply emerging evidence to practice, consider alternative methods of reaching community members in patient-centered ways that address social determinants of health, and implement and advocate for health promoting public policies within community systems.

Foundational to this skillset is a command of improvement science and understanding how measurement can support the identification of the changes in processes that are effective in improving outcomes. Through these skills, health centers can identify which and to what degree subpopulations in their community are most in need of support, what interventions are most likely to make an impact for those groups, and design systems that are more likely to be well received by these groups. These changes will naturally lead health center dental programs to move away from traditional surgical approaches of care and towards more prevention-focused, culturally appropriate care models that leverage team members to the top of their scope. These kinds of changes are what place health centers
in a unique position as innovators and leaders for the future of how care can and should be provided. Quality improvement skills are critical to making this transition happen.

Population health is “health outcomes of a group of individuals, including the distribution of such outcomes within in the group.”

5. Quality Improvement Tools
QI models present a systematic, formal framework for clinical practice and process improvement. The Chronic Care Model and the Model for Improvement are two of the most commonly used frameworks for QI. The Chronic Care Model is a validated, proven template for system change, while the Model for Improvement provides the technical muscle to improve the processes that drive those system changes. An Improvement Glossary with additional relevant details and terms regarding these models are available in Appendix A.

The Chronic Care Model
The Chronic Care Model (Figure 1) originated from a synthesis of scientific literature in the early 1990’s and became part of a national program of the Robert Wood Johnson Foundation in 1998. The model serves as a framework for organizations to develop and implement the Patient Centered Medical [Health] Home (PCMH or PCHH) concept. The model is built on the notion that positive interactions between a well-informed, empowered patient and a properly-equipped, proactive health care team lead to improvements in health outcomes. The Chronic Care Model identifies the following elements, related to health systems where populations of patients engage and are essential to ensuring and improving the quality of care:

![The Chronic Care Model Diagram](image-url)
Community Resources and Policies: To help improve health outcomes, health centers can help mobilize community resources through promotion and partnerships. Examples of community resources include cooking classes at a local community center or after school activities at a local library. Health centers can encourage their patients to participate in community programs, advocate for health policies, and cultivate partnerships with community organizations. Stronger links between the health center and community resources (e.g., outside health care providers, schools, health departments) may improve the effectiveness of the oral health program and its referral system.

Health Systems and Care Organization: For an oral health QI program to succeed, it must have the full support of the organization structure and senior leadership (e.g. CEO, Board of Directors, leadership committees). The health care organization should develop a culture that promotes high quality care. Within the health care system, the following elements are crucial to quality:

- **Self-Management Support**: Effective self-management support empowers patients to better manage their health and health care. This includes acknowledging that the patient has a critical role in their own health. It is important to consider how much time and control patients have in managing their own health. Self-management support involves using proven strategies like motivational interviewing to elicit patient-identified goals and motivation for behavioral change, peer and social support, action planning, and follow-up.

- **Delivery System Design**: The design of the health center assures efficient and effective care for the patient. In order for this to happen, a health center’s delivery system must be coordinated. The use of a multidisciplinary team approach ensures that patients can access and receive quality care, while also allowing health care professionals to maintain current and centralized information. This also includes clinical case management for complex patients and provision of care that fits the patient’s cultural background and consideration for how facilities and programs are designed to best serve patients in the health center and in the community.

- **Decision Support**: Health programs must promote health care that is consistent with evidence-based practices and patient preferences. Health centers should incorporate evidence-based guidelines into clinical practice and leverage written protocols and technology-based tools to support providers to make effective real-time recommendations about patient care.

- **Clinical Information Systems**: This element of the Chronic Care Model involves organizing patient and population health data to facilitate improved health care. These systems can provide individual health care planning and care coordination for the patient. To make appropriate clinical decisions, oral health providers need timely and clinically relevant information about each patient, as well as their total patient population. Health centers can obtain this information through health centers’ practice management systems, registries, or independently created tracking models, such as those outlined at the end of this chapter.

The flexibility of the Chronic Care Model enables it to be successfully applied in various health care settings, target populations, and for many chronic health care conditions, including oral diseases. With consistent use, the model can result in healthier patients, more satisfied providers, and improved cost savings.10 Oral health and the scope of care provided by health center dental programs concentrate on
two primary oral diseases: dental caries and periodontal disease. These are both chronic diseases for which traditional surgical or short-term approaches cannot support long-term improvement in health or outcomes. The Chronic Care Model can be used to improve the design of systems that can support better oral health outcomes. A health center could develop a program or strategy to address information system design or utilize patient self-management for caries management. NNOHA’s Oral Health Disparities Pilot demonstrated the Chronic Care Model could be used to manage dental caries and periodontal disease. More information on how this pilot program leveraged the Chronic Care Model can be found by following the link in the Helpful Links Section on page 24.

The Model for Improvement

The Model for Improvement enables an organization to approach QI through rapid cycles of change and continual feedback on the effectiveness of those changes. When used in conjunction with the Chronic Care Model, the Model for Improvement can lead to positive, sustainable changes in the quality of oral health care.

The Model for Improvement (Figure 2) is comprised of three questions and a test cycle. In combination, they are the framework for deploying the scientific method to evaluate ideas for improvement through testing hypotheses (ideas for change) and acting upon the findings from each test (i.e. abandoning, adopting, or adjusting a change idea).

![Figure 2. The Model for Improvement](image-url)
Additionally, health centers can apply this model in conjunction with other established improvement processes. The mechanism for testing ideas within the Model for Improvement is the Plan-Do-Study-Act (PDSA) Cycle (Figure 3). The PDSA cycle was originally developed by Walter A. Shewhart as the Plan-Do-Check-Act (PDCA) cycle. W. Edwards Deming modified Shewhart’s cycle to PDSA, replacing “check” with “study.” More information on the Model for Improvement and PDSA Cycle Form can be found in Appendix B and C. For practice with quality improvement, case studies are available in Appendix D.

