

Guideline on Oral Health Care for the Pregnant Adolescent

Originating Council

Council on Clinical Affairs, Committee on the Adolescent

Adopted

2007

Purpose

The American Academy of Pediatric Dentistry (AAPD), as the oral health advocate for infants, children, adolescents, and persons with special needs, recognizes that adolescent pregnancy remains a significant social and health issue in the US. This guideline is intended to address management of oral health care particular to the pregnant adolescent rather than provide specific treatment recommendations for oral conditions.

Methods

This guideline is based on a review of the current dental and medical literature related to adolescent pregnancy. Some recommendations are evidence-based, while others represent best clinical practice and expert opinion. A MEDLINE search was conducted using the terms "pregnancy", "adolescent pregnancy", "maternal", and "pre-term birth" with "oral health".

Background

General considerations

Even though the birth rate for US females aged 15 to 19 declined 1 percent between 2003 and 2004 to 41.2 births per 1,000, approximately 900,000 teenagers become pregnant each year.¹ Approximately 50 percent of adolescent pregnancies occur within the first 6 months of initial sexual intercourse, even with increasing use of contraceptives by adolescents.² The correlation between poverty and adolescent pregnancy is great, for as many as 83 percent of adolescent females who give birth are from low-income families.³ Once an adolescent has given birth to one child, she is at increased risk for giving birth to another child during adolescence.¹

Medical complications involving mother and child occur more frequently in pregnant females aged 11 through 15 years than those aged 20 to 22 years.⁴ These include the delivery of low birth weight infants, increased neonatal death rate, and increased mortality rate for the mother.⁴ In addition, pregnancy-induced hypertension, anemia, sexually transmissible diseases, and premature delivery are concerns for the pregnant adolescent.⁵ Hypertension increases the risk of bleeding during procedures. Blood pressure $\geq 140/90$ mmHg is considered mild hypertension, whereas values $\geq 160/110$ mmHg are considered severe.⁶

The diet of the pregnant adolescent can affect the health of the child. A healthy diet is necessary to provide adequate amounts of nutrients to the mother-to-be and the unborn child.⁷

Nutrients of particular importance include folate, vitamin B⁶, vitamin B¹², calcium, and zinc.⁸ During pregnancy, a woman's nutritional needs are increased, but certainly "the eating for 2" concept is not recommended.⁹ The total energy needs during pregnancy range between 2,500 to 2,700 kcal a day for most women, but pre-pregnancy body mass index, rate of weight gain, maternal age, and physiological appetite must be considered in tailoring this recommendation to the individual.¹⁰ Nausea and vomiting occur in 50 to 90 percent of all pregnancies during the first trimester and often are associated with young age and low socioeconomic status.¹¹ An expectant female may modify food choices due to morning sickness and/or taste aversions, but appropriate nutrition for the health of the mother and fetus is crucial.

A study of over 152,000 women who gave birth between 1996 and 2000 found almost half were prescribed medications for which there was no clinical evidence of safety for use during pregnancy.¹² The goal of any drug therapy during pregnancy is to improve maternal/fetal health while avoiding adverse drug reactions.¹³ The US Food and Drug Administration has defined 5 categories of drugs according to the risk they pose to pregnant women and their fetuses.¹⁴ These categories provide some guidance to the relative safety of the medication for use by pregnant women. Category A includes drugs that have been studied in humans and have evidence supporting their safe use; Category B drugs show no evidence of risk to humans. Generally, these drugs are considered acceptable for use during pregnancy.¹³ Category C drugs, such as aspirin and aspirin-containing products, may be used with caution, whereas drugs in categories D (eg, tetracycline) and X are not intended for use during pregnancy. The Organization of Teratology Information Services ("<http://orpheus.ucsd.edu/otis>"; 866-626-6847) provides useful national information for drug safety during pregnancy.

Low socioeconomic status and lack of parental involvement can place an adolescent at increased risk of initiating tobacco use.¹⁵ Smoking during pregnancy is associated with adverse outcomes.^{15,16} Women who smoke may have increased risks for ectopic pregnancy, spontaneous abortion, and preterm delivery.^{15,16} Infants born to women who smoke during pregnancy are more likely to be small for gestational age and have low birthweight.¹⁵⁻¹⁸ The longer the mother smokes during pregnancy, the greater the effect on the infant's birth weight.¹⁶ Increasing evidence shows that maternal tobacco use is associated with

mental retardation and birth defects such as oral clefts.¹⁵ The risk for perinatal mortality (ie, stillbirths and neonatal deaths) and sudden infant death syndrome (SIDS) is increased for infants of women who smoke.^{15,16} Infants and children exposed to environmental tobacco smoke (ie, second hand smoke) have higher rates of lower respiratory illness, middle ear infections, asthma, and caries in the primary dentition.¹⁵⁻²⁰ Women are more likely to stop smoking during pregnancy, both spontaneously and with assistance, than at other times in their lives.¹⁶

