

A Best Practice Approach Report describes a public health strategy, assesses the strength of evidence on the effectiveness of the strategy, and uses practice examples to illustrate successful/innovative implementation.

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## **Best Practice Approach: Perinatal Oral Health**

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## **Best Practice Approach: Perinatal Oral Health**

### **I. Executive Summary**

#### **Background**

Receiving oral health care is important and safe throughout pregnancy. It is essential for oral health professionals to provide women considering pregnancy and pregnant women with appropriate and timely oral health care, including preventive, diagnostic, and restorative treatment, as well as education. Despite the benefits of receiving oral health care during pregnancy, oral health professionals have historically been hesitant to provide care, often postponing it until after delivery. In addition, there is a shortage of dentists willing to treat pregnant women, which is compounded by a lack of dentists enrolled as Medicaid providers to provide care to pregnant women enrolled in the program.

Since medical professionals (e.g., obstetricians, family physicians, nurse midwives) are often first to assess pregnant women's health and can promote oral health care, they play a critical role in connecting the oral health care and medical care systems. Although medical professionals can incorporate many oral health services (e.g., screening, risk assessment, anticipatory guidance, counseling) into primary care, thereby increasing women's access to oral health care during the perinatal period, many do not.

Many women lack knowledge about perinatal oral health, and all women need to receive education about oral health changes during pregnancy, the importance and safety of receiving oral health care while pregnant, and coverage for oral health available through Medicaid or individual insurance plans. Pregnant women frequently do not seek or receive oral health care, even though some have obvious signs of oral disease. Women's inability to access oral health care during and after pregnancy can contribute to negative outcomes for them and their infants.

In recent years, there has been improvements in pregnant women's ability to access to oral health care, partly due to the establishment of a safety net that helps meet the oral health needs of individuals with low incomes. But many women still find it difficult to access oral health care during

pregnancy and postpartum. States differ in Medicaid dental coverage for pregnant and postpartum women with low incomes. A strategy for financing oral health care for all women during the perinatal period who cannot otherwise afford it is needed.

### **Strategic Framework for Improving Perinatal Oral Health**

National, state, and local dental public health programs are responsible for identifying the population’s oral health problems and oral health care needs. The report includes a strategic framework for improving perinatal oral health and the table identifies the framework components and an example of action.

<b>Components</b>	<b>Example of Action</b>
Monitor perinatal oral health status	Promote efforts to collect and analyze data on the effect of care on women’s oral health status during the perinatal period to improve oral health outcomes for women and children.
Educate and engage women of reproductive age, prenatal health professionals, and community providers	Encourage prenatal health professionals (e.g., obstetricians, family physicians, nurses, midwives) and community providers (e.g., community health workers, Early Head Start staff, home visitors, WIC staff) to advise pregnant women to practice good oral hygiene and seek oral health services.
Promote partnerships	Ensure that state and local agencies encourage replication of successful programs and initiatives that focus on improving oral health care for pregnant women to internal and external partners.
Develop policies and plans	Enhance benefits for all women eligible for Medicaid during the perinatal period through 1-year post-partum (e.g., include dental benefits in “pregnancy-related” services).
Promote quality oral health care during the perinatal period	Promote evidence-based oral health risk assessment and risk-based oral health interventions to improve quality of care.
Ensure a competent and adequate oral health workforce	Develop perinatal clinical competencies and integrate them into dental school and dental hygiene education and training and board certification as well as continuing education courses.
Support, conduct, and promote research	Promote, conduct, and support research to improve the effectiveness of perinatal oral health care (e.g., motivational interviewing for pregnant women, treatment protocols for periodontal disease for pregnant women).

### **Initiatives**

The report includes state practice examples that illustrate best practice approaches to promoting perinatal oral health. Examples are grouped into the following categories: (1) perinatal oral health surveillance, (2) perinatal oral health professional training, (3) care coordination and systems integration, and (4) perinatal oral health promotion.

## Best Practice Approach: Perinatal Oral Health

### II. Description

#### A. Perinatal Oral Health and Its Significance

The perinatal period begins at conception and ends 2 months after delivery. It is a unique time during a woman's life and is characterized by complex physiological changes, which may adversely affect oral health.<sup>1</sup>

Receiving oral health care is important and safe throughout pregnancy. Because pregnant women may be receptive to changing health behaviors to improve the health of their unborn child, pregnancy is an opportune time for oral health promotion and interventions. Therefore, to improve the oral health of women and children, it is essential for medical professionals and oral health professionals to provide women considering pregnancy and pregnant women with appropriate and timely oral health care, including preventive, diagnostic, and restorative treatment, as well as education.<sup>2</sup>

During pregnancy, women are usually seen by prenatal care professionals and community health providers, who can play a critical role in promoting awareness of oral health and oral health care and can help connect pregnant women to the oral health care system. In several states, being pregnant qualifies women for Medicaid dental coverage and thus access to care that they don't have during other periods of their lives.<sup>3</sup>

Research and professional experience have shown that if women don't receive oral health care when they are *not* pregnant, they are less likely to receive it when they *are* pregnant.<sup>4</sup> Therefore, it is critical to provide women considering pregnancy or who are pregnant with oral health care. Counseling women about good oral health behaviors may reduce the transmission of bacteria from mothers to infants and young children, thereby preventing or delaying the onset of tooth decay while also helping to improve the woman's own oral health.<sup>2,5</sup> And if women fear receiving oral health care during pregnancy, this needs to be addressed, as well.

Although medical professionals can conduct oral health risk assessments and screenings for pregnant women, provide anticipatory guidance, and refer them to oral health professionals, many do not. At the same time, oral health professionals frequently miss opportunities to refer pregnant women for medical care, and pregnant women frequently do not seek or receive oral health care, even though some have obvious signs of oral disease. And, in many cases, neither medical professionals nor pregnant women understand that oral health care is an important component of a healthy pregnancy.<sup>2</sup> These barriers result in missed opportunities for oral health care and overall health care during this important time period.

#### Background

##### Data About Oral Health During the Perinatal Period

Three data sources that provide information about oral health during the perinatal period are the [Pregnancy Risk Assessment Monitoring System \(PRAMS\)](#), the [National Health and Nutrition Examination Survey \(NHANES\)](#), and the [Behavioral Risk Factor Surveillance System \(BRFSS\)](#). All the sources have limitations, which makes it difficult to assess access to oral health care for pregnant women and make comparisons across states.

##### *Pregnancy Risk Assessment Monitoring System*

PRAMS is an ongoing, state-specific, population-based data monitoring system on maternal attitudes and experiences before, during, and shortly after pregnancy. The system currently includes about 83 percent of all U.S. births. Participation is voluntary, and data is self-reported. While 47 states, New York City, Puerto Rico, the District of Columbia, and the Great Plains Tribal Chairmen's Health Board participate in PRAMS, some states do not collect all data that the monitoring system addresses. The frequency of data collection and reporting is inconsistent among participating states.<sup>6</sup> The most recent publicly available PRAMS data from the Centers for Disease Control and Prevention is for 2017.<sup>7</sup>

### *National Health and Nutrition Examination Survey*

NHANES is a nationally representative survey designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and both medical and oral examinations. The NHANES data briefs published by the National Center for Health Statistics do not include analysis of oral health data specific to pregnant women. Even if pregnancy specific NHANES data were reported at the national level, it would provide only a snapshot.<sup>8</sup>

### *Behavioral Risk Factor Surveillance System*

BRFSS collects data through phone interviews with adults, ages 18 and older, about their health-related risk behaviors, chronic health conditions, and use of preventive services. BRFSS collects data in all states, the District of Columbia, and three territories (Guam, Puerto Rico, and the U.S. Virgin Islands).