“Start small: one patient, one provider, one day. Do not be afraid to try something new or different because you have done things the same way for years. Change is difficult, but rewarding.”

_Nasson Health Care, Maine_
**MODEL FOR IMPROVEMENT BEST PRACTICES**

| WHY TEST? | Increase belief that change(s) will work.  
|           | Predict expected improvements.  
|           | Learn how to adapt to the local environment.  
|           | Evaluate costs and side effects.  
|           | Minimize resistance upon implementation. |

| WHAT CONSTITUTES A TEST? | The test was planned, including:  
|                          | - There was a plan for collecting data.  
|                          | - There was a prediction about results.  
|                          | - The plan was attempted.  
|                          | - Time was set aside to analyze data and study results.  
|                          | - The action was rationally based on what was learned. |

| PRINCIPLES FOR TESTING | Test on a small scale (e.g. one patient, one huddle, one provider, one day, one shift, etc.).  
|                        | Collect data over time.  
|                        | Useful data beats perfect data.  
|                        | Record challenges with data collection.  
|                        | Build knowledge sequentially. |

**6. Measurement**

One of the most important steps in the improvement process is to establish measures for evaluation. Working towards improvement in the measures is what drives system change. Measures can be derived from national goals (e.g. Healthy People 2020), existing data sets (e.g. Healthcare Effectiveness Data and Information Set (HEDIS), National Committee for Quality Assurance (NCQA)), HRSA measures, or other metrics that are important to improving the oral health of the populations that health centers serve. There are different types of measures, all of which are important to understand in quality improvement.

**TYPES OF MEASURES**

| PROCESS MEASURES (LAGGING) | Evaluates the degree to which a step in a process or a clinical activity occurred.  
|                           | *Are we doing what we must to get the outcome we seek?*  
|                           | Example: Sealant placement |

| OUTCOME MEASURES (LEADING) | Evaluate the impact an intervention has on patient health.  
|                           | *Are we getting the outcome we seek?*  
|                           | Example: Caries reduction |

HRSA requires all health centers to regularly measure and improve the quality of care within their department. In 2015, HRSA added a requirement that health centers must report the total amount of sealants placed on children between the ages of 6-9. Details regarding this measure are outlined in NNOHA’s UDS Sealant FAQ. The link for the FAQ is available in the Helpful Links Section on page 24.
While change can be slow, there has been increased attention and interest on oral health metrics nationwide. The federal government and a variety of private sector organizations are engaged in oral health quality activities, such as the development of measures, guidelines, and other data sources. Even with the increased focus on oral health quality and measurement, there is no national consensus on how to define quality in oral health care or how to determine oral health quality measures.

There are many dental quality improvement metrics that can be useful to a health center dental program. The NNOHA Health Center Dental Dashboard© has developed a core set of metrics to help health centers manage their programs. The Health Center Dental Dashboard will be described in more detail later in Section 7 of this manual. The Dental Quality Alliance is a dentist-driven organization that also developed metrics that can be used in the health center. For more information about the Dental Quality Alliance metrics as well as sample metrics, go to the Helpful Links Section on page 25. Other sample quality metrics can be found in Appendix E.

There are various visual tools that can be utilized for quality improvement. One useful tool is a run chart. Run charts help with testing the Model for Improvement by painting a picture of the health center’s quality improvement work. Run charts allow health centers to monitor the performance over time. They also provide comparison information of performance before and after the implementation of a quality improvement strategy, thus telling the story of a quality improvement for that activity.

Figure 4 demonstrates how quality improvement can be monitored and visualized through a run chart. The run chart shows dental sealant placement. The dotted red line indicates the time when the organization began to engage in quality improvement activities.

![Figure 4. Run chart for quality improvement](image-url)
7. NNOHA Health Center Dental Dashboard©

The NNOHA Health Center Dental Dashboard is an evolution and indicator of the measurement journey for dentistry and health center dental programs. The Health Center Dental Dashboard was designed to offer valuable resources and real-world guidance on setting up a dental dashboard for organizations.

Dashboard Development:

NNOHA has had a long-standing strategic priority to develop a dashboard of metrics for health center dental programs. In 2012, a small group of health centers approached the Delta Dental of Colorado Foundation (DDCOF) and the Washington Dental Service Foundation (now Arcora Foundation) to request support in developing a set of oral health quality measures that could drive quality in their health center dental programs. The Dental Dashboard is being used today to guide dental QI and innovation work across the country.

Why Use a Dashboard?

A dashboard makes measurement easy. It is a quick, visual tool designed to give health centers a snapshot of their department’s performance. By keeping track of the big picture, the leadership team can make informed decisions for the benefit of the dental department, the organization, and most importantly, the patients. Dashboards give a quick status update for key measures and allow health center leadership to monitor factors that affect quality and drive performance. Regularly seeing the data for an organization makes it much easier to respond quickly to areas of concern, or to change courses of action.

“Since we’ve been tracking measures, we’re providing higher quality care and modifying systems along the way. Our team has become a stronger, more unified team since we make changes together and implemented them as a team.”

Community Health Center of Richmond, New York

Dental Dashboard Tools

- The Health Center Dental Dashboard User’s Guide is a companion to support the implementation and use of the Dental Dashboard. It outlines a set of 15 oral health measures for health centers to use as a part of their QI efforts, to more effectively monitor and measure quality, and to drive performance within their dental programs. The in-depth User’s Guide includes:
  - How the recommended measures were selected.
  - Numerator and denominator specifics.
  - Codes needed to track the measures.
  - Tips for collecting the data.
  - Instructions on how to access the online template.