Use of ionizing radiation in the US is a well-regulated activity.²¹ The federal government establishes performance standards for manufacture and installation of x-ray generating equipment. States implement regulations that govern users; these regulations pertain to facility design, shielding, and use and maintenance of equipment.²¹ Major biological risks from radiation exposure are carcinogenesis, fetal effects, and mutations. Health benefits will outweigh the risk from radiation exposure from any radiographic examination if:

1. the examination is clinically indicated and justified,
2. technique is optimized to ensure high quality diagnostic images, and
3. principles are followed to minimize exposure.²¹

Oral conditions associated with pregnancy

Changes in the oral cavity have been associated with pregnancy. These include alterations in both the hard and soft tissues. An increase in caries has been associated with carbohydrate loading as snacking becomes more frequent.⁷ In some instances, morning sickness and vomiting may contribute to the onset of perimyolysis, an erosion of the lingual surfaces of the teeth caused by exposure to gastric acids. A confounding factor is that pregnancy-associated hormonal changes may cause dryness of the mouth. Approximately 44 percent of pregnant participants in one study reported persistent xerostomia.²²

From a periodontal perspective, the effects of hormonal levels on the gingival status of pregnant women may be accompanied by increased levels of *Bacteroides*, *Prevotella*, and *Porphyromonas*.²³ Signs of gingivitis (eg, bleeding, redness, swelling, tenderness) are evident in the second trimester and peak in the eighth month of pregnancy, with anterior teeth affected more than posterior teeth.²⁴ These findings are exacerbated by poor plaque control and mouth breathing.²⁴ Increased tooth mobility has been associated with microbial shifts from aerobic to anaerobic bacteria.²³ These bacterial shifts are accompanied by increased inflammation in the attachment apparatus, as well as mineral disturbances in the lamina dura, causing tooth mobility. This condition appears to reverse postpartum.²³

Periodontitis during pregnancy, if left untreated, has been shown to contribute to preterm, low birth weight infants.²⁴ One study compared 74 pregnant teenagers who received periodontal treatment during pregnancy to 90 who did not. The rate of preterm/low birth weight delivery was 18.9 percent in the control and 13.5 percent in the treatment group.²⁵ This relationship continues to be investigated in large clinical trials.^{27,28} Periodontal disease, as a risk for pre-term birth, may be related to the presence of prostaglandins, certain cytokines, and tumor

necrosis factor-alpha. Prospective studies may provide more direct evidence of this relationship. Another association being investigated is the effect of periodontitis and the development of preeclampsia, a rapidly progressing condition occurring in pregnancy characterized by hypertension and the presence of proteinuria.²⁸

Oral health care during pregnancy

A multi-state study concluded that, besides neglecting medical care during pregnancy, most expectant females of all ages do not seek dental care, even though 50 percent of them have a dental problem.⁵ The expectant mother might question the safety of dental treatment during pregnancy. Untreated oral disease may compromise the health of the pregnant female and the unborn child.²⁹ The consequences of not treating an active infection during pregnancy outweigh the possible risks presented by most of the medications required for dental care.¹³ In addition, deferring elective dental treatment during a healthy pregnancy is not justified.²⁹

During dental radiographic examination of a pregnant patient, optimizing techniques, shielding the thyroid and abdomen, choosing the fastest available image receptor (ie, high-speed film, rare earth screen-film systems, digital radiography), and avoiding retakes help minimize radiation exposure to the fetus.^{21,30} The health care provider must be aware that the primary dental x-ray beam may pass near or through the thyroid gland, even with attention to proper radiographic techniques. The juvenile thyroid is among the most sensitive organs to radiation-induced tumors, both benign and malignant.²¹ Risk decreases significantly with age at exposure, essentially disappearing after age 20.²¹ Evidence shows that radiation exposure to the thyroid during pregnancy is associated with low birth weight.³¹ Common dental projections rarely, if ever, deliver a measurable absorbed dose to the embryo or fetus.²¹ Gonadal absorbed dose from a typical dental x-ray procedure is equivalent to about 1 hour of natural background radiation.²¹ The National Council on Radiation Protection and Measurements recommends if dental treatment is to be deferred until after the delivery, so should the dental radiographs.²¹