### Periodontal Disease and Adverse Birth Outcomes

Maternal oral health has implications for infant oral health.<sup>3</sup> While evidence shows an association between maternal periodontal disease and risk for adverse birth outcomes (e.g., preterm birth, low birthweight),<sup>9-11</sup> it has not been shown that receiving treatment for periodontal disease during pregnancy affects birth outcomes.<sup>12,13</sup>

To address the impact of periodontal disease in women of reproductive age, more research is needed to (1) learn how to monitor periodontal health and evaluate treatment outcomes, (2) understand the biological basis for the link between oral health and adverse birth outcomes, and (3) determine strategies for prevention and treatment of periodontal disease among women in this age group and optimal timing for implementing these strategies.<sup>14,15</sup>

### Factors Impacting Infants' Oral Health

Hormonal and immunologic changes make pregnant women susceptible to oral health problems, which can have implications for infant oral health. Bacteria that cause tooth decay primarily pass from mother to child.<sup>3,16</sup> Oral health interventions targeting women during the perinatal period are an optimal approach to preventing tooth decay in children, and collaboration among medical professionals and oral health professionals can help meet the oral health needs of pregnant women and their children.<sup>17</sup>

Both primary and permanent teeth begin to form in utero.<sup>16</sup> Fetal distress, adverse birth outcomes, and challenges in neonatal life increase the risk for craniofacial problems and enamel defects, which can also increase the risk for tooth decay in children.<sup>18</sup> Tooth decay in children under age 6 has a tremendous impact on society and the health care system, but most people are unaware of the toll it takes. Many young children endure needless pain and suffering as a result of tooth decay. Treatment is expensive and, if general anesthesia is required, can be dangerous for young children.<sup>18-21</sup>

Local, systemic, genetic, and environmental conditions can affect the formation of teeth beginning during pregnancy and throughout life. Maternal and child risk factors for tooth anomalies and developmental defects include age of the mother, pregnancy problems, medication taken during pregnancy, alcohol consumption or smoking, malnutrition, respiratory distress, and hyperbilirubinemia during pregnancy.<sup>22-27</sup>

## **B. Accessing Oral Health Care**

Women's inability to access oral health care during and after pregnancy can contribute to negative outcomes for them and their infants. Despite heightened oral health needs and the benefits of receiving oral health care during the perinatal period, many women do not receive oral health care. Data from PRAMS indicate that in 2015, 73 percent of women had dental insurance during pregnancy, but only 56 percent had a dental cleaning during the 12 months before pregnancy, and only 48 percent had a dental cleaning during pregnancy.<sup>6</sup> Underuse of oral health care during the perinatal period may be caused by a number of factors, as described below.

Populations that are underserved bear the greatest oral disease burden and have high unmet need for oral health care. Access to oral health care is directly related to income level; pregnant women with low incomes are less likely to have received oral health care than those with higher incomes. Aside

from financial constraints, barriers to oral health care among those who are underserved include lack of education, lack of access to transportation, and lack of dentists enrolled as Medicaid providers.<sup>1</sup>

#### Women's Knowledge, Attitudes, and Behaviors

Pregnant women's oral health knowledge varies according to maternal race or ethnicity, and their oral health beliefs vary according to their education levels.<sup>5,28</sup> Racial and ethnic differences exist in oral health behaviors and oral health care use among pregnant women.<sup>4</sup> Women from families with low incomes, who are enrolled in Medicaid, or who belong to a racial or ethnic minority are half as likely to obtain oral health care when they are pregnant compared to women from families with higher incomes, who are privately insured, or who are non-Hispanic white.<sup>28</sup>

Nevertheless, lack of knowledge and understanding about perinatal oral health appears to cross demographic boundaries and is not limited to a single socioeconomic group. All women need to receive education about oral health changes during pregnancy, the importance and safety of receiving oral health care while pregnant, how their oral health is connected to that of their child's, and the oral health programs and oral health care coverage available in their state. They can also benefit from information about how eating healthy foods, practicing good oral hygiene, and practicing other healthy behaviors helps keep them and their infants healthy.<sup>2</sup> Women may also need help with overcoming their fears about receiving oral health care in general as well as their concerns about the safety of receiving oral health care during pregnancy.

#### Integration of Oral Health Care and Medical Care

Incorporating oral health services (e.g., risk assessment, screening, anticipatory guidance, and referral) into primary care delivered by medical professionals to pregnant women is a promising strategy for reducing oral health disparities.<sup>29</sup> An environmental scan of oral health care and medical care integration activities conducted between 2000 and 2017 showed that such integrated care improves coordination of care for pregnant women,<sup>30</sup> but health care systems (particularly electronic medical records and electronic dental records) are not well connected, making it difficult for a diverse range of health professionals to work together to improve oral health.

Since medical professionals are often first to assess pregnant women's health and can promote oral health care, they play a critical role in connecting the oral health care and medical care systems. Therefore, it is important to educate the next generation of medical professionals about oral health. Educational interventions aimed at promoting interprofessional oral health education for medical professionals should focus on long-term outcomes and clinical skill development related to oral health.<sup>31</sup>

Data from 2013 indicate that approximately 60 percent of primary care physicians (PCPs) included oral health in prenatal care counseling.<sup>32</sup> While the majority of PCPs agreed that preventive oral health care is important, most had not received oral health training. It is promising that most PCPs acknowledged their role in oral health promotion and agreed that they should be able to identify oral health issues in patients. Completing continuing education courses and perceived preparedness are strongly and positively associated with likelihood of providing prenatal oral health counseling. Only a small proportion of PCPs recalled receiving oral health training during medical school or residency, which suggests that most are not well prepared to address oral health with pregnant women.<sup>32</sup> Evidence suggests that oral health promotion by medical professionals may be associated with increased use of oral health services during pregnancy.<sup>33</sup>

#### Workforce Preparedness/Willingness

Results from recent surveys of dentists indicate that the majority believe perinatal oral health is important and are willing to provide oral health education and counseling during pregnancy.<sup>34-36</sup> However, their beliefs about and practices related to providing treatment for pregnant women vary significantly.

Despite the benefits of receiving oral health care during pregnancy, oral health professionals have historically been hesitant to provide care, often postponing it until after delivery. The American Dental Education Association patient-care competencies for general dentists do not include a competency for care of pregnant women.<sup>37</sup> In follow-up to the release of *Oral Health Care During Pregnancy: A National Consensus Statement*, the American Dental Association's (ADA's) Council on Advocacy for

Access and Prevention (previously the Council on Access, Prevention and Interprofessional Relations) has fostered efforts to make the profession aware of the importance and safety of providing oral health care throughout pregnancy. As part of these efforts, the council submitted two resolutions to the 2014 ADA House of Delegates, which were approved. These resolutions are now ADA policy and read as follows:<sup>38</sup>

- Resolved, that the ADA urges all pregnant women and women of child-bearing age to have a regular dental examination.
- Resolved, that the ADA acknowledges that preventive, diagnostic and restorative dental treatment is safe throughout pregnancy and is effective in improving and maintaining the oral health of the mother and her child.

In spite of these resolutions, there is a shortage of dentists willing to treat pregnant women, which is compounded by a lack of dentists enrolled as Medicaid providers. Inadequate education, training, and responsibility for meeting the oral health needs of vulnerable populations, including people enrolled in Medicaid, also contribute to dentists' unwillingness to serve pregnant women.<sup>39</sup> Only 39 percent of dentists in the United States accept Medicaid.<sup>40</sup> Dentists often note low reimbursement rates, slow payment, administrative burdens, and high no-show rates for appointments as the primary reasons for not accepting these patients.<sup>41</sup> Although dentists are more likely to accept Medicaid for patient care when reimbursement rates are at least 85 percent of the dentist's fees, 56 percent would still accept Medicaid for patient care if reimbursement rates were only 55 percent of their fees if they were told the patient would never miss appointments and claims would be approved on initial submission.<sup>42</sup>

In recent years there has been some improvement in pregnant women's ability to access oral health care, partly due to the establishment of a safety net that helps meet the oral health needs of individuals with low incomes. The disparate makeup of the oral health safety net and the differing policies that govern it make it difficult to deliver comprehensive oral health care to the population the safety net serves.<sup>43</sup>

#### Financing Oral Health Care

The number of pregnant women who have adequate dental coverage or any dental coverage at all is unknown.<sup>44</sup> Many women with low incomes continue to face barriers to accessing and receiving quality, affordable oral health care during pregnancy and postpartum.<sup>45-47</sup> States are not required to provide a comprehensive Medicaid dental benefit for adults. Adult dental services are available in all 50 states<sup>a</sup>; however, some states provide only emergency services. There is considerable variation among states in eligibility policies and scope of dental coverage for women with low incomes during the perinatal period.

