

# Dental Care as a Safe and Essential Part of a Healthy Pregnancy

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**Abstract:** Oral health is essential for general health and well-being, and this is especially so during pregnancy. Pregnancy may present challenges to the oral health of the mother, mainly because of adaptations in basic physiology. However, many mothers-to-be and their health professionals, both prenatal and dental, are unsure as to the safety of providing dental care during pregnancy. National guidelines, together with recommendations from numerous state-level and professional organizations, consistently indicate that provision of dental care is both safe and essential during pregnancy. Pregnancy also provides opportunities for the oral health of both infant and new mother after delivery that can set the infant on a lifetime pathway that minimizes preventable oral disease. This review summarizes guidelines for dental care during pregnancy, provides an overview of physiologic changes that occur and their relevance to oral health and dental care delivery, outlines risk factors for oral conditions, and considers timely preventive strategies. It also underscores the need for interprofessional collaboration with the perinatal team to optimize the quality of healthcare and ensure positive outcomes.

## LEARNING OBJECTIVES

- Describe the systemic physiologic changes that occur during pregnancy, including those encountered in the oral cavity
- Discuss the current guidelines and consensus statements for oral health and dental care during pregnancy
- Assess risk factors for oral disease in pregnant patients to allow timely preventive strategies and restorative services
- Explain the need for interprofessional collaboration with the perinatal team to achieve successful outcomes

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Dental professionals acknowledge that oral health is essential for overall health and well-being.<sup>1-3</sup> Periods of pregnancy are no exception. Yet many dental and medical professionals, including prenatal care providers, struggle with interpreting the safety and appropriateness of dental treatment during pregnancy despite a series of consensus reports and guidelines that indicate preventive and restorative dental care are both safe and essential.<sup>4,5</sup> Not surprising, therefore, this uncertainty also seems to exist among expectant mothers. Few pregnant women seek or receive routine dental care, and as many as one in two with obvious dental problems do not seek care.<sup>6</sup>

Good oral health and dental hygiene are critical components of a healthy pregnancy and may reduce the burden of bacterial load and inflammatory mediators, enable dental interventions to be avoided, and help the mother-to-be and her fetus maintain overall

well-being.<sup>6,7</sup> Additionally, pregnancy may provide a teachable moment when the mother-to-be may have a heightened interest in oral health, thereby presenting the dental team with an opportunity to discuss optimal self-care and appropriate use of dental services for both herself and her infant.<sup>1</sup> Further, the multidisciplinary array of prenatal healthcare professionals allows for interprofessional collaboration and the chance to achieve better health outcomes as well as referral opportunities.

Deferral of dental care until after delivery often results from fear and caution by patients and the dental team. The complex molecular and cellular interactions of the systemic-oral relationships are challenging to discuss as concrete clinical recommendations. Many patients and their prenatal care providers are not always aware of these relationships.<sup>8</sup> To avoid any misunderstanding and to build skills and confidence in caring for pregnant women, dental professionals should familiarize themselves with

the current consensus statements and guidelines to provide appropriate dental services.<sup>9</sup>

The dental management of the pregnant patient with comorbidities such as diabetes, valvular conditions, hypertension, bleeding disorders, and so on, as well as pregnancy complications and/or marked risk factors for adverse outcomes are beyond the scope of this review. The emphasis is the healthy patient with a non-complicated pregnancy.

### Consensus Statements and Practice Guidelines

Multidisciplinary panels representing social care and healthcare for women and neonates have evaluated the evidence with regard to the delivery of dental care during pregnancy, with the objective to help ensure optimal outcomes for all pregnant women. *Oral Health Care During Pregnancy: A National Consensus Statement* was published in 2012 by the National Maternal and Child Oral Health Resource Center at Georgetown University to establish guidelines to enable pregnant women to receive optimal oral health services.<sup>9</sup> The statement provides detailed guidance for both prenatal and oral health professionals, advising that preventive, diagnostic, and restorative dental treatment is safe throughout pregnancy and is effective in improving and maintaining oral health. It also offers guidance for health professionals to share with pregnant women that includes the practice of good oral hygiene and healthy eating. Pharmacological considerations are also presented and include indications and contraindications for analgesics, antibiotics, anesthetics, and antimicrobial agents.<sup>6,10</sup>

State health departments, including California, New York, South Carolina, and Washington, and other state and national professional organizations have also published consensus statements and practice guidelines.<sup>4,9,11-17</sup> Typically, these publications have included consensus contributions from professional organizations representing OB/GYN, primary care, pediatrics, nurse-midwives, pediatric dentistry, public health dentistry, and periodontology.