To access the User’s Guide, follow the link in the Helpful Link Section on page 24.
• **The Dental Dashboard Template** is an interactive tool that allows users to track and monitor a set of measures, and create a visual representation of the measures. The purpose of the dashboard is to give health center dental programs access to timely data that allows for rapid feedback and action on quality, productivity, and costs. Access the template using the link in the Helpful Links Section on page 24.

**Dental Dashboard Measures**
The Dental Dashboard consists of 15 measures which are organized into three categories: Population Health, Fiscal and Operational Sustainability, and Patient Satisfaction.

<table>
<thead>
<tr>
<th>Population Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Caries at Recall</td>
</tr>
<tr>
<td>• Risk assessments of all dental patients</td>
</tr>
<tr>
<td>• Oral evaluation and/or risk assessment</td>
</tr>
<tr>
<td>• Sealants (6-9 years old)</td>
</tr>
<tr>
<td>• Sealants (10-14 years old)</td>
</tr>
<tr>
<td>• Topical fluoride</td>
</tr>
<tr>
<td>• Self-management goal setting</td>
</tr>
<tr>
<td>• Self-management goal review</td>
</tr>
<tr>
<td>• Treatment plan completion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiscal and Operational Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recall rates</td>
</tr>
<tr>
<td>• No shows</td>
</tr>
<tr>
<td>• Gross charges (production) per encounter</td>
</tr>
<tr>
<td>• Encounters per hour</td>
</tr>
<tr>
<td>• Direct cost per visit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recommendations to family and friends.</td>
</tr>
</tbody>
</table>

**8. Health IT and Using Data for Quality Improvement**
Currently health center dental programs vary widely in their ability to both gather data and organize that data into usable information to improve health. Individual electronic health records also have varying capacities to access and report data. While Meaningful Use funds were intended to create a fully integrated health care IT system, oral health IT systems often still experienced difficulties with integration. Although some interfacing may exist, few electronic dental records (EDR) are fully integrated with their medical components. This can create challenges to ideal care coordination and interprofessional practice.

An ideal EDR includes:

• Ability to customize treatment notes in a way to follow standard policies and compliance guidelines.
• Ability to link with other health disciplines, such as medical and behavioral health, to ensure a complete health history, medication reconciliation, and ease of communication between health care providers regarding shared patients.
• Integration of electronic patient management systems to allow visibility to patient demographic information, schedules, facilitation the ability to schedule medical referral appointments directly from the dental department, and create dental referrals directly from medical and other departments.
• Ability to easily extract, monitor, and report data.

Ideally, an EDR would allow access to real time data by organization, dental site, and dental provider. This type of data allows for better understanding of health center and provider performance. Timely data also gives the ability to identify areas in need for improvement, opening the door for QI activities and ideas for small-scale testing.

While not universally used, diagnostic codes can be utilized in dental quality improvement to track data. These codes are required to quantify disease extent and health improvement. Health center dental programs must strongly rely on their EDR to track and document diagnostic codes as well as develop reports to help drive QI.

Obtaining data is only the first step. The critical component is utilizing that data in a manner that can improve quality. One way to do that is to form a QI committee of providers, front office staff, and operations personnel. This committee can map out current workflows driving the specific target of each metric and help drive change within their program by engaging QI processes described earlier in this chapter. Once optimal levels are achieved, the same committee can be used to support maintenance of a desired level of performance.

Health IT provides many benefits including faster and easier access to data, information sharing opportunities, and ability to evaluate all data. Although Health IT systems may often be seen as a barrier within health center dental programs, it is essential that it is leveraged for QI initiatives. While vendors are continuously making changes and upgrades to systems, there is often a lag to deliver software to support the reporting needs of health centers. As the demand by payers for proof of quality increases, so will the demands on Health IT to provide health centers the means to measure that quality.
9. Future Influences on Quality

There are a number of changes happening in the dental profession that may have profound changes on the quality of the dental care delivered in health centers, many of which are driven by the Quadruple Aim: Quality, Cost, Patient Experience, and Provider Experience.¹⁷

Quality Population Health Improvement: Risk-Based Managed Care

Medicaid managed care has already been established in multiple states. This type of managed care typically differs little from the way Medicaid is reimbursed in non-managed care states. Instead of the state directly reimbursing the health centers, the state pays the Dental Managed Care Plans who then reimburse the health centers. There are variations of dental managed care that differ in their reimbursement structures, ranging from Prospective Payment Systems (PPS) to Fee-for-Service (FFS) and value-based reimbursement (VBR). Overall, there is little effect on the type of dental care delivered to patients. End stage surgical interventions still dominate the treatment spectrum.

Risk-based managed care contracts are currently rare, but are beginning to gain attention and it has the potential to radically change the delivery and quality of care that providers deliver. In risk-based managed care contracts, health center dental programs accept up-side and down-side risk. Upside risk means that the health center shares in any monetary savings the Dental Managed Care Plans may have on the panel of patients that the health center is assigned. As Dental Managed Care Plans can support the improvement of health and reduction of specialty referrals and/or emergency room utilization, the better chance the health center has in sharing in the cost savings. Downside risk means the health center shares in any cost overruns, including payment to the Dental Managed Care Plans for a portion of the cost overruns if they occur. Downside risks increase when there is no attention paid to lowering specialty referrals or lowering caries rates or periodontal disease.

In a risk-based model, health center dental programs will have to pay a great deal of attention to preventative care, and this has implications for the types of interventions employed by the dental program and for whom and in what settings the program might seek to administer them (e.g. promoting dental care in primary care medical settings, utilizing silver diamine fluoride, etc.). If health centers will be responsible for specialty care, dental programs may consider incorporating more specialists within their facilities or leveraging contracts with community specialists to improve access and lower costs. While health centers are already technically responsible for the oral health of the communities served today, risk-based contracts increase health centers’ financial responsibility to an entire panel of patients. This is a brave new world for health centers that will require a true paradigm change in how oral health care is delivered.