Pregnant adolescents can receive dental coverage through Medicaid's Early and Periodic Screening, Diagnostic and Treatment (EPSDT) program. This program provides comprehensive and preventive health care services for children and adolescents under age 21, including pregnant adolescents, who are enrolled in Medicaid. Preventive services encompass dental services, defined as including, at minimum, relief of pain and infections, restoration of teeth, and maintenance of oral health.

Although pregnant women enrolled in Medicaid are entitled to "pregnancy-related services," oral health care is not explicitly included as a pregnancy-related service.<sup>48</sup> A strategy for financing oral health care for all women during the perinatal period who cannot otherwise afford it is needed.

### **C. Strategic Framework for Improving Perinatal Oral Health**

National, state, and local dental public health programs are responsible for identifying the population's oral health problems and oral health care needs. The following strategic framework for improving perinatal oral health is based on core public health activities set forth in the *Ten Essential Public*

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<sup>a</sup> The [Medicaid | Medicare | CHIP Services Dental Association](#) (MSDA) surveys Medicaid and CHIP oral health programs in all 50 states and the District of Columbia and publishes a [profile](#) of national, regional, and state program information and data. The profile provides program characteristics, policies, administrative practices, provider networks, benefit and payment structures, and other topics.

*Health Services*<sup>49</sup> and the *Essential Public Health Services to Promote Oral Health in the United States*.<sup>50</sup> Public health agencies can use the framework to build support for monitoring health status, providing education, promoting partnerships, developing policies and plans, promoting quality care, ensuring an adequate work force, and supporting and promoting research (see Attachment B, Perinatal Oral Health Logic Model, which depicts the strategic framework).

#### Monitor Perinatal Oral Health Status

It is essential to collect, analyze, and report data on perinatal oral health at the state, local, and individual program levels for monitoring perinatal oral health status, disseminating findings in a timely manner, launching new and effective perinatal oral health programs, and evaluating existing perinatal oral health programs.

#### **Examples of Actions**

- Develop guidelines to indicate which national data should be collected.
- Promote efforts to collect and analyze data on the effect of care on women’s oral health status during the perinatal period to improve oral health outcomes for women and children.
- Use data from community-based programs (e.g., Early Head Start, home visiting, Special Supplemental Nutrition Program for Women, Infants, and Children [WIC]) to identify oral health needs and disparities, effective and innovative oral health services, and workforce models to address barriers to accessing oral health care.
- Correlate perinatal oral health data-collection and assessment efforts with other health-assessment and data-collection efforts conducted by public health systems (e.g., BRFSS, NHANES, PRAMS).
- Establish baseline and evaluate progress of perinatal oral health goals and objectives at the state, local, and individual program level.

#### Educate and Engage Women of Reproductive Age, Prenatal Health Professionals, and Community Providers

To make perinatal oral health a priority and to reduce oral health disparities, women of reproductive age and their families, prenatal health professionals, and community health providers need to be aware and understand the importance of oral health during the perinatal period and across the lifespan. Using targeted interventions, including education and counseling during prenatal visits, can increase women’s knowledge about the safety of oral health during pregnancy and about how to maintain oral health and encourage them to seek care. Pregnancy is a key time to care for a woman’s mind and attitude. One way this can be done is through mindfulness, known to promote emotional positivity and stability.<sup>51</sup>

#### **Examples of Actions**

- Promote awareness of resources (e.g., *Oral Health Care During Pregnancy: A National Consensus Statement*, *Smiles for Life: A National Curriculum*) for prenatal health professionals (e.g., obstetricians, family physicians, midwives) and community providers (e.g., community health workers, Early Head Start staff, home visitors, WIC staff) to increase their awareness of oral health and engagement in oral health care.
- Encourage prenatal health professionals and community providers to help pregnant women navigate the oral health system of care to find dental practices and clinics that serve pregnant women.
- Encourage prenatal health professionals and community providers to promote effective, clear communication at an appropriate literacy level to pregnant women to emphasize the safety and importance of receiving oral health care during pregnancy.
- Develop accurate, clearly written, and culturally and linguistically sensitive materials, in languages that women and their families speak, about the importance of oral health for pregnant women.
- Disseminate perinatal oral health success stories to health professionals, program administrators, policymakers, and the public.

#### Promote Partnerships

The perinatal period offers women opportunities to access oral health care they may not have during other periods of their lives. Promote partnerships between oral health professionals and service and

advocacy organizations, as well as perinatal health professionals and community service providers, to take advantage of these opportunities.

#### **Examples of Actions**

- Integrate oral health education into community-based programs (e.g., Early Head Start, home visiting, prenatal, tobacco-cessation, WIC).
- Increase established referral arrangements between perinatal health clinics and area dental practices and clinics.
- Encourage perinatal care settings to include oral health care or to facilitate referrals.
- Ensure that state and local agencies encourage replication of successful programs and initiatives that focus on improving oral health care for pregnant women to internal and external partners.
- Share successful quality-improvement efforts implemented at the program level (e.g., federally qualified health centers) to other programs.

#### Develop Policies and Plans

Policies that prioritize the importance of oral health during the perinatal period are a foundation for seeking adequate funding to provide women with oral health.

#### **Examples of Actions**

- Advocate for policies that support consistent access to perinatal oral health care.
- Encourage stakeholders (e.g., academic institutions, faith-based groups, managed care organizations, mother-to-mother networks, not-for-profit philanthropies) to establish and promote perinatal oral health goals, while including them in strategic and operating plans (e.g., Title V 5-year needs assessment, state health plans, state oral health plans, organization/clinic strategic plans).
- Enhance benefits for all women eligible for Medicaid during the perinatal period through 1-year post-partum (e.g., include dental benefits in “pregnancy-related” services).
- Coordinate interaction between medical and oral health professionals to enhance effective and informed access to oral health care through bi-directional referral mechanisms.

#### Promote Quality Care

Promoting quality oral health care during the perinatal period is critical to ensure that every woman and her unborn child can achieve the best possible oral health.

#### **Examples of Actions**

- Ensure that perinatal oral health care is comprehensive, continuously accessible, coordinated, culturally effective, compassionate, and family- or patient-centered.<sup>a</sup>
- Encourage oral health professionals to promote effective, clear communication at an appropriate literacy level to pregnant women to emphasize the safety and importance of oral health during pregnancy.
- Promote evidence-based or evidence-informed oral health risk assessment and risk-based oral health interventions to improve quality of oral health care.
- Adopt and endorse interdisciplinary perinatal oral health guidelines and recommendations and promote them to health professionals and professional organizations that provide perinatal health, social, and educational services.
- Promote coordination between medical and oral health professionals.

<sup>a</sup> “Patient-centered” is defined as care that is respectful of and responsive to individual patient or family preferences, needs, and values and ensures that patient or family values guide all clinical decisions.

#### Ensure a Competent and Adequate Oral Health Workforce

A competent and adequate oral health workforce is essential to facilitate changes in women’s oral health behavior during the perinatal period to improve oral health outcomes for this population. Collaborative efforts by academic institutions, professional health organizations, and state agencies are necessary to educate health professionals about how to provide perinatal oral health care.

### **Examples of Actions**

- Develop perinatal clinical competencies and integrate them into dental school and dental hygiene program education and training and board certification as well as continuing education courses.
- Implement strategies to develop and enhance case management, care coordination, and referral services.
- Expand diversity within the oral health workforce to reflect the racial and ethnic makeup of pregnant women.