Reports of dental care utilization during pregnancy range from 23% to 35%. Up to a quarter of pregnant women surveyed reported having a dental problem, and of these, only about half sought dental care.<sup>6</sup> However, a recent (2016) survey by the Delta Dental Plans Association indicated that 63% of expectant mothers reported visiting a dentist during their pregnancy.<sup>18</sup> Underutilization of dental care may be influenced by lack of, or inadequate, dental insurance coverage for lower-income women, other life stressors (eg, unemployment, housing, intimate partner violence, substance abuse), and/or an unwillingness of dental care professionals to render treatment due to reliance on previous recommendations that lacked current evidence-based knowledge.<sup>4</sup>

For some women, pregnancy is the only time they have medical and dental insurance, providing a unique chance for access to dental care and increased opportunities for oral health.<sup>16</sup> Pregnancy also allows the prospect for improved self-care. For example, pregnant women are nearly twice as likely to quit smoking and stay quit than their non-pregnant counterparts.<sup>19,20</sup> Furthermore, improved maternal oral health and hygiene has been shown to decrease caries rates in children up to 5 years old.<sup>18,21</sup> This may represent a critical time point to allow for intervention that has a long-lasting effect on both maternal and childhood oral health.

### Physiologic Changes in the Pregnant Dental Patient

Pregnancy is marked by complex physiologic changes. During pregnancy many temporary shifts occur in the normal mechanisms of a healthy female body, and adaptations occur to accommodate the growing fetus. The most commonly occurring changes and their significance to oral health and dental care are summarized as follows<sup>1,2,10</sup>:

**Cardiovascular system**—Blood volume, heart rate, and cardiac output all increase. Smooth muscle relaxation may lead to vasodilation and a reduction in diastolic blood pressure. In the second and third trimesters, supine hypotension syndrome may occur due to the weight of the fetus and uterus compressing the inferior vena cava. **Dental significance:** Blood pressure monitoring will be useful and should ideally be referenced against that reported by other prenatal healthcare providers. In the second and third trimesters, the patient should be tilted to her left side to relieve pressure on the inferior vena cava.

**Respiratory system**—Hyperventilation, dyspnea, and hypoxia may occur due to increased maternal-fetal oxygen requirements, upward displacement of the diaphragm by the developing fetus, and airway edema. **Dental significance:** These effects may be exacerbated when in the supine position.

**Gastrointestinal system**—Nausea and vomiting are the most commonly occurring changes. Gastroesophageal reflux and symptoms of heartburn are common in the later stages and are thought to be the effect of physical changes of the enlarging fetus. **Dental significance:** Reflux and vomiting increase the risk for acid erosion. For patients suffering morning sickness and nausea, it may be helpful to allow some flexibility in scheduling dental appointments.

**Endocrine system**—Many alterations occur with significant increases in progesterone and estrogens. For example, sensitivity to insulin may diminish, increasing the risk of gestational diabetes. **Dental significance:** Food cravings and increased intake are believed to be of hormonal origin and may increase risk for caries and acid erosion. Elevated estrogen may lead to vascular permeability manifesting as increased gingival inflammation, combined with an increased level of periodontal pathogens, specifically *Porphyromonas gingivalis* and *Prevotella intermedia*.

**Renal system**—An increased glomerular filtration rate may lead to a greater need to urinate, which may be exacerbated by pressure of the developing fetus. **Dental significance:** Consideration of the patient's need for frequent urination should be given during lengthy dental appointments.

**Immune system**—The immune system adapts to accommodate the fetus and its genetic differences with the mother. **Dental significance:** Changes in the immune system may also be responsible for an increased response to plaque manifested as pregnancy gingivitis or pyogenic granuloma.

**Metabolic system**—Daily nutritional requirements increase to support fetal growth. The enlarging uterus, placenta, and developing fetus together with increased body fluids and deposition of fat all contribute to an increase in body weight. **Dental significance:** Increased appetite may be satisfied by greater amounts and more frequent intake of sugar-containing foods and beverages, leading to an increased risk of dental caries.