Cost of Care: Value Based Reimbursement/Pay for Performance

There are many states that operate under Medicaid/Medicare waivers from the Centers for Medicare and Medicaid Services (CMS). VBR, also known as Pay for Performance (P4P), has become a common
way to reimburse health center medical programs that achieve certain metric benchmarks. It offers financial incentives for meeting specific performance metrics selected by states and/or managed care plans. Disincentives can also be part of VBR if the health center does not meet the designated outcomes.

VBR for oral health is a relatively new development but is gaining traction across the country. Federally, there is potential for quality incentive payments for performance related to UDS measures and a number of states are reimbursing managed care plans for dental metrics, who are passing these reimbursements to the health centers.

Quality measures and VBR will require more robust IT capabilities on the local level. As described in the previous Health IT section (section 9), an ideal EDR allows for timely access to data. Health centers will need to be able to extrapolate data in various ways including by provider or by dental clinic in order to comply with and report on VBR guidelines.

Greater visibility to performance will require health center dental programs to develop processes to ‘move the dial’ in the effort to gain incentive funding.

**Patient Experience: Patient Satisfaction Surveys**

Patient satisfaction surveys are common in health centers, but in the future we will likely see a focus shift from satisfaction with care to attempts to measure the patients’ experience of care. A patient-reported outcome (PROM) measures the patients’ perceptions of their health outcomes. A patient-reported experience measure (PREM) is a survey of a patient’s perception of their full personal experience of the healthcare he/she have received and not just single events. His/her total experience includes interactions with the health care system, the health plans, billing, and interaction with providers and staff.

PROMs and PREMs provide a more accurate information of how patients view the care they are provided. The more the patients’ experience is understood, the better care health centers can ultimately provide. There are other measurement tools such as the Oral Health Impact Profile (OHIP) that have been used to demonstrate the impact of oral health treatment on quality of life scores. The OHIP questionnaire can be found here: [https://www.researchgate.net/figure/OHIP-14-questionnaire_fig1_309875550](https://www.researchgate.net/figure/OHIP-14-questionnaire_fig1_309875550)

**Provider Satisfaction**

The American Academy of Family Physicians identified high rates of professional burnout among physicians in the United States. Burnout is a psychological syndrome in response to interpersonal stressors on the job.\(^{14}\) Electronic health records, intense financial pressures, expanded work hours, budget shortages, family expectations, and quality metric expectations have been identified as contributors to burnout. Provider satisfaction can impact patient outcomes through increased provider error and quality of patient interaction. Many health care systems are beginning to integrate system-level interventions to improve provider satisfaction, including incentive programs, variable benefit programs, and offering a greater variety of schedules for providers. However, far more work will be needed to address increasingly critical areas of concern.
10. Summary
Defined by the Institute of Medicine’s six essential domains, quality health care is safe, effective, patient-centered, timely, efficient, and equitable. Through the development of and greater engagement in the use of quality improvement techniques, measurement skills, and evidence-based practices, health centers are leading the way forward in dentistry to a future that more greatly focuses on patient-centered outcomes and the health of populations.

The oral health care system is undergoing transformations that will require health center dental programs and dental professionals to adapt the way care is delivered. Despite these changes, the importance of delivering quality health care remains the same. The intention of this Quality Chapter of the NNOHA Operations Manual is to provide oral health professionals with an understanding of QI concepts and tools to improve their practices and engage in these health care transformations.

Although success in achieving quality oral health programs requires considerable effort, it is attainable through small changes over time and staff commitment to ensuring the best possible patient care.

11. Frequently Asked Questions:

How can I keep staff motivated to continuously improve quality?

The entire team needs to understand the reasoning behind quality improvement. Sharing and celebrating successes is a good way to keep staff motivated as is asking your entire team to strategize to tackle challenges. Post your goals and results in an area where the entire team can see them so that your team is constantly brainstorming new ideas.

What is a good goal for the HRSA sealant measure?

QI is about improving the baseline data through small calculated changes. The national average for the HRSA sealant measure is 52.8% (2018), but because each health center faces different challenges, the amount of improvement will be variable. The goal for your health center should be based on your baseline data and what improvements are reasonably achievable. Focus your efforts on determining baseline performance, setting performance goals, and aiming for steady improvement over time.

What are some quality measures for medical/dental integration?

Collectively working toward common quality measures can be an effective strategy to unite all programs within a health center. To further link dental and medical quality measures, consider finding target dental populations within medical populations. For instance, increasing the percentage of children ages 12-24 months receiving medical care at the health center who have also had a dental visit within the last year, or increasing the percentage of pregnant or diabetic medical patients who are also dental patients. Measures like HgA1c levels before and after periodontal treatment can help evaluate efficacy of dental care on health outcomes.
How do I get buy-in from staff to shift towards more prevention-oriented care?

Practicing evidence-based dentistry is the standard of care and should be the basis for all treatment decisions. The current evidence for caries management is trending towards less surgical dentistry and towards more minimally invasive care, focused on the management of disease over time through the use of primary and secondary preventive techniques. Discussing studies on current evidence-based dentistry at staff or provider meetings can help to gain provider buy-in, recognizing that this is a paradigm shift for which health center staff will require support and time to learn and apply.

How do I use my electronic dental record (EDR) to track quality?