### Support, Conduct, and Promote Research

Data from research improves the ability to educate health professionals about how to deliver effective oral health care, promote oral health, and coordinate referrals and consultations during the perinatal period. Research focused on perinatal oral health is important to ensure that evidence-based and evidence-informed science is available to health professionals providing care to women during this period.

### **Examples of Actions**

- Promote, conduct, and support research to improve the effectiveness of perinatal oral health care (e.g., motivational interviewing for pregnant women, treatment protocols for periodontal disease for pregnant women).
- Promote, conduct, and support research to determine effective mechanisms to increase oral health knowledge, enhance awareness of the importance of oral health, and change behaviors among both women during the perinatal period and the medical professionals and oral health professionals who serve them.

## **D. Federal Initiative**

HRSA's Maternal and Child Health Bureau (MCHB) supported the Perinatal and Infant Oral Health Quality Improvement (PIOHQI) initiative to reduce the prevalence of oral disease in pregnant women and infants at high risk for oral disease through improved access to high-quality oral health care (i.e., preventive services, restorative treatment, education). The outcomes of the initiative were increased utilization of oral health services and improved oral health.

The PIOHQI initiative funded 16 projects. Three pilot projects—Connecticut, New York, and West Virginia—were funded through 2018, and 13 expansion projects—Arizona, California, Colorado, Maine, Maryland, Massachusetts, Minnesota, New Mexico, Rhode Island, South Carolina, Texas, Virginia, and Wisconsin—were funded through 2019.

Despite a plethora of local- and systems-level barriers, the projects were able to accomplish noteworthy achievements in seven strategy areas including network development; workforce enhancement; community outreach; process and procedure development; program development; state practice guidance development; and data collection, evaluation, and reporting. See Section V: State Practice Examples.

## **III. Guidelines and Recommendations from Authoritative Sources**

### **Materials with National Focus**

#### **Oral Health During Pregnancy Expert Workgroup**

[\*\*Oral Health Care During Pregnancy: A National Consensus Statement\*\*](#) (2012)

This consensus statement resulted from an expert workgroup meeting convened by the Health Resources and Services Administration in collaboration with the American College of Obstetricians and Gynecologists and the American Dental Association. It contains guidance on oral health care for pregnant women for prenatal care health professionals and oral health professionals, pharmacological considerations, and guidance for health professionals to share with pregnant women.

**American Academy of Pediatric Dentistry, Council on Clinical Affairs**  
**[Guideline on Perinatal and Infant Oral Health Care](#)** (2016)

This paper provides guidelines for perinatal and infant oral health care, including caries risk assessment, preventive strategies, and therapeutic interventions. It discusses anticipatory guidance, the management of perinatal and infant oral health, and the safety of oral health treatment during pregnancy.

**American College of Obstetricians and Gynecologists, Women’s Health Care Physicians, Committee on Health Care for Underserved Women**  
**[Oral Health Care During Pregnancy and Through the Lifespan](#)** (2013; reaffirmed 2017)

This committee opinion offers information and recommendations for obstetricians, gynecologists, and other health professionals about the importance of counseling pregnant women about maintaining good oral health habits throughout their lives as well as about the safety and importance of oral health care during pregnancy. Topics include general health, common oral health conditions during pregnancy, periodontal disease and pregnancy outcomes, oral health assessment and counseling during pregnancy, and access to oral health care.

**American Dental Association**  
**[Bisphenol A: ADA Statement on Bisphenol A and Dental Materials](#)** (2013)

This statement provides information about bisphenol A (BPA) in dental materials, including composites and dental sealants, to prevent and treat dental caries. The statement discusses whether exposure to BPA through dental materials poses a health threat. It concludes that low-level BPA exposure that may result from placement of composites and dental sealants poses no known health threat.

**Barzel R, Holt K, Kolo S**  
**[Prescribing Opioids for Women of Reproductive Age: Information for Dentists](#)** (2018)

This paper provides an overview of dental pain management for women of reproductive age. It discusses pharmacological considerations for pregnant women, neonatal opioid withdrawal syndrome, guidelines for providing opioids, managing acute dental pain, and guidelines for discharging women with opioid prescriptions. Information about prescription drug monitoring programs is included.

**Casamassimo P, Holt K, eds.**  
**[Bright Futures: Oral Health—Pocket Guide \(3rd ed.\)](#)** (2016)

This pocket guide offers an overview of preventive oral health supervision for five periods: pregnancy and postpartum, infancy, early childhood, middle childhood, and adolescence. It is designed to help health professionals implement specific oral health guidelines during these periods.

**Chazin S, Guerra V, McMahon S**  
**[Strategies to Improve Dental Benefits for the Medicaid Expansion Population](#)** (2014)

This brief summarizes state decisions to include dental benefits for populations newly eligible for Medicaid. It details emerging strategies to ensure access to oral health care for adults, including pregnant women. Topics include tailoring outreach to the targeted population, developing stakeholder engagement, improving network adequacy through financial and non-financial incentives, and expanding the oral health work force.

**Children’s Dental Health Project**  
**[Oral Health During Pregnancy](#)** (2018)

This brief outlines key challenges and starting points to improve pregnant women and family health and stability in the following areas: inadequate data collection and reporting at federal and state levels, inconsistent oral coverage and access to oral health care for pregnant women, addressing pregnant women’s oral health needs outside the dental office, and the confusing terrain of Medicaid’s pregnancy-related benefits.

**Dragan IF, Veglia V, Geisinger ML, Alexander DC**  
**[Dental Care as a Safe and Essential Part of a Healthy Pregnancy](#)** (2018)

This review summarizes guidelines for oral health care during pregnancy, provides an overview of physiological changes that occur and their relevance to oral health care delivery; outlines risk factors for oral conditions; and considers preventive strategies, including interprofessional collaboration.

**Higman SM, Lai YH, Lauzon S, Garcia S, Minkovitz C**  
**[Strengthen the Evidence for Maternal and Child Health Programs: National Performance Measure 13a Oral Health in Pregnancy Evidence Review](#)** (2018)

This review summarizes evidence-based and evidence-informed strategies to promote the safety and effectiveness of receiving oral health care during pregnancy.

**National Maternal and Child Oral Health Policy Center**  
**[Improving the Oral Health of Pregnant Women and Young Children: Opportunities for Policymakers](#)** (2012)

This brief explores opportunities for policymakers to improve the oral health of pregnant women and children.

**National Center for Toxicological Research, Food and Drug Administration**  
**[White Paper: FDA Update/Review of Potential Adverse Health Risks Associated with Exposure to Mercury in Dental Amalgam](#)** (2017)

This paper reviews peer-reviewed articles to provide information to improve understanding of or change risk estimates for the use of dental amalgam, including the effects of mercury exposure on pregnant women. Compared to previous analyses performed by the U.S. Public Health Service, no significant new information was discovered that would change the Food and Drug Administration risk estimates for the use of dental amalgam, which concluded that there is insufficient evidence to support an association between exposure to mercury from dental amalgam and adverse health effects in humans, including pregnant women.

**Skinner E**  
**[Oral Health Care and Coverage During Pregnancy](#)** (2016)

This brief provides information about the effects of oral disease on pregnant women and infants and state actions to prevent disease and reduce costs. It examines insurance coverage for oral health care for pregnant women, publicly funded coverage and reimbursement rates, dental expenditures, and where to find state-specific statistics on oral health status and coverage rates. It discusses state strategies to help pregnant women access oral health services and describes provisions in the Affordable Care Act that promote improved oral health outcomes for pregnant women, including comprehensive tobacco-cessation services.

## **Materials with State Focus**

The following guidelines produced by state organizations are designed to help health professionals deliver oral health services to pregnant women.