The objectives of professional oral health care during the first trimester include avoiding fetal hypoxia, premature labor/abortion, and teratogenic effects.²⁹ Due to the increased risk of pregnancy loss, use of nitrous oxide may be contraindicated in the first trimester of pregnancy.³² The safest and most comfortable time for dental treatment is during weeks 14 to 20 of gestation. Because the pregnant uterus is below the umbilicus, the woman is generally more comfortable at this time. Pregnant women are considered to have a "full stomach" due to delayed gastric emptying and, therefore, are at increased risk for aspiration, particularly during the last trimester.^{33,34} Elective restorative and periodontal therapies during the second trimester may prevent any dental infections or other complications from occurring in the third trimester.²⁹ In the final trimester, a prophylaxis may be repeated, especially if home oral care is inadequate or if soft tissue is abnormal.

Evidence is insufficient to support or refute that mercury exposure from dental amalgams contributes to adverse pregnancy

outcomes.^{35,36} Currently, there is no evidence that the exposure of a fetus to mercury releases from the mother's existing amalgam fillings causes any adverse effects.³⁵⁻³⁸ Mercury vapor released during the removal or placement of amalgam restorations may be inhaled and absorbed into the blood stream and does cross the placental barrier. The use of rubber dam and high speed suction can reduce the risk of vapor inhalation.³⁸

Suppression of the mother's reservoirs of *Streptococcus mutans* (SM) by dental rehabilitation and antimicrobial treatments may prevent or at least delay infant acquisition of these cariogenic microorganisms.³⁹ SM, present in all children with early childhood caries, is predominantly acquired from mother's saliva, and transmission may occur as early as the first year of life.⁴⁰ Improving oral health during pregnancy leads to a reduction in salivary SM in the offspring.⁴⁰ Beginning in the sixth month of pregnancy, a daily rinse of 0.05 percent sodium fluoride and 0.12 percent chlorhexidine has resulted in significant reduction in levels of caries-causing bacteria, consequently delaying the colonization of such bacteria among offspring.³⁹ Xylitol, a naturally occurring sweetener, has been added to a variety of products because of its potential to reduce caries incidence. Although xylitol chewing gum has been shown to reduce the mother-child transmission of SM, there is still uncertainty regarding the frequency, amount, and duration of chewing required to reduce bacterial transmission.⁴¹

Education is an important component of prenatal oral health care and may have a significant effect on the oral health of both the mother and the child. Counseling for the pregnant adolescent includes topics directed toward all adolescent patients (eg, dietary habits, injury prevention, third molars), as well as oral changes that may occur during pregnancy and infant oral health care. Since the pregnant adolescent may be receptive to information that will improve the infant's health, anticipatory guidance, a proactive developmentally-based counseling technique, can be introduced to focus on the needs of the child at each stage of life.

Legal considerations

Statutes and case law concerning consent involving pregnant patients less than 18 years of age vary from state to state. In some states, dentists are required to obtain parental consent for non-emergency dental services provided to a child 17 years of age or younger who remains under parental care.⁴² This would involve obtaining consent from the parent who must be aware of the pregnancy in order to understand the risks and benefits of the proposed dental treatment.²⁹ However, if the parent is unaware of the pregnancy, the pregnant adolescent may be entitled to confidentiality regarding health issues such as the pregnancy.⁴³ In other states, there are "mature minor" laws that allow minors to consent for their own health care when a dentist deems the minor competent to provide informed consent. In addition, some states emancipate minors who are pregnant or by court order. Practitioners are obligated to be familiar with and abide by the laws particular to where they practice and where the patient resides.

Recommendations

The AAPD recommends that all pregnant adolescents seek pro-

fessional oral health care during the first trimester. After obtaining a thorough medical history, the dental professional should perform a comprehensive evaluation which includes a thorough dental history, dietary history, clinical examination, and caries risk assessment. The dental history includes, but is not limited to, discussion of preexisting oral conditions, signs/symptoms of such, current oral hygiene practices and preventive home care, previous radiographic exposures, and tobacco use. The adolescent's dietary history should focus on exposures to carbohydrates, especially due to increased snacking, and acidic beverages/foods. During the clinical examination, the practitioner should pay particular attention to health status of the periodontal tissues. The AAPD's caries-risk assessment tool⁴⁴, utilizing historical and clinical findings, will aid the practitioner in identifying risk factors in order to develop an individualized preventive program.