All EDRs are different and each has its own strengths and weaknesses. Most EDRs have the ability to track some dental measures, but most require the use of “smart codes” to track accurate data. In most cases, the EDR must be customized to accomplish QI monitoring. Some QA/QI programs are using ICD-10 codes to track whether or not certain procedures are performed based on a particular diagnosis. Although these codes may not perfectly measure all quality metrics within current systems, tracking metrics using diagnostic codes will be an important QI tool in the future.

How do I get buy-in (dedicated time and resources) from leadership on the importance of QI?

The oral health program should be represented in the health center’s overall QI program. Finding opportunities to highlight and invest in the QI efforts of the dental program should be a priority of the health center. Doing so will enable greater visibility and resource allocation to dental QI work by the health center board and staff. Oral health metrics should be included in the overall health center quality measures. Most systems of reimbursement in healthcare are moving from a quantity of care provided basis to a quality of care provided basis. The leadership/board should be supportive of the oral health team’s effort to be at the frontline of this movement.

How do you read a run chart?

A run chart provides a graphical display of data over time. Run charts help assess change and stability in processes visually. A run chart will have an X-axis (horizontal) and Y-axis (vertical). The run chart will show a measurement on the Y-axis over time on the X-axis. The Institute for Healthcare Improvement has a run chart tool that provides instructions for run charts and a template to create a run chart. Find the run chart tool in the Helpful Links section on page 25.
12. Helpful Links

NNOHA Links

● NNOHA Website: http://www.nnoha.org/

● NNOHA Operations Manuals: https://www.nnoha.org/resources/operations-manual/

● NNOHA Health Center Dental Dashboard®: https://www.nnoha.org/resources/dental-dashboard-information/

● NNOHA Dental Dashboard Collaborative: https://www.nnoha.org/programs-initiatives/dashboard-collaborative/


● NNOHA’s UDS Sealant Measure FAQ: http://www.nnoha.org/resources/hrsa-sealant-measure-faqs/

HRSA LINKS


• Quality Improvement & Risk Management Training: http://www.hrsa.gov/publichealth/guidelines/qualityimprovement.html

• Quality Improvement: https://bphc.hrsa.gov/qualityimprovement/clinicalquality/qualityimprovement.html

• The Provider’s Guide to Quality and Culture: https://www.hrsa.gov/cultural-competence/index.html


• State Primary Care Associations: https://bphc.hrsa.gov/qualityimprovement/strategicpartnerships/ncapca/associations.html

• Assuring a QI/QA Plan meets HRSA Quality Requirements: https://www.hrsa.gov/sites/default/files/quality/toolbox/508pdfs/qualityimprovement.pdf

**Other Useful Links**

• AHRQ Effective Health Care: http://effectivehealthcare.ahrq.gov/

• American Academy of Pediatric Dentistry: http://www.aapd.org

• American Dental Association Evidence-Based Dentistry Site: http://ebd.ada.org/

• Association of Maternal & Child Health Programs: http://www.amchp.org

• Centers for Medicare and Medicaid Services: https://www.medicaid.gov/medicaid/section-1115-demo/demonstration-and-waiver-list/index.html

• Dental Quality Alliance: https://www.ada.org/en/science-research/dental-quality-alliance

• Healthy People 2020: www.healthypeople.gov

• Healthy People 2030: https://www.healthypeople.gov/2020/About-Healthy-People/Development-Healthy-People-2030

• Institute for Healthcare Improvement – Chronic Care Model: http://www.ihi.org/IHI/Topics/ChronicConditions/

• Institute for Healthcare Improvement – Run Chart Tool: http://www.ihi.org/resources/Pages/Tools/RunChart.aspx

• National Association for Community Health Centers/Clinical Quality: http://www.nachc.org/clinical-matters/quality-center/
- The Lean Dentist: [https://www.lean.org/Bookstore/ProductDetails.cfm?SelectedProductId=259](https://www.lean.org/Bookstore/ProductDetails.cfm?SelectedProductId=259)
13. Appendices

Appendix A – Improvement Glossary

Aim
A written, measurable, and time sensitive statement of the expected results of an improvement process.

Key Driver Diagram
The key driver diagram organizes the theory of improvement for a specific aim, connects the aim/outcome, key drivers and interventions to create a learning structure. The key drivers provide a focus for changes to test.

Metric (measures)
An indicator of change. Key measures should be focused, clarify your health center’s aim, and be reportable. A measure is used to track the delivery of proven interventions to patients and to monitor progress over time.

Model for Improvement
An approach to process improvement, developed by Associates in Process Improvement, which helps accelerate the adoption of proven and effective changes.

Outcome measure
This type of measure is used to evaluate the impact an intervention has on patient health. Outcome measures are typically high-level outcomes that are influenced by process measures.

PDSA Cycle
A structured trial of a process change. Drawn from the Shewhart cycle, this effort includes:

- Plan - a specific planning phase;
- Do - a time to try the change and observe what happens;
- Study - an analysis of the results of the trial; and
- Act - devising next steps based on the analysis.

This PDSA cycle will naturally lead to the Plan component of a subsequent cycle.

Process measure
This type of measure is used to evaluate the degree to which a step in a process or clinical activity occurred. Process measures are the specific steps in a process that lead to an outcome measure.

Run Chart
A line graph of data that is plotted over time. A run chart will have an X-axis and Y-axis. The Y-axis represents the measure and the X-axis represents the time.

Test
A small scale trial of a new approach or a new process. A test is designed to learn if the change results in improvement and to fine-tune the change to fit the practice and patients. Tests are carried out using one or more PDSA cycles.
### Appendix B – Blank PDSA Form

#### Plan-Do-Study-Act Record

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Act</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Plan</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Study</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Do</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Change Idea to ______ test or ______ implement**

---

**PLAN**

Questions: What do we want to know?

Predictions: What do we think will happen?

Plan for Change or Test: who, what, when, where. What are we going to do to make our test happen?