### **CDA Foundation**

**[Oral Health During Pregnancy and Early Childhood: Evidence-Based Guidelines for Health Professionals](#)** (2010)

Presents information about the importance of oral health; maternal physiological considerations related to oral health; pregnancy, oral conditions, and oral health care; oral health and early childhood; access to care; and systems improvement and public policy changes. Sample forms, websites for parents, and a policy brief are available.

### **Diop H, Hwang S, Leader D, Silk H, Chie L, Lu E, Stone SL, Flaherty K**

**[Massachusetts Oral Health Practice Guidelines for Pregnancy and Early Childhood](#)** (2016)

Includes background information about oral diseases, the status of oral health among pregnant women and children in Massachusetts and national and state efforts to improve it, and the role of interdisciplinary health professionals in this area. Resources on medication use, sample referral forms, and reproducible handouts on healthy portion sizes and healthy eating are provided.

### **Kumar J, Iida H**

**[Oral Health Care During Pregnancy: A Summary of Practice Guidelines](#)** (2008)

Includes information to help change the health care delivery system and to improve the overall standard of care for pregnant women. Provides guidance for all health professionals, prenatal care professionals, and oral health professionals. Guidance to share with families and a sample referral form are included.

### **Maryland Department of Health, Office of Oral Health**

**[Oral Health Care During Pregnancy: Practice Guidance for Maryland's Prenatal and Dental Providers](#)** (2018)

Discusses myths and facts about oral health during pregnancy and oral conditions that can affect pregnant women. A table listing dental pharmacological considerations for pregnant women, a referral form, and tips for good oral health during infancy (available in English and Spanish) are included and available in stand-alone format.

### **Northwest Center to Reduce Oral Health Disparities**

**[Guidelines for Oral Health Care in Pregnancy](#)** (2009)

Discusses treatment considerations related to hypertension, diabetes, use of heparin, and risk of aspiration, as well as positioning women during procedures. A chart summarizes recommendations for various pregnancy stages.

### **South Carolina Oral Health Coalition**

**[Oral Health Care for Pregnant Women](#)** (2017)

Presents clinical practice guidelines for the oral health care of pregnant women in South Carolina. It contains data on infant mortality and preterm birth, oral health care and counseling utilization, and key findings from the SC Pregnancy Risk Assessment Monitoring Systems (PRAMS) for 2012–2013.

**Virginia Department of Health, Dental Health Program**  
**[Oral Health During Pregnancy: Practice Guidance for Virginia's Prenatal and Dental Providers](#)** (2018)

Presents clinical practice guidelines for the oral health of pregnant women and their infants in Virginia. It contains an infographic about oral health during pregnancy, myths vs. facts about oral health during this period, and information about oral conditions during pregnancy and pharmacological considerations for pregnant women.

#### **IV. Research Evidence**

##### **Periodontal Disease and Pregnancy Outcomes**

Corbella S, Taschieri S, Del Fabbro M, Francetti L, Weinstein R, Ferrazzi E. 2016. **[Adverse pregnancy outcomes and periodontitis: A systematic review and meta-analysis exploring potential association.](#)** *Quintessence International* 47(3):193–204.

This systematic review evaluates periodontal disease as an independent risk factor for adverse pregnancy outcomes, reporting a low but existing association.

Daalderop LA, Wieland BV, Tomsin K, Reyes L, Kramer BW, Vanterpool SF, Been JV. 2017. **[Periodontal disease and pregnancy outcomes: Overview of systematic reviews.](#)** *JDR Clinical & Translational Research* 3(1):10–27.

This overview of systematic reviews studies the association between periodontal disease and adverse pregnancy outcomes. None of the reviews report an association between periodontal disease and maternal or perinatal mortality. The reviews with the lowest risk of bias consistently demonstrate positive associations between periodontal disease and preterm birth, low birthweight, preeclampsia (a disorder of pregnancy characterized by the onset of high blood pressure and often a significant amount of protein in the urine, and preterm low birthweight (LBW)). The overview also indicates that pregnant women with periodontal disease are at increased risk of developing preeclampsia and of delivering a preterm and/or LBW baby.

Iheozor-Ejirofor Z, Middleton P, Esposito M, Glenny A. 2017. **[Treating periodontal disease for preventing adverse birth outcomes in pregnant women.](#)** *Cochrane Database of Systematic Reviews* 6:CD005297.

This article reviews global studies where pregnant women with gum disease were treated using a combination of different mechanical techniques with or without antibiotics. The authors conclude that it was not clear whether periodontal treatment during pregnancy has an impact on preterm birth (low-quality evidence). In addition, there was low-quality evidence indicating that periodontal treatment may reduce low birthweight (< 2,500 g); however, confidence in the effect estimate was limited. There was insufficient evidence to determine which periodontal treatment is better in preventing adverse obstetric outcomes.

Michalowicz BS, Gustafsson A, Thumbigere-Math V, Buhlin K. 2013. **[The effects of periodontal treatment on pregnancy outcomes.](#)** *Journal of Clinical Periodontology* 84(Suppl 4):S195–208.

This review uses randomized controlled trials to discuss whether periodontal therapy reduces rates of preterm birth and low birthweight. The authors conclude that non-surgical periodontal therapy, scaling, and root planning do not improve birth outcomes in pregnant women with periodontitis.

## Safety of Oral Health Care During Pregnancy

Achtari MD, Georgakopoulou EA, Afentoulide N. 2012. [Dental care throughout pregnancy: What a dentist must know](#). *Oral Health Dental Management* 11(4):169–176.

This review offers evidence-based answers to questions concerning oral health treatment for pregnant women. The authors conclude that oral health care is safe during pregnancy and that information about the importance of maintaining oral health during pregnancy should be shared.

Finlayson TL, Gupta A, Ramos-Gomez FJ. 2017. [Prenatal maternal factors, intergenerational transmission of disease, and child oral health outcomes](#). *Dental Clinics of North America* 61(3):483–518.

This article reviews evidence of maternal prenatal risk factors for caries in children and intergenerational transmission of caries, emphasizing early interventions for women starting during pregnancy and within the first 24 months after the child is born. The authors support early prenatal interventions as effective in reducing mother-child mutans Streptococcus transmission and subsequently caries in children. The authors conclude that oral health care is safe and effective and should be part of regular prenatal care and pediatric well visits.

Fleisch AF, Sheffield PE, Chinn C, Edelstein BL, Landigran PJ. 2010. [Bisphenol A and related compounds in dental materials](#). *Pediatrics* 126(4):760–768.

This article evaluates the literature on Bisphenol A (BPA) content in dental materials, assesses BPA exposures from dental materials and potential health risks, and provides evidence-based guidance for reducing BPA exposures while promoting oral health. The authors recommend that materials containing BPA should be minimized during pregnancy whenever possible.

Iida H. 2017. [Oral health interventions during pregnancy](#). *Dental Clinics of North America* 61(3):467–481.

This article reviews knowledge and practice related to oral health interventions during pregnancy, with individual and population-based strategies for improving the oral health of these women and their children. Topics include management of dental caries and periodontal disease, systems-level interventions, and financing oral health care.

Leone SM, Quinonez RB, Chuang A, Begue A, Kerns A, Jackson J, Phillips C. 2017. [Introduction of prenatal oral health into medical students' obstetrics training](#). *Journal of Dental Education* 81(12):1405–1412.

The article examines the influence of the Prenatal Oral Health Program at the University of North Carolina at Chapel Hill on medical student knowledge, confidence, attitudes, and referral practices surrounding oral health. The results show that this program significantly influenced students on all clinical constructs except their knowledge about treatment safety during pregnancy. Clinically examining a woman's mouth for signs of oral disease resulted in greater likelihood of making dental referrals. The authors conclude that using multi-method interventions can effectively promote interdisciplinary coordinated oral health care, meet interprofessional education accreditation standards, and aid in implementing practice guidelines in medical school curricula.

Michalowicz BS, DiAngelis AJ, Novak MJ, Buchanan W, Papapanou PN, Mitchell DA, Curran AE, Lupo VR, Ferguson JE, Bofill J, Matseoane S, Deinard AS Jr, Rogers TB. 2008. [Examining the safety of dental treatment in pregnant women](#). *Journal of the American Dental Association* 139(6):685–695.