Fig 1.

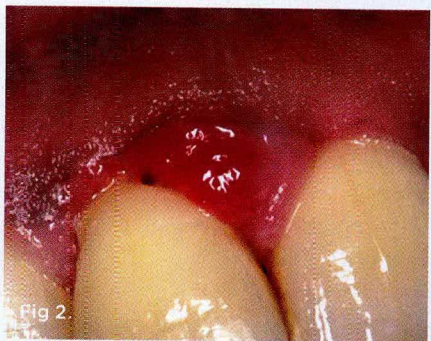


Fig 2.

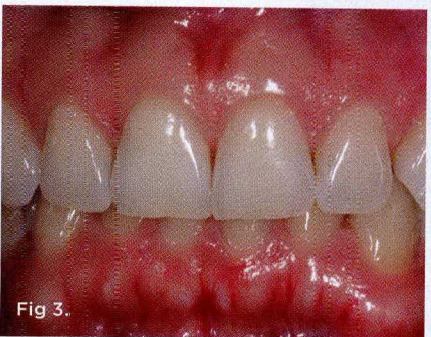


Fig 3.

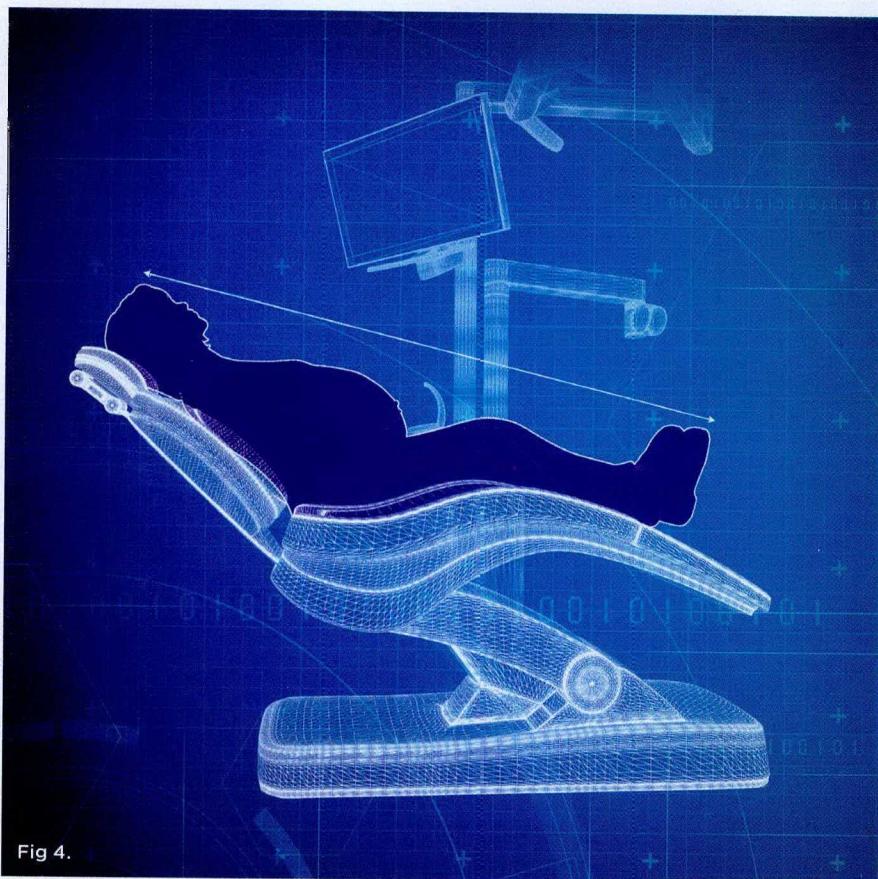


Fig 4.

**Fig 1.** Example of mild pregnancy gingivitis, which is typically most noticeable between the upper central incisors. Oral hygiene and plaque control appear generally good in this case. Interdental cleaning should be emphasized to reduce the possibility of a pregnancy granuloma. **Fig 2.** Example of pregnancy granuloma. **Fig 3.** At 5 months, gingival health is indicated by the absence of inflammation and plaque. Smooth, dull facial surface of incisors is indicative of mild acid erosion. **Fig 4.** For maximum safety and comfort while in the dental chair, the patient's head should be kept at a higher level than the feet.

