

# Guideline on Perinatal Oral Health Care

## Originating Council

Council on Clinical Affairs

## Review Council

Council on Clinical Affairs

## Adopted

2009

## Revised

2011

## Purpose

The American Academy of Pediatric Dentistry (AAPD) recognizes that perinatal oral health, along with infant oral health, is one of the foundations upon which preventive education and dental care must be built to enhance the opportunity for a child to have a lifetime free from preventable oral disease. Recognizing that dentists, physicians, allied health professionals, and community organizations must be involved as partners to achieve this goal, the AAPD proposes recommendations for perinatal oral health care, including caries risk assessment, anticipatory guidance, preventive strategies, and therapeutic interventions, to be followed by the stakeholders in perinatal and pediatric oral health.

## Method

This document is an update of the previous guideline adopted in 2009. The update is based on a review of the current dental and medical literature related to perinatal oral health care. An electronic search was conducted using PubMed® with the following parameters: Terms: “early childhood caries”, “perinatal”, “perinatal oral health”, and “early childhood caries prevention”; Fields: all; Limits: within the last 10 years, humans, English, and clinical trials. Papers for review were chosen from the resultant list of 113 articles and from references within selected articles. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

## Background

The perinatal period is defined as the period around the time of birth, beginning with the completion of the 20-28th week of gestation and ending 1-4 weeks after birth.<sup>1-3</sup> Perinatal oral health plays a crucial role in the overall health and well-being of pregnant women.<sup>4</sup> It is also essential for the health and well-being of their newborn children. Many women do not seek dental care during their pregnancy, and those that do often confront unwillingness of dentists to provide care.<sup>5-9</sup> Many expectant mothers are unaware of the implications of poor oral health for themselves, their pregnancy, and/or their unborn child.<sup>7,10,11</sup> Research continues to show links between peri-

odontal disease and adverse outcomes in pregnancy including preterm deliveries, low birth weight babies, and preeclampsia.<sup>12-21</sup> Furthermore, mothers with poor oral health and high levels of cariogenic oral bacteria are at greater risk for infecting their children with the bacteria and increasing their children's caries risk at an early age.<sup>22</sup> Dental caries in infants is a disease that generally is preventable. Determining those mothers at highest risk for transferring cariogenic bacteria to their children improves opportunities for preventive intervention.

The primary goal of perinatal oral health care, with regard to caries transmission, is to lower the numbers of cariogenic bacteria in an expectant mother's mouth so that mutans streptococci (MS) colonization of the infant can be delayed as long as possible.<sup>23</sup> Timely delivery of educational information and preventive therapies to these parents can reduce the incidence of early childhood caries (ECC), prevent the need for dental rehabilitation, and improve the oral health of their children.<sup>24-26</sup> Physicians, nurses, and other health care professionals are far more likely to see expectant or new mothers and their infants than are dentists. Therefore, it is essential that these providers be aware of the infectious etiology and associated risk factors of dental caries and ECC, make appropriate decisions regarding timely and effective interventions for pregnant women, and facilitate the establishment of a dental home.<sup>27-29</sup>

## Perinatal Oral Health

### Dental caries

Dental caries is a common chronic infectious transmissible disease resulting from tooth-adherent specific bacteria, primarily MS, that metabolize sugars to produce acid which, over time, demineralizes tooth structure.<sup>30</sup> MS is considered to be the principal indicator group of bacterial organisms responsible for dental caries.<sup>31,32</sup> MS colonization of an infant may occur from the time of birth.<sup>31,33-38</sup> Significant colonization occurs after dental eruption as teeth provide non-shedding surfaces for adherence. Other surfaces also may harbor MS.<sup>38-40</sup> For example, the furrows of the tongue appear to be an important ecological niche in harboring the bacteria in predecidate infants.<sup>31,39</sup>

Vertical transmission of MS from mother to infant is well documented.<sup>41-44</sup> Genotypes of MS in infants appear identical to those present in mothers in 17 reports, ranging from 24 to 100%.<sup>43</sup> The higher the levels of maternal salivary MS, the greater the risk of the infant being colonized.<sup>45-47</sup> The success of transmission and resulting colonization of the mother's salivary MS may be related to several factors including the magnitude of the inoculum, frequency of inoculation, and a minimum infective dose.<sup>48-50</sup> Along with maternal salivary levels of MS, the mother's oral hygiene, periodontal disease, snack frequency, and socioeconomic status also are associated with infant colonization.<sup>40</sup> Reports indicate that horizontal transmission (ie, transmission between members of a group such as siblings of a similar age or children in a daycare center) occurs.<sup>51-54</sup> A study of children with severe early childhood caries (S-ECC) revealed that non-maternal MS genotypes were identified in the majority (74%) of children.