This article compares safety outcomes from a trial in which pregnant women received scaling and root planing and other dental treatments. The authors found that rates of adverse outcomes did not differ significantly between women who received essential dental treatment (EDT) and those who did not or between those that received both EDT and periodontal treatment, either EDT or

periodontal treatment alone, or no treatment. Use of topical or local anesthetics during root planing also was not associated with increased risk of adverse outcomes.

Rochester JR. 2013. [Bisphenol A and human health: A review of the literature](#). *Reproductive Toxicology* 42:132–155.

This article reviews the literature on bisphenol A (BPA) exposure and adverse perinatal, childhood, and adult health outcomes, including reproductive and developmental effects, metabolic disease, and other health effects. The studies encompass both prenatal and postnatal exposures, include several study designs and population types, and provide increasing support that environmental BPA exposure can be harmful to humans, especially in children.

Vander Schaff EB, Quinonez RB, Cornett AC, Randolph GD, Boggess K, Flower KB. 2018. [A pilot quality improvement collaborative to improve safety net dental access for pregnant women and young children](#). *Maternal and Child Health Journal* 22(2):255–263.

This article reviews the acceptability and feasibility of a quality-improvement collaborative in five safety net dental practices and its effects on financial stability, access, efficiency, and care for pregnant women and young children, using business assessments as well as quality-improvement and prenatal and early childhood oral health training. Results vary by practice, with some demonstrating the largest increases in encounters for pregnant women and others for young children. Individual sites saw greater improvements in different outcomes areas, based on their own structures and needs.

### **Coverage for Oral Health Care for Pregnant Women**

Stohl HE, Chen A, 2017. [Oral health coverage options for pregnant adults and adolescents](#). *Maternal and Child Health Journal* 22(1):24–31.

This article discusses the importance of comprehensive oral health care during pregnancy and summarizes the range of options for oral health coverage for pregnant women under Medicaid and the Children’s Health Insurance Program.

### **V. Best Practice Criteria**

The ASTDD Best Practices Project has selected five best practice criteria to guide state and community oral health programs in developing best practices. For these criteria, initial review standards are provided below to help evaluate a practice’s or program’s ability to promote optimal oral health for women and infants during the perinatal period.

#### **1. Impact/Effectiveness**

- A practice or program enhances the *processes* to improve access to oral health care.  
*Example:* A program provides training on perinatal oral health care to physicians, midwives, nurse practitioners, and other health professionals.
- A practice or program demonstrates *outcomes* that show improved access to oral health care and/or improved oral health status.  
*Example:* A program increases the number of preventive dental visits it provides and reduces the number of visits to the emergency room or urgent care facility for oral infection.

#### **2. Efficiency**

- A practice or program shows cost savings resulting from preventing oral disease and/or reducing treatment needs.  
*Example:* A program implements cost savings practices by providing preventive oral health services and reducing the need for dental treatment.

- A practice or program leverages federal, state, and/or local resources to improve perinatal oral health.  
*Example:* A program uses existing systems of care and resources as well as partnerships with public and private sectors to support perinatal oral health services (e.g., outreach, care coordination, case management, preventive services).

### **3. Demonstrated Sustainability**

- A practice or program demonstrates sustainability or has a plan to maintain sustainability.  
*Example:* A program demonstrates continuous funding (agency line item in budget, reimbursement from public and private insurers) to support provision of services.

### **4. Collaboration/Integration**

- A practice or program establishes and maintains collaborations that integrate oral health efforts into other efforts to enhance oral health services.  
*Example:* A program located in the state department of health works in collaboration with state MCH agencies to improve systems of care and financing for oral health care (e.g., identifying and implementing models for delivery of care and payment).

### **5. Objectives/Rationale**

- A practice or program aligns its objectives with national or state objectives or performance measures to improve oral health.  
*Example:* A program aligns objectives with Healthy People national objectives to prevent and/or treat oral diseases, including periodontal disease and dental caries.

## **Evidence Supporting Best Practice Approaches**

The ASTDD Best Practices Committee takes a broad view of evidence to support best practice approaches for building effective state and community oral health programs. Practices that are linked by strong causal reasoning to the desired outcome of improving oral health and overall health of priority populations will be reported on by the committee. Strength of evidence from research, expert opinion, and field lessons fall within a spectrum: on one end of the spectrum are *promising best practice approaches*, which may be supported by limited research, expert opinion, and field lessons evaluating effectiveness; on the other end of the spectrum are *proven best practice approaches*, which are supported by strong research, expert opinion from multiple authoritative sources, and field lessons evaluating effectiveness.

Research may range from a majority of studies in dental public health or other disciplines reporting effectiveness to the majority of systematic reviews of scientific literature supporting effectiveness. Expert opinion may range from one expert group or general professional opinion supporting the practice to multiple authoritative sources (including federal agencies, national organizations, and/or initiatives) supporting the practice. Field lessons may range from success in state practices reported without evaluation documenting effectiveness to cluster evaluation of several states (group evaluation) documenting effectiveness.

To access information related to a systematic review vs. a narrative review: [Systematic vs. Narrative Reviews. \(Accessed: 5/21/2019\)](#)

## VI. State Practice Examples

The following practice examples illustrate various elements or dimensions of the best practice approach of *Perinatal Oral Health*. These reported success stories should be viewed in the context of the states and program's environment, infrastructure and resources. End-users are encouraged to review the practice descriptions (click on the links of the practice names) and adapt ideas for a better fit to their states and programs.

### A. Summary Listing of Practice Examples

**Table 1** provides a listing of programs and activities submitted by states. Each practice name is linked to a detailed description.

#	Practice Name	State	Practice
1	<a href="#">Alaska Childhood Understanding Behaviors Survey (CUBS)</a>	AK	02004
2	<a href="#">Partnerships and Cultural Relevancy: Changing Perceptions of Oral Health within Native American Tribe</a>	AZ	04008
3	<a href="#">Data Analysis and Reporting to Improve Oral Health Access</a>	AZ	04009
4	<a href="#">Infant Oral Health Program (IOCP)</a>	CA	06006
5	<a href="#">Infant Dental Quality Improvement Project</a>	CA	06008
6	<a href="#">Prenatal Oral Health Partnership</a>	CO	07007
7	<a href="#">Connecticut Perinatal and Infant Oral Health Project</a>	CT	08006
8	<a href="#">Integration of Oral Health Assessment, Education and Dental Referrals into Perinatal Care</a>	ME	22002
9	<a href="#">Developing Practice Guidance on Oral Health Care During Pregnancy for Prenatal and Dental Providers in Maryland</a>	MD	23014
10	<a href="#">Children's Dental Services WIC and Early Childhood Collaborative Project</a>	MN	26011
11	<a href="#">Advancing Oral Health for New Mexico Perinatal Populations Through Community Training</a>	NM	34006
12	<a href="#">Prenatal Oral Health Program (pOHP)</a>	NC	36005
13	<a href="#">Collaborative Practice Framework for Perinatal Oral Health Improvement</a>	NC	36009
14	<a href="#">North Carolina's Into the Mouths of Babes Program</a>	NC	36010
15	<a href="#">Oral Health Program and Home Visiting Partnership</a>	RI	45004
16	<a href="#">Building a Statewide Network to Address Perinatal Infant Oral Health</a>	SC	46003
17	<a href="#">Healthy Texas Smiles for Moms and Babies (HTSMB): Training Partnership for Home Visiting Programs</a>	TX	49005
18	<a href="#">Virginia's Experience: Improving Oral Health Outcomes for Pregnant Women and Infants</a>	VA	53007

19	<a href="#">Healthy Smiles for Mom and Baby</a>	WI	56007
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## B. Highlights of Practice Examples

Highlights of state practice examples are listed below.