## Changes in the Oral Cavity During Pregnancy

### *Soft Tissues*

Increased gingival inflammation during pregnancy is due to elevated pathogenicity and/or a higher response by the host to the plaque biofilm.<sup>8</sup> Plaque-induced gingivitis is the most common form of periodontal disease, affecting 36% to 100% of pregnant women.<sup>22-24</sup> Common conditions present clinically as gingivitis (Figure 1), gingival enlargement, or pyogenic granuloma (Figure 2).

Pregnancy does not cause periodontal disease, but it may exacerbate any current inflammatory condition or predispose the pregnant woman to increased inflammation. If the mother has been diagnosed with periodontitis, the condition might affect the development and overall health of the fetus as a result of plaque microbes or inflammatory mediators released by the host tissues entering the circulation and reaching the placenta.<sup>25</sup> Worldwide, 15 million babies are born prematurely each year, and preterm birth ranks as the second-most common cause of death for children less than 5 years old.<sup>26</sup> In the United States in 2015, preterm birth affected about one in every 10 infants.<sup>27</sup>

Pregnant patients should be evaluated to determine their periodontal condition, and those who exhibit signs of gingivitis or

pregnancy granuloma or are periodontally compromised should be recalled and reviewed more frequently and given prophylaxis or scaling and root planing as necessary. If these conditions do not resolve after delivery, referral to a periodontist should be considered. Further, the clinician can re-evaluate the need for more frequent maintenance visits and make appropriate recommendations with regard to future at-home self-care and in-office professional care.

An emphasis should be placed on meticulous oral hygiene when gingivitis and/or periodontal conditions such as pregnancy granuloma are present during pregnancy. These conditions may improve with intensive instructions and the use of advanced oral hygiene aids.<sup>28</sup> After delivery, resolution occurs in most cases as the body returns to its non-pregnant state.<sup>29,30</sup> If complete resolution is not achieved, periodontal referral should be considered.

### *Hard Tissues*

Tooth enamel and exposed dentin may be indirectly affected during pregnancy either by the vomiting associated with early morning sickness or by food cravings. The presence of stomach acid in the mouth causes demineralization and surface softening of both enamel and dentin, which may lead to erosion. Cravings for acidic

foods and beverages, such as citrus fruits and juices, or carbonated beverages may also result in erosion.<sup>31,32</sup>

Erosion may initially manifest itself by the symptom of sensitivity and the clinical signs of a smooth, dull enamel surface (Figure 3). Later stages of erosion will appear as cratering of the cervical areas, yellowing as enamel thins, reductions in incisal height, and loss of anatomical features such as grooves and cusps. Erosion due to vomiting most commonly occurs on the palatal surfaces of upper molars and incisors, while erosion due to acidic foods and beverages is less distinct and varies widely.

### Delivering Care During Pregnancy

**Health history**—The standard principles of history-taking, assessment, diagnosis, and treatment planning apply to the pregnant patient as they do for any other dental patient. A variety of additional questions, as listed in Table 1, may be asked when taking the health history of any pregnant patient.

**Key advice for oral healthcare**—The National Consensus Statement and several other guidelines state that dental professionals should provide reassurance to pregnant patients and those contemplating becoming pregnant that oral healthcare, including radiographs, pain medication, and local anesthesia, is safe throughout pregnancy.<sup>9,11-17</sup> This reassurance should include encouragement to continue to seek care, practice effective oral hygiene, eat healthy foods, and attend prenatal classes.

**Patient comfort**—It can be challenging for the patient to find a comfortable position in the dental chair. However, the National Consensus Statement<sup>9</sup> and other reviews<sup>1,2</sup> advocate a semi-reclining position in which the head is kept higher than the feet. Frequent position changes

should be allowed. In later pregnancy, particularly the third trimester, a small pillow or rolled towel should be placed under the right hip to help the patient avoid dizziness or nausea, as this shifts the weight of the fetus away from the inferior vena cava (Figure 4).