Caries risk assessment can be performed to determine the patient's relative risk for dental caries. Its goal is to prevent disease by identifying and minimizing causative factors (eg, microbial burden, dietary habits, plaque accumulation) and optimizing protective factors (eg, fluoride exposure, oral hygiene, sealants).<sup>55</sup> Caries-risk assessment can aid in the identification of reliable predictors and allow health care professionals to identify and refer high-risk patients.<sup>56</sup> The early establishment of a dental home provides time-critical opportunities to implement preventive oral health practices, including caries risk assessment, and reduces the risk of preventable oral/dental conditions or disease for children.<sup>57</sup>

### Anticipatory guidance<sup>45</sup>

Anticipatory guidance for the mother and/or other caregivers can help delay the onset and reduce the impact of MS colonization of the infant.<sup>24-26,58</sup> Modification of the mother's oral hygiene and diet and the use of topical chlorhexidine and/or fluoride can have a significant effect on MS levels and, correspondingly, the infant's caries rate.<sup>59-62</sup>

### Recommendations

Recommendations for perinatal oral health include the following:

**Oral health education:** The perinatal period is an opportune time to educate and perform dental treatment on expectant mothers.<sup>9,19,63,64</sup> Pregnancy offers an opportunity to educate women regarding oral health by providing a "teachable moment" in self-care and future child-care.<sup>65</sup> Early intervention and counseling during the perinatal period from all health care providers (eg, physicians, dentists, nurses) are essential to ensure good oral health for the mother and infant.<sup>24-26</sup>

**Oral hygiene:** Toothbrushing with fluoridated toothpaste and flossing by the mother are important to help dislodge food and reduce bacterial plaque levels. Systematic literature reviews suggest an association between periodontal disease and an increased risk of adverse pregnancy outcomes, including preterm deliveries, low birth weight babies, and preeclampsia.<sup>14,15,17,18,66,67</sup> Periodontal infections, which can be a reservoir for inflamma-

tory mediators, can pose a threat to the placenta and fetus which can increase the likelihood of preterm delivery.<sup>68,69</sup> Mothers with severe periodontitis have high levels of prostaglandin in their gingival crevicular fluid and blood. In turn, these increased levels of prostaglandins may be associated with uterine contractions leading to preterm deliveries.<sup>69,70</sup> While some research shows that scaling and root planning during pregnancy can reduce the likelihood of preterm deliveries and low birth weight babies,<sup>12,71-75</sup> a recent randomized controlled trial did not support that treatment of periodontal disease during pregnancy prevents preterm birth, fetal growth restriction, or preeclampsia.<sup>76</sup> Regardless of the potential for improved oral health to improve pregnancy outcomes, the data on the relationship between maternal and child experience with dental caries is well established. Therefore, comprehensive dental services for pregnant women should be available so that, not only their own oral and general health is safeguarded, but also so that their children's caries risk is reduced.<sup>65</sup>

The effects of pregnancy may negatively affect oral health behaviors among pregnant women. Nausea and vomiting may lead to avoidance of toothbrushing, resulting in an increased caries rate. For a pregnant woman experiencing frequent vomiting, rinsing with a cup of water containing a teaspoon of baking soda and waiting an hour before brushing can help minimize dental erosion.<sup>9</sup> Using a fluoridated toothpaste, chewing sugarless or xylitol-containing gum, and eating small amounts of nutritious food throughout the day can help minimize their caries risk.<sup>9</sup>

**Diet:** Important components of the mother's diet need to be discussed fully. A healthy diet is necessary to provide adequate amounts of nutrients for the mother-to-be and unborn child. Food cravings may lead to the consumption of foods that increase the mother's caries risk. The caries potential of the mother's diet (ie, cariogenicity of certain foods, beverages, medicines), as well as its effect on her child, should be addressed. The frequency of consumption of cariogenic substances and resulting demineralization/remineralization process also are important discussion topics.