### AK [Alaska Childhood Understanding Behaviors Survey \(CUBS\) \(Practice #02004\)](#)

The Alaska CUBS is a follow-up survey to the Pregnancy Risk Assessment Monitoring System (PRAMS) that was developed by the Alaska Division of Public Health, Section of Women’s, Children’s and Family Health, in 2006. After a pilot period in 2006 and 2007, CUBS has been ongoing since January 2008. CUBS’ purpose is to fill a gap in knowledge by collecting information related to child behavior, health, health care access, and school readiness among Alaska’s 3-year-olds. By using the methodology of re-interviewing mothers who completed a PRAMS survey, CUBS is also able to evaluate factors present at birth or early life that affect risk for later adverse childhood outcomes.

### AZ [Partnerships and Cultural Relevancy: Changing Perceptions of Oral Health within a Native American Tribe \(Practice #04008\)](#)

Native American children have some of the highest dental caries rates in the United States; estimated to be four times higher than the national average. Project Zero—Women & Infants (PZWI), a Perinatal Infant Oral Health Quality Improvement (PIOHQI) grant embarked on a partnership with a Native American Tribe located in northern Arizona to address this preventable disease. The inclusion of the Tribal judicial system and the broad awareness and educational campaign caused us to recognize that the Tribe was engaged in making a cultural shift in how their people viewed oral health.

### AZ [Data Analysis and Reporting to Improve Oral Health Access \(Practice #04009\)](#)

Project Zero-Women & Infants (PZWI) analyzed Arizona Medicaid (Arizona Health Care Cost Containment System – AHCCCS) 2017 and 2017 dental claims data to better understand the state’s oral health workforce capacity. Data analysis resulted in an established data pull, a database, charts, graphs and heat maps. These graphics were used by partners to advocate for legislative change including the addition of an adult emergency dental benefit, passed in 2018 and the promotion of a pregnant women’s benefit, reintroduced in 2019.

### CA [Infant Oral Health Program \(IOCP\) \(Practice #06006\)](#)

The specific aim of the IOCP is to simultaneously increase entry points of access and increase the number of trained dental and pediatric primary care providers (MDs, nurse practitioners, nurses, etc.) to integrate perinatal and pediatric health care with oral health services to improve overall health outcomes. IOCP not only trains dental students/residents, it also includes training for pediatric medical residents and pediatric nurse practitioner students and works in collaboration with trained Community Oral Health Workers (COHWs).

### CA [Infant Dental Quality Improvement Project \(Practice #06008\)](#)

California’s project was the result of several quality improvement projects at a Federally Qualified Health Center (FQHC) with the goal of increasing the dental visit rate of infants. This project took place at the Petaluma Health Center (PHC) in Sonoma County. The primary short-term outcome of interest for the program was the number of children with a well-child visit who visited the dentist by age 12 months. Embedding the caries risk assessment in the electronic medical record (EMR) was very important to this process.

### CO [Prenatal Oral Health Partnership \(Practice #07007\)](#)

Colorado's Cavity Free At Age Three (CF3) program has been testing promising practices to implement prenatal oral health education, screening and referral to a dental provider within health care delivery systems. The aim of the Prenatal Oral Health Partnership (POHP) is to increase the percentage of women who receive any dental services during pregnancy, with a focus on preventive dental services. CF3 strategically collaborated with health care delivery systems that serve high-risk populations.

**CT [Connecticut Perinatal and Infant Oral Health Project](#) (Practice #08006)**

Before 2009, dental utilization by perinatal women and infants in the HUSKY Health (Medicaid/CHIP) program in Connecticut was low. In September 2013, Connecticut was awarded a \$750,000 HRSA Perinatal and Infant Oral Health Quality Improvement grant for a four-year period, through March 2018. Dental utilization for perinatal women increased from 29.8% in 2005 to 57.6% in 2017. Dental utilization for infants increased from 27.3% in 2009 to 55.7% in 2016. Oral assessments by pediatric medical providers for children under four increased from 4,310 in 2012 to 16,105 in 2017 (+274%) and fluoride varnish applications went from 1,993 to 10,511 (+427%).

**ME [Integration of Oral Health Assessment, Education and Dental Referrals into Perinatal Care](#) (Practice #22002)**

The Before the First Tooth (BTFT) initiative works to integrate oral health into prenatal care by providing oral health education for health providers and expectant mothers and will refer patients to dental services. This initiative has worked on a state-wide clinical prenatal oral health integration pilot program encompassing the integration of oral health screenings, assessments and dental referrals during OB/medical prenatal visits and collecting data from each pilot site to assess impact, challenges and successes. Each pilot site received a one-hour clinical training and guide to implementation prior to the pilot launch. The initiative established goals, objectives and requirements for data reporting, and how initiative staff would provide support.

**MD [Developing Practice Guidance on Oral Health Care During Pregnancy for Prenatal and Dental Providers in Maryland](#) (Practice #23014)**

With support from the U.S. Health Resources and Services Administration (HRSA), the Maryland Department of Health's (MDH) Office of Oral Health (OOH) launched its Perinatal and Infant Oral Health Quality Improvement (PIOHQI) project in 2015 to address barriers related to access to oral health care for pregnant women. As part of the PIOHQI project, an interprofessional steering committee of Maryland experts developed state-specific practice guidance for health care providers who serve pregnant women. The final document, *Oral Health Care During Pregnancy: Practice Guidance for Maryland's Prenatal and Dental Providers* and its additional resources took almost two years to develop and cost approximately \$75,000 including lead staff member salary, and printing and mailing expenses. It was disseminated via mail to about 7,600 dentists, dental hygienists, obstetricians and gynecologists, and nurse midwives and was sent electronically to numerous provider organizations and academic and public health programs in Maryland.

**MN [Children's Dental Services WIC and Early Childhood Collaborative Project](#) (Practice #26011)**

Children's Dental Services (CDS) expanded services and dental education across Minnesota through partnerships with agencies that host Women, Infants, and Children (WIC) programs, Early Head Start programs, Early Childhood Dental Network, Early Childhood Family Education Programs, Department of Health, and other primary medical providers are targeting care to pregnant women and infants. CDS and partners developed a system for identifying pregnant women in need of oral health services and referred them to appropriate and accessible services. This project has been conducted through three phases: logistical planning, implementation, and evaluation.

**NM [Advancing Oral Health for New Mexico's Perinatal Populations Through Community Training \(Practice #34006\)](#)**

New Mexico's PIOHQI project adopted a community training model for advancing oral health education for the perinatal and infant workforce. This model employs a comprehensive and inclusive approach to oral health training of multiple provider types, agencies, and organizations that are engaged in the care and services provided to pregnant mothers and infants in a given community. Outcomes include increased knowledge and skills in evidence-based content, educating clients and parents, and community-specific oral health and dental resource identification.

**NC [Prenatal Oral Health Program \(pOHP\) \(Practice #36005\)](#)**

The Prenatal Oral Health Program (pOHP) began as a public health initiative to improve access to oral health care for pregnant women, while simultaneously promoting comprehensive prenatal oral health training in dental and medical schools. Dental students at the University of North Carolina (UNC) undergo pOHP training during their 3<sup>rd</sup> year. Medical students at UNC are also provided training and are taught to provide oral screenings. Though this program exists primarily at UNC, it is well adapted for use at other locations.

**NC [Collaborative Practice Framework for Perinatal Oral Health Improvement \(Practice #36009\)](#)**

In December 2018, the North Carolina Oral Health Section (OHS) launched Oral Health Care During Pregnancy: North Carolina Collaborative Practice Framework. This Framework serves as guidance to educate medical prenatal healthcare providers and dental providers on the importance and the safety of perinatal oral health care. This tool is being disseminated to providers across North Carolina (NC) who care for pregnant women. Quick Reference Guides were developed in conjunction with the framework for providers to use in the clinical setting. These Guides not only highlight provider services during the appointment, but also the shared oral health messages, which support oral health literacy for pregnant women.