**Clinical evaluation**—Due to the increased risk of soft- and hard-tissue changes, the clinical evaluation should include emphasis on detecting changes in periodontal, dental caries, and erosion status. Patients who have been seen over many years and have exhibited high levels of plaque control, an absence of gingival inflammation and white spot lesions, and no early signs of erosive tooth wear may suddenly show some or all of these changes. The evaluation should include interview questions regarding morning sickness and the ability to perform early morning oral hygiene, effectiveness of interdental cleaning, and the development of any changes in dietary habits.

**Dental health education**—Before conception or as early in the pregnancy as opportunity allows, the patient should receive information about the physiologic changes that are commonly encountered, including increased gingival bleeding and enlargement such as pregnancy granuloma, dental caries, and erosion. Topics to discuss with the patient to reduce the risk of these conditions are listed in Table 2.

**Provision and scheduling of dental treatment**—While necessary procedures can be provided at any stage during pregnancy, it is prudent to avoid scheduling elective dental care in the first trimester and the last half of the third trimester.<sup>29</sup> Thus, 14 to 20 weeks of gestation is the ideal time for care.

If scaling and root planing is indicated during pregnancy, local anesthetics in FDA pregnancy category B or C are safe to use. For example, lidocaine and prilocaine are safe as long as they are

TABLE 1

### Examples of Questions to Add to Health History Based on National Consensus Statement<sup>9</sup> and Relevance of Responses

QUESTIONS	RELEVANCE OF RESPONSE
When is your due date? How many weeks pregnant are you?	To determine the ideal schedule for any treatment; to assess the appropriate diet and oral hygiene counseling; to anticipate the likely clinical changes at clinical examination
Do you have any questions or concerns about receiving oral healthcare while you are pregnant?	To explain that many pregnant women and some prenatal healthcare providers are confused over the safety and appropriateness of dental care, even when dental problems are encountered
Have you received prenatal care? If not, do you need help making an appointment for prenatal care?	To explain the importance of prenatal care and offer assistance in referral to prenatal health professionals in the community, especially those who accept Medicare and other public insurance programs
Since becoming pregnant, have you been vomiting? If so, how often? Also, do you suffer heartburn or have acid reflux into your mouth?	To assess risk for acid erosion
Do you have any dietary cravings, fads, or food aversions?	To assess risk for dental caries, acid erosion, and the adequacy of overall nutrition
Are any teeth sensitive to heat or cold, or sweet or acidic foods and drinks?	To assess risk of acid erosion
Do you have swollen or bleeding gums, a toothache, or other problems in your mouth? Have you noticed any changes since becoming pregnant?	To assess the likelihood of soft-tissue changes, caries, or other oral maladies
Are you able to perform your routine oral hygiene as normal?	To assess if oral hygiene procedures are compromised because of nausea and vomiting, which are commonly due to morning sickness, and if more intense prevention should be instituted

used at the recommended doses.<sup>29</sup> The American Academy of Periodontology has stated that the presence of an acute infection, abscess, or other potentially disseminating sources of sepsis may warrant prompt intervention irrespective of the stage of pregnancy.<sup>29</sup> (*Authors' note: Pharmacological mechanisms and prescribing suggestions are beyond the scope of this article, which is intended to emphasize the need to provide dental care to women with uncomplicated and healthy pregnancies. More information on the safety and efficacy of pharmacotherapies for pregnant women can be found in the aforementioned National Consensus Statement.*) Deferral or refusal of dental care (by either the provider or patient) until after delivery is generally discouraged as the new mother may be preoccupied with the care of her newborn and may find scheduling both her own appointment and a caregiver for her infant a challenge.

### After Delivery

Gingival inflammation, including pyogenic granulomas, will generally subside after delivery and the gingival tissues typically will return to their pre-pregnancy state. Likewise, any food cravings that increase risk for caries and acid erosion will likely cease as well, in most cases well before term.<sup>1,2,10</sup> If gingival conditions remain, a referral to a periodontist should be considered, especially for the management of any remaining signs of a pyogenic granuloma.

In the case of the first child, the parents will most likely undergo changes in their daily routine and lifestyle and, as such, may neglect their own self-care. They may miss or fail to schedule their own dental appointments due to their natural preoccupation with their new family member. Thus, as one set of risk factors diminishes at delivery, another set emerges that may still compromise the parent's oral health, and these factors must be considered.