<table>
<thead>
<tr>
<th>List the tasks necessary to complete this test (what)</th>
<th>Person responsible</th>
<th>When</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Plan for Collection of Data: who, what, when, where. How will we compare predictions to actual?

**DO:** carry out the change or test; collect data and begin analysis; describe the test

**STUDY:** complete analysis of data; summarize what was learned.

**ACT:** are we ready to make a change? Plan for the next cycle.
## Appendix C – Completed PDSA Form

**Plan-Do-Study-Act Record**

<table>
<thead>
<tr>
<th>Act</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Idea to <strong>test or implement</strong></td>
<td></td>
</tr>
<tr>
<td>Same day sealants using isolation tool.</td>
<td></td>
</tr>
</tbody>
</table>

**DATE:** 7/8/2019

### PLAN

**Questions:** What do we want to know?

**Can we complete sealants the same day as a hygiene visit by using an isolation tool?**

**Predictions:** What do we think will happen?

The dental hygienist will be able to apply sealants after the prophy by saving time during sealant placement with the new isolation tool.

**Plan for Change or Test:** who, what, when, where. What are we going to do to make our test happen?

<table>
<thead>
<tr>
<th>List the tasks necessary to complete this test (what)</th>
<th>Person responsible</th>
<th>When</th>
<th>Where</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Train RDH on using isolation tool.</td>
<td>Dr. Seal</td>
<td>Lunch 7/9/19</td>
<td>Dental Clinic A</td>
</tr>
<tr>
<td>2. RDH will identify two patients on the schedule who are eligible for sealants.</td>
<td>Pearl White, RDH</td>
<td>Morning 7/10/19</td>
<td>Dental Clinic A</td>
</tr>
<tr>
<td>3. RDH will try to place sealants on all eligible first molars on two patients using the isolation tool.</td>
<td>Pearl White, RDH</td>
<td>Morning 7/10/19</td>
<td>Dental Clinic A</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Plan for Collection of Data:** who, what, when, where. How will we compare predictions to actual?

Pearl White, RDH will attempt to place sealants on all eligible first molars on two patients using the isolation tool on 7/10/19. Pearl and Dr. Seal will meet during lunch on 7/10/19 after the test to see if the predictions were correct.

### DO: carry out the change or test; collect data and begin analysis; describe the test

Pearl White, RDH checked the schedule for two kids who were eligible for dental sealants. Pearl completed the prophy and x-rays then applied sealants on all eligible first molars using an isolation tool. After sealants were placed, Dr. Seal completed the comprehensive exam.

### STUDY: complete analysis of data; summarize what was learned.

Pearl White found that placing sealants using the isolation tool saved a significant amount of time. She was able to place four sealants in nearly half the time. She also did not need to get help from a dental assistant. It is very feasible to place the sealants the same day as the hygiene visit with this tool.

### ACT: are we ready to make a change? Plan for the next cycle.

Yes. The next cycle will test a full clinical day of using the isolation tool to place same day sealants. If that works out well, Dr. Seal and Pearl will train the other RDH’s and have each test with two patients of their own.
Appendix D – Case Studies

The following case studies demonstrate how an oral health center implemented a QI process. The case studies describe how the quality team developed baseline metrics to select target measures for improvement, utilized the Model for Improvement to enhance quality measures, and examined the results.

Case Study 1

The Community Health Center Dental Clinic (CHC) identified a problem. Many of their pediatric patients were not scheduling and returning for their sealant visit. Frequently, by the time the patients returned for their next visit, their molar teeth were decayed and in need of a restoration. The Dental Department observed the decline in their patients’ oral health and realized that this could have been avoided. CHC was reporting their sealant rate to HRSA between 20-25% annually. While they recognized each year that this was low, they were unsure how to correct it.

CHC’s dental director had knowledge and experience in quality improvement (QI) work from her last position, but was not sure about the right place to begin. The Dental Department had a meeting with the Medical Department and learned that the Medical Department had established a QI committee to address issues like this. The Dental Department created a QI committee consisting of the dental director, a staff dentist, a staff dental hygienist, the dental office manager, and an IT staff member. Their first charge was to improve sealant rates. The QI committee developed a strategy to accomplish this. They met with the dental team to generate ideas for small scale tests. This also garnered interest from the dental team to participate in these tests. The QI committee began monthly tracking and reporting the number of patients who received dental sealants on one or more molars.

CHC identified their current sealant measure baseline to be 25%. They realized that they would need to adjust their current workflow if they wanted to increase their sealant numbers.

For their first PDSA, CHC decided to review their schedule a day ahead of time and to choose one patient on one of the hygienist’s schedule to perform same day sealants after the exam and cleaning. The hygienist prepared all the materials before the visit and was able to perform the sealants without an issue. As a result, the QI committee asked the same hygienist to do the same processes with five patients on the next day. The hygienist was efficient and able to accomplish both procedures on the same day. This also increased patient satisfaction because the parents were happy that an additional procedure was performed. This workflow was tested at another site and proven to be easily adopted in a new environment. After multiple tests under different conditions, CHC felt confident that the new workflow could consistently support their teams to provide sealants, so they spread this change across their entire dental program and implemented it as their new standard of care. Within six months, this change in the workflow of providing same day sealants allowed CHC to increase their sealant rate to 70%.
Case Study 2

*It is important to note that the improvements achieved in this case study may not function the same for every health center. Therefore, it is vital for each health center to find solutions that work for each setting through testing innovative changes that may result in quality improvements.*

Community Health Center dental clinic’s (CHC) schedule was booked out months in advance. The same day that new appointment schedules were opened, they were booked. By the time most patients would have been due for their recall appointments, their initial treatment plans hadn’t been completed. No-show rates were high and production charges were low. Patient and staff satisfaction scores both showed room for improvement.