**Fluoride:** Using a fluoridated toothpaste and rinsing with an alcohol-free, over-the-counter mouth rinse containing 0.05% sodium fluoride once a day or 0.02% sodium fluoride rinse twice a day have been suggested to help reduce plaque levels and help promote enamel remineralization.<sup>23</sup>

**Professional oral health care:** Routine professional dental care for the mother can help optimize her oral health. Every pregnant woman should have an oral evaluation, be counseled on proper oral hygiene, and be referred for preventive and therapeutic oral health care.<sup>9,19</sup> It has been shown that maternal salivary levels of MS are related significantly to MS colonization in plaque as well as dental caries in their children.<sup>46,77,78</sup> Removal of active caries with subsequent restoration of the remaining tooth structure is important to suppress maternal MS reservoirs and has the potential to minimize the transfer of MS to the infant, thereby decreasing the infant's risk of developing ECC.<sup>9</sup> The safest time to perform dental treatment during

pregnancy is in the second trimester, or the 14th–20th weeks.<sup>9,19,65,79</sup> The risk of pregnancy loss is lower in the second trimester compared to that in the first trimester, and organogenesis is complete.<sup>7</sup> Even though the second trimester is usually optimal, dental treatment can be accomplished safely at any time during pregnancy.<sup>9</sup>

Treatment options may include diagnostic x-rays,<sup>9,80-84</sup> dental prophylaxis, periodontal treatment, and restorations<sup>85-90</sup> with the administration of local anesthetics containing epinephrine.<sup>9,91</sup> Amalgam may be considered as a restorative material in pregnant women. There is no evidence that fetal exposure to mercury released from the mother's existing amalgam restorations causes any adverse effects.<sup>85,86,89,90</sup> Since mercury vapor released during removal and placement of an amalgam restoration may be absorbed into the blood stream and cross the placental barrier, the use of rubber dam and high speed evacuation is recommended.<sup>90</sup> Antibiotics and analgesics for treating infection and controlling pain may be administered.<sup>9</sup> Acute conditions, such as pain and swelling, should be treated as soon as possible.<sup>9,92</sup> Delay in necessary treatment could result in significant risk to the mother and indirectly to the fetus.<sup>9</sup> The consequences of not treating an active infection during pregnancy out-weigh the possible risks presented by most of the medications required for dental treatment.<sup>93</sup> Due to patient positioning, comfort is a consideration for treatment during the third trimester. In these cases, elective treatment sometimes is best deferred until after delivery.

*Delay of colonization:* Reducing maternal MS reservoirs, avoiding or delaying MS transmission, and implementing preventive practices for the child can help delay the colonization process.<sup>94-96</sup> Maternal MS reservoirs can be suppressed by dietary counseling, reducing the frequency of simple carbohydrate intake, applying topical chlorhexidine and/or fluoride, removing and restoring active caries, and chewing xylitol-containing chewing gum.<sup>9</sup> Evidence suggests that the use of xylitol chewing gum (at least 2 or 3 times per day by the mother) has a significant impact on mother-child transmission of MS and decreasing the child's caries rate.<sup>61,97-100</sup> Avoidance or delay of MS transmission can be accomplished by educating the mother or caregiver on behaviors that directly pass saliva to the child (eg, sharing utensils or cups, cleaning a dropped pacifier by mouth).<sup>94,101,102</sup> Routine preventive efforts should include toothbrushing, optimizing the child's fluoride exposure, and limiting the child's frequency of carbohydrate intake.

#### Additional recommendations

The AAPD recommends:

1. All primary health care professionals who serve pregnant women provide education on the etiology and prevention of ECC. Oral health counseling and referral for a comprehensive oral examination and treatment during pregnancy is especially important for the mother.
2. The curriculum of all medical, nursing, and allied health professional programs include education in perinatal oral health, including the infectious etiology of ECC, methods

of oral health risk assessment, anticipatory guidance, and the need for early establishment of a dental home.

3. Parents/caregivers establish a dental home for infants by 12 months of age.
4. Legislators, policy makers and third party payors be educated about the benefits of perinatal intervention in order to support efforts that improve access to oral health care for pregnant women, including more frequent and comprehensive services.

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