Based upon the historical indicators, clinical findings, and previous radiographic surveys, radiographs may be indicated. Because risk of carcinogenesis or fetal effects is very small but significant, radiographs should be obtained only when there is expectation that diagnostic yield (including the absence of pathology) will influence patient care. If dental treatment must be deferred until after delivery, radiographic assessment also should be deferred. All radiographic procedures should be conducted in accordance with radiation safety practices. These include optimizing the radiographic techniques, shielding the pelvic region and thyroid gland, and using the fastest imaging system consistent with the imaging task. Image receptors of speeds slower than American National Standards Institute (ANSI) speed group E shall not be used.

Counseling for all pregnant patients should address:

1. Relationship of maternal oral health with fetal health (eg, association of periodontal disease with preterm birth and pre-eclampsia),
2. An individualized preventive plan including oral hygiene instructions, rinses, and/or xylitol gum to decrease the likelihood of SM transmission postpartum,
3. Dietary considerations (eg, maintaining a healthy diet, avoiding frequent exposures to cariogenic foods and beverages, overall nutrient and energy needs),
4. Anticipatory guidance for the infant's oral health including the benefits of early establishment of a dental home,
5. Anticipatory guidance for the adolescent's oral health to include injury prevention, oral piercings, tobacco and substance abuse, sealants, and third molars,
6. Oral changes that may occur secondary to pregnancy (eg, xerostomia, shifts in oral flora),
7. Individualized treatment recommendations based upon the specific oral findings for each patient.

Preventive services must be a high priority for the adolescent pregnant patient. Ideally, a dental prophylaxis should be performed during the first trimester and again during the third trimester if oral home care is inadequate or periodontal conditions warrant professional care. Referral to a periodontist should be considered in the presence of progressive periodontal disease. While fluoridated dentifrice and professionally-applied

topical fluoride treatments can be effective caries preventive measures for the expectant adolescent, the AAPD does not support the use of prenatal fluoride supplements to benefit the fetus.⁴⁵

A pregnant adolescent experiencing morning sickness should be instructed to rinse with a cup of water containing a teaspoon of sodium bicarbonate and to avoid tooth brushing for about 1 hour after vomiting to minimize dental erosion caused by stomach acid exposure.⁶ Where there is established erosion, fluoride may be used to minimize hard tissue loss and control sensitivity. A daily neutral sodium fluoride mouth rinse or gel to combat enamel softening by acids and control pulpal sensitivity may be prescribed.⁴⁶ A palliative approach to alleviate dry mouth may include increased water consumption or chewing sugarless gum to increase salivation.

Customary practice regarding invasive dental procedures requires certain precautions during pregnancy, particularly during the first trimester. Elective restorative and periodontal therapies should be performed during the second trimester. Dental treatment for a pregnant patient who is experiencing pain or infection should not be delayed until after delivery. When selecting therapeutic agents for local anesthesia, infection, postoperative pain, or sedation, the dentist must evaluate the potential benefits of the dental therapy versus the risk to the pregnant patient and the fetus. The practitioner should select the safest medication, limit the duration of the drug regimen, and minimize dosage. Health care providers should avoid the use of aspirin, aspirin-containing products, erythromycin estolate, and tetracycline in the pregnant patient.⁶

Patients requiring restorative care should be counseled regarding the risk and benefits and alternatives to amalgam fillings. The dental practitioner should use rubber dam and high speed suction during the placement or removal of amalgam to reduce the risk of vapor inhalation.³⁸ Consultation with the prenatal medical provider should precede use of nitrous oxide/oxygen analgesia/analgesia during pregnancy. Nitrous oxide inhalation should be limited to cases where topical and local anesthetics alone are inadequate. Precautions must be taken to prevent hypoxia, hypotension, and aspiration.³³

The pediatric dentist should incorporate positive youth development (PYD)⁴⁷ into care for the adolescent patient. This approach goes beyond traditional prevention, intervention, and treatment of risky behaviors and problems and suggests that a strong interpersonal relationship between the adolescent and the pediatric dentist can be influential in improving adolescent oral health and transitioning to adult care. Through PYD, the dentist can promote healthy lifestyles, teach positive patterns of social interaction, and provide a safety net in times of need. At a time agreed upon by the patient, parent, and pediatric dentist, the patient should be transitioned to a practitioner knowledgeable and comfortable with managing that patient's specific oral care needs.

Dental practitioners must be familiar with state statutes that govern consent for care for a pregnant patient less than the age of majority. If a pregnant adolescent's parents are unaware of the pregnancy, and state laws require parental consent for dental treatment, the practitioner should encourage the

adolescent to inform them so appropriate informed consent for dental treatment can occur.

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