Soon after this, the entire health center including the dental clinic, participated in several weeks of quality improvement training. Each department formed its own quality team and was charged with selecting an area in which they wished to improve. The dental clinic elected to work on treatment plan completion.

**Develop a Baseline:**

The oral health quality team first established baseline clinical and management metrics in the dental clinic, including treatment plan completion rate (TPCR). The team identified all patients who presented for a comprehensive (ADA code 0150) or periodic recall (ADA code 0120) oral exam during January 2010 (denominator).

Next, the team randomly selected 50 patient charts during the same timeframe and identified patients who had completed Phase I treatment within the subsequent 12 months (numerator). For each patient, the following data elements were collected: patient name, visit date, examining provider, ADA code 0150 and/or 0120. The final equation to calculate treatment plan completion rate (TPCR) was:

\[
\frac{\text{# of patients who completed Phase I treatment by January 2020}}{\text{# of patients seen during January 2019}} \times 100\%
\]

**Utilize the Improvement Model:**

The initial chart audit revealed a baseline 12-month Treatment Plan Completion Rate (TPCR) of 26 percent. The quality team set a goal of increasing the TPCR from 26 to 50 percent within the next year and began using principles of the Model for Improvement; including Plan-Do-Study-Act (PDSA) cycles to support their QI effort.

First, the team gathered information about factors contributing to the low TPCR. Patient satisfaction surveys, used to obtain information about barriers to treatment completion, revealed that patients found it difficult to schedule an appointment. Phone calls to patients who no showed for appointments revealed that many failed to keep their appointments because they were scheduled too far in advance (patients easily forgot the appointments). From these investigations, the team discovered there were insufficient appointment times available for patients to appropriately complete their treatment plans. Fundamentally speaking, supply did not match demand.
The team approached balancing the equation from both sides by increasing appointment supply, while also controlling demand. The team met with the CHC Board of Directors to share the factors contributing to low TPCR. The team and the Board of Directors discussed strategies to address this. As a result, supply was increased by 1) improving the dentist-to-dental assistant ratio, and 2) optimizing the scheduling system. The team conducted a PDSA cycle and found that increasing the ratio of dentists to dental assistants from 1:1.5 to 1:2 allowed them to schedule 25 percent more restorative appointments per provider. Next, the team focused on optimizing the scheduling system to ensure that the manageable number of patients were in active treatment at any given time. After performing a PDSA cycle, the team tested opening schedules one month at a time, with the goal of providing appointments for every patient who needed restorative care within a month.

Finally, to manage demand, the daily number of scheduled new patients was reduced from five to one per provider. Previous analyses had revealed that new patients required an average of 5.3 appointments to successfully complete Phase I treatment. As such, the team was able to reduce the number of new patients receiving treatment at one time with the ultimate goal of improving treatment compliance with subsequent appointments for all patients. Additionally, these adjustments created an opportunity for the clinic to decrease the backlog of patients with unmet restorative needs.

Examine the Results:

Over the next few months, the clinic observed a dramatic increase in overall production. Additionally, the number of ‘no-show’ appointments decreased, as all new exam patients left the clinic with their next appointment scheduled within a month. These improvements were a result of increasing supply through improving the dentist-to-dental assistant ratio and optimizing the scheduling system, allowing the clinic to increase the number of daily appointment slots.

In the longer-term, nearly two years later, the clinic gradually increased the TPCR from 26 to 70 percent. Since the changes were implemented in a sustainable fashion, the TPCR has remained at 70 percent for more than three years. Additionally, the QI team observed an increase in both patient and staff satisfaction scores, indicating the scheduling changes were well received.
Appendix E – Sample Quality Measures

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of patients who had at least one dental visit during the measurement year.</td>
<td>HEDIS®, NNOHA proposed Meaningful Use Clinical Quality Metric (CQM)</td>
</tr>
<tr>
<td>Percentage of children under age 21 who had at least one dental service during the measurement year.</td>
<td>Dental Quality Alliance; UTL-CH-A</td>
</tr>
<tr>
<td>Percentage of children 1-17 years have had tooth decay or cavities in the past 6 months.</td>
<td>National Quality Forum measure #1335</td>
</tr>
<tr>
<td>Percentage of patients who had a periodontal exam at least once during the measurement year.</td>
<td>NNOHA proposed Meaningful use CQM</td>
</tr>
<tr>
<td>Oral cancer risk assessment and counseling: percentage of all patients who receive soft tissue screening, oral cancer exam and counseling.</td>
<td>NNOHA proposed Meaningful use CQM</td>
</tr>
<tr>
<td>Percentage of patients for whom a Phase 1 treatment plan is completed within 12-months of the exam visit.</td>
<td>NNOHA proposed Meaningful use CQM</td>
</tr>
<tr>
<td>Percentage of children who received preventive dental care during the previous 12 months.</td>
<td>National Quality Forum measure #1334, Healthy People 2020</td>
</tr>
<tr>
<td>Percentage of children with at least one topical fluoride treatment or fluoride varnish treatment during the measurement year.</td>
<td>Healthy People 2020, NNOHA proposed Meaningful use CQM</td>
</tr>
<tr>
<td>Percentages of children ages 6-21 years who received at least a single sealant treatment during the measurement year.</td>
<td>Healthy People 2020, NNOHA proposed Meaningful use CQM</td>
</tr>
<tr>
<td>Percentage of children who received primary caries prevention intervention as part of well/ill child care as offered by primary care medical providers.</td>
<td>National Quality Forum measure #1419</td>
</tr>
<tr>
<td>Percentage of enrolled adults aged 18 years and older who are at “elevated” caries risk who received at least 2 topical fluoride applications in the measurement year.</td>
<td>Dental Quality Alliance measure; TFL-A-A</td>
</tr>
<tr>
<td>Percentage of enrolled adults with diabetes who received a comprehensive or periodic evaluation or a comprehensive periodontal evaluation within the measurement year.</td>
<td>Dental Quality Alliance measure; DOE-A-A</td>
</tr>
<tr>
<td>Percentage of children, age 2-20, who received an oral assessment or limited, periodic, comprehensive, or problem focused oral evaluation in the year prior to the measurement year who also received a comprehensive or periodic oral evaluation in the measurement year.</td>
<td>Centers for Medicare and Medicaid Services #3269</td>
</tr>
</tbody>
</table>
Appendix F – Quality Improvement Starter Kit