**NC [North Carolina's Into the Mouths of Babes Program \(Practice #36010\)](#)**

North Carolina's (NC) Into the Mouths of Babes (IMB) program trains and pays primary care medical professionals to provide preventive oral health services (POHS) to Medicaid-insured children from tooth eruption to age three and a half. Preventive oral health services in IMB visits include oral evaluation, risk assessment, parent counseling, fluoride varnish application, and a dental referral as indicated. Use of a NC developed priority oral health risk assessment and referral tool is part of the training and can be used to prioritize referrals of the children at highest risk of caries in workforce shortage areas where referring every child to a dental home at age one is not an option.

**RI [Oral Health Program and Home Visiting Partnership \(Practice #45004\)](#)**

The Rhode Island Department of Health (RIDOH), the Oral Health Program (OHP) and the Family Home Visiting Program (FHVP) have a shared vision to improve the health of pregnant women and children in Rhode Island. The oral health and family home visiting partnership focuses on successfully building a relationship that supports the objectives of the Title V Maternal Child Health Services Block Grant program's National Performance Measure 13, preventive dental visits for pregnant women and children. Over the past two years, these two RIDOH programs have worked together to educate Family Home Visitors (FHV) on oral health, increased referrals made to dentists (tracked through a database created and maintained by FHVP), created educational materials for FHVs and parents/pregnant women, and worked on community outreach events. This unique collaboration serves as a model for other state programs looking to improve their maternal and child health national performance measures.

**SC [Building a Statewide Network to Address Perinatal Infant Oral Health \(Practice #46003\)](#)**

The broad purpose of South Carolina’s Perinatal Infant Oral Health Initiative (PIOHQI) was to adopt a statewide evidence-based framework for the integration of an oral health assessment and services into existing perinatal care systems. Social network analysis (SNA) was an essential component to the project. SNA examines the patterns of social relationships existing among a given set of actors, and the effect that network patterns may have on actor as well as network outcome. SNA was used to map the pattern of connections among Regional Community Systems Directors and local community agencies, and medical and dental providers.

**TX [Healthy Texas Smiles for Moms and Babies \(HTSMB\): Training Partnership for Home Visiting Programs \(Practice #49005\)](#)**

The Oral Health Improvement Program (OHIP) within the Texas Department of State Health Services is working to reduce the incidence of early childhood caries (ECC) by educating pregnant women on oral health and the importance of dental visits for themselves and their infant. OHIP is currently partnering through its HTSMB project with Nurse Family Partnership and Parents as Teacher home visiting programs. OHIP provides oral health training and resources to home visitors so they can confidently educate their clients. OHIP meets with home visiting leaders to discuss ways to provide additional learning opportunities and how to make institutional changes within home visiting programs that support oral health.

**VA [Virginia’s Experience: Improving Oral Health Outcomes for Pregnant Women and Infants \(Practice #53007\)](#)**

The Virginia Department of Health (VDH) provides information and tools to home visitors, family support workers, family educators and nurses. These non-traditional partners in turn provide oral health education to families they serve. Tools include the “Bright Futures-Oral Health Pocket Guide” that gives information on anticipatory guidance, proper nutrition, eruption of teeth, and the dental visit experience, as well as the effects of allowing children to sleep with a bottle, the importance of wiping an infant’s gums after each feeding, and how to practice good oral hygiene. In addition to education, community health nurses are taught how to perform oral health screenings, provide referrals, and apply fluoride varnish. Families receive links or referrals to available community services that meet their individual needs, including information on dental benefits available through Medicaid, and participate in a number of community meetings to increase knowledge on the importance of oral health during pregnancy and caring for an infant’s teeth throughout childhood.

**WI [Healthy Smiles for Mom and Baby \(Practice #56007\)](#)**

The goal of this project is to improve access to dental services for pregnant women and young children (under age 4) by integrating oral health education, preventive services (fluoride varnish) and dental care referral into Women, Infant and Children (WIC) and Prenatal Care Coordination (PNCC) programs. Six implementation sites used a quality improvement framework to test a variety of strategies and models to improve on, or add to, the oral health services provided to their clients. Federally Qualified Health Centers (FQHCs) and safety-net community dental clinics partnered with WIC and PNCC programs to serve as referral sources for the target population.

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## IX. Perinatal Oral Health Logic Model

Objectives	Inputs	Activities	Outputs	Outcomes
<ul style="list-style-type: none"> <li>• Monitor and assess oral health</li> <li>• Enhance infrastructure</li> <li>• Build partnerships</li> <li>• Inform and empower public and mobile support</li> <li>• Ensure workforce and systems</li> <li>• Utilize data and research</li> <li>• Develop and enhance programs</li> <li>• Integrate oral health care into primary care</li> </ul>	<ul style="list-style-type: none"> <li>• Funding               <ul style="list-style-type: none"> <li>–CDC</li> <li>–State general fund</li> <li>–Title V MCH Block Grant</li> </ul> </li> <li>• Perinatal oral health guidelines</li> <li>• Surveillance               <ul style="list-style-type: none"> <li>–BRFSS, PRAMS</li> </ul> </li> <li>• Perinatal and oral health professionals</li> <li>• Professional organizations               <ul style="list-style-type: none"> <li>–AAP, AAPHD, ACOG</li> <li>–AAPD, ADA, ADHA</li> </ul> </li> <li>• Academic institutions</li> <li>• Networks               <ul style="list-style-type: none"> <li>–Coalitions</li> <li>–Perinatal network</li> <li>–Rural health network</li> </ul> </li> <li>• Non-governmental organizations               <ul style="list-style-type: none"> <li>–Faith-based groups</li> <li>–Mother-mother networks</li> <li>–Philanthropies</li> </ul> </li> <li>• Public health agencies</li> <li>• Programs               <ul style="list-style-type: none"> <li>–Diabetes</li> <li>–Early Head Start</li> <li>–Fluoride varnish</li> <li>–Home visiting</li> <li>–Prenatal</li> <li>–Tobacco cessation</li> <li>–Water fluoridation</li> <li>–WIC</li> </ul> </li> <li>• Public and private insurance payers</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor perinatal oral health status</li> <li>• Educate and engage women of reproductive age, prenatal care professionals, and community providers</li> <li>• Promote partnerships between oral health professionals and service and advocacy organizations as well as perinatal health professionals and community service providers</li> <li>• Develop policies and plans that prioritize the importance of oral health during the perinatal period</li> <li>• Promote quality oral health care during the perinatal period</li> <li>• Ensure a competent and adequate oral health workforce</li> <li>• Support, conduct and promote research focused on perinatal oral health</li> </ul>	<ul style="list-style-type: none"> <li>• Burden of oral disease and access to oral health care is described</li> <li>• Perinatal oral health indicators are monitored</li> <li>• Key stakeholders are identified</li> <li>• Community goals are identified</li> <li>• Perinatal and oral health professionals promote perinatal oral health</li> <li>• Perinatal oral health services are available and appropriately compensated</li> <li>• Effective interventions are available and successfully implemented</li> </ul>	<p><u>Increased</u></p> <ul style="list-style-type: none"> <li>• Percentage of women who receive oral health care during pregnancy</li> <li>• Percentage of women who have a regular source of oral health care during pregnancy</li> </ul> <p><u>Reduced</u></p> <ul style="list-style-type: none"> <li>• Prevalence of caries and untreated caries among women during perinatal period</li> <li>• Prevalence of gingivitis and disruptive periodontitis among women during pregnancy</li> <li>• Disparities in perinatal oral health care access and oral health status</li> </ul> <p><b>Distal</b></p> <p><u>Increased</u></p> <ul style="list-style-type: none"> <li>• Maternal and child oral health and well-being</li> <li>• Utilization of preventive oral care by young children</li> </ul> <p><u>Reduced</u></p> <ul style="list-style-type: none"> <li>• Prevalence of early childhood caries</li> <li>• Oral health disparities in the community</li> <li>• Oral health care expenditures</li> </ul>

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