This Quality Improvement (QI) Starter Kit is a list of resources that can help support your quality improvement work. Share this with new employees, new quality improvement team members, leadership and others to orient them to QI background, or, use with existing team members as a refresher and source of helpful tools and resources.

Quality Improvement Introduction

   a. This free interactive course teaches the fundamentals of quality improvement (QI) and how to use this methodology to create effective, beneficial change. Lessons and exercises go over important elements such as the Model for Improvement, Plan-Do-Study-Act cycles, implementation and spread. The course is just the beginning for creating a real culture of change that fosters improvement for all. (30-45 minutes)

II. NICHQ’s Quality Improvement 102: The next step in understanding how change leads to improvement. [https://www.nichq.org/resource/quality-improvement-102](https://www.nichq.org/resource/quality-improvement-102)
   a. Building on Quality Improvement 101, this free interactive course provides further insight into the quality improvement best practices needed to create effective change. The course reviews the concepts covered in QI 101, and then gives direction on how to test improvement ideas and increase their impact and effectiveness. Lessons and exercises provide examples of best practices and offer direction on moving from one PDSA cycle to another. The course is the next step in gaining the knowledge to create a real culture of change that fosters improvement for all. (30-45 minutes)

III. Institute for Health Care Improvement’s (IHI) Open School is available for those interested in a more in-depth quality improvement course. This course was developed by IHI and the Dental Quality Alliance.

Driver Diagrams

For more information on what a Driver Diagram is used for, how it is developed, and its use for QI, visit [IHI QI Toolkit: Driver Diagrams](https://www.ihi.org/IHI/Topics/QualityImprovement/DriverDiagram/)

Plan-Do-Study-Act (PDSA)

For more information on PDSA’s, how to run them and worksheets to help, utilize the following resources:

II. [PDSA Worksheet used in NNOHA Collaborative](https://www.nnoha.org/)

Measurement

To learn more about why measurement for Quality Improvement is different and necessary:

I. [Why Data Collection is a Necessary Part of Quality Improvement – NICHQ Blog Post](https://www.nichq.org/)
II. [IHI Excerpt: Tips for Effective Measurement](https://www.ihi.org/IHI/Topics/QualityImprovement/EffectiveMeasurement/)

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![Image](https://via.placeholder.com/150)
Process Flow Charts

Process flowcharts can be useful tools in improvement work. Here are a few examples:

I. IHI QI Toolkit: Flowchart
II. American Society for Quality (ASQ) Flow Chart Template Excel

For a description and overview of a Swimlane Diagram, visit: Swimlane Diagrams.

I. If you are interested in a software program to create Swimlane Diagrams, SmartDraw offers a free trial.
14. References

1 Institute of Medicine – “Crossing the Quality Chasm: The IOM Health Care Quality Initiative”

2 DentaQuest Partnership – 


4 Duke University Medical Center website – “Patient Safety – Quality improvement” :  


6 Bureau of Primary Health Care, Efforts to Expand and Accelerate Health Center Program Quality Improvement: http://bphc.hrsa.gov/ftca/riskmanagement/healthcenterqualityimprovement.pdf

https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.93.3.380


9 Institute for Healthcare Improvement – “Changes to Improve Chronic Care.”  
http://www.ihi.org/knowledge/Pages/Changes/ChangestolImproveChronicCare.aspx.

10 Improving Chronic Illness Care – “The Chronic Care Model: Model Elements”:  

11 National Network for Oral Health Access – “Medical/Dental Partnerships”:

12 Institute for Healthcare Improvement – “Science of Improvement: How to Improve”:
http://www.ihi.org/knowledge/Pages/HowtolImprove/ScienceofImprovementHowtolImprove.aspx.


15 Phase I Treatment is defined as prevention, maintenance and/or elimination of oral pathology that results from dental caries or periodontal disease. This includes: oral cancer prevention and early diagnosis; prevention education and services; emergency treatment; diagnostic services and treatment planning; restorative treatment; basic periodontal therapy (non-surgical); basic oral surgery that includes simple extractions and biopsy; non-surgical endodontic therapy; and space maintenance and tooth eruption guidance for transitional dentition. For more information, see “Chapter 1: Health Center Fundamentals” of the Operations Manual for Health Center Oral Health Programs (https://www.nnoha.org/resources/operations-manual/).

16 Tracking patient charts through an electronic dental record (EDR) system is optimal. However, those without an EDR may collect smaller sample sizes over regular intervals to obtain adequate information for QI processes.

Credits
Thank you to NNOHA’s Quality Workgroup and Practice Management Committee members for volunteering their time and expertise to create this document:

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The National Network for Oral Health Access (NNOHA) is a nationwide network of dental professionals and supporters in safety-net settings. These providers understand that oral disease can affect a person’s speech, appearance, health, and quality of life and that inadequate access to oral health services is a significant problem for low-income individuals. The members of NNOHA are committed to improving the overall health of the country’s underserved individuals through increased access to oral health services.

For more information on NNOHA, visit www.nnoha.org, email info@nnoha.org, or call 303-957-0635.