Many parents will seek information about the infant's oral health and the appropriate time to commence dental visits. The American Academy of Pediatric Dentistry encourages parents and other care providers to help every child establish a dental home that provides comprehensive, continuously accessible, coordinated, and compassionate care by 12 months of age.<sup>33</sup>

### Summary

During pregnancy, changes occur in many body systems, including the oral cavity. Most of these changes are hormonal or physical and may lead to further changes in the oral tissues such as gingival inflammation and increase the risk of dental caries and acid erosion. A National Consensus Statement and guidelines from numerous other expert



**Pregnancy may provide a teachable moment when the mother-to-be may have a heightened interest in oral health, thereby presenting the dental team with an opportunity to discuss optimal self-care and appropriate use of dental services for both herself and her infant.**

groups indicate that routine dental treatment, including taking radiographs, is considered safe during pregnancy. Many pregnant women, members of the prenatal healthcare team, and some dental professionals may be unsure about the safety and appropriateness of dental care during pregnancy. The ideal time for elective care is early in the second trimester. In the later stages of pregnancy, comfort in and the angle of the dental chair is an important consideration.

Due to increased risk of periodontal diseases, dental caries, and acid erosion, good oral hygiene practices are essential and should include twice-daily brushing with a fluoride toothpaste, daily interdental cleaning, and use of fluoride or antimicrobial mouth rinses as indicated.

Dental professionals should be prepared to collaborate with the patient's prenatal care team and advocate for prenatal care and assist in its arrangement for those patients who do not have a prenatal provider. Only a small number of pregnant patients seek dental care,

TABLE 2

### Topics to Discuss With Pregnant Patients to Reduce Oral Health Risks

TOPIC	RECOMMENDATION
Plaque control	Plaque control needs to be maintained at a high level; twice-daily brushing with a fluoride-containing toothpaste and once-daily interdental cleaning is recommended.
Mouth rinse	Use of a fluoride or anti-gingivitis rinse (preferably an alcohol-free formula) is safe and can be continued throughout the pregnancy.
Acid erosion	After vomiting, the mouth should be rinsed with water, and toothbrushing should be avoided for at least 1 hour to allow the acid-softened tooth surface to reharden. The addition of a teaspoon of baking soda to a cupful of water will help neutralize the acidic environment.
Treatment	Preventive, diagnostic, and restorative dental treatment is safe throughout the pregnancy and is effective in improving and maintaining oral health. It is preferable, however, that elective dental care be avoided in the first trimester and the last half of the third trimester.
Re-evaluation	Dental re-evaluation is prudent during the latter stages of pregnancy. Treatment should not be deferred unnecessarily, as the patient is likely to face scheduling challenges after birth when caring for her newborn. Changes in gingival health typically resolve after delivery; for conditions that may not resolve completely, referral to a periodontist is advisable.

and fewer than half of those who report dental problems during pregnancy pursue care. Collaboration with the prenatal care team may increase dental referrals, and such a channel of communication between the oral health and prenatal communities can benefit maternal and child oral health outcomes.

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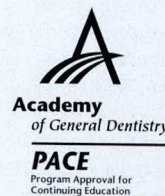
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- Deferral of dental care during pregnancy until after delivery often results from:**
  - emerging science clarifying the oral-systemic link.
  - clear understanding of guidelines.
  - evidence recommending deferral of care.
  - caution by patients and dentists.
- What was published in 2012 by the National Maternal and Child Oral Health Resource Center to establish guidelines so pregnant women could receive optimal oral health services?**
  - a national consensus statement
  - a consensus statement from the American Academy of Periodontology
  - practice guidelines by Delta Dental
  - state health department guidelines in New York and New Jersey
- Underutilization of dental care by expectant mothers may be influenced by lack of:**
  - qualified clinicians to provide the care.
  - practice guidelines and consensus statements.
  - treatment options available for pregnant women.
  - dental insurance coverage for lower-income women.
- Pregnant women are nearly twice as likely to do what compared to non-pregnant women?**
  - regularly visit the dentist
  - have endodontic therapy
  - quit smoking and stay quit
  - take up drinking alcohol
- In the second and third trimesters, a pregnant dental patient should be tilted to her left side to relieve pressure on the:**
  - inferior vena cava.
  - pulmonary veins.
  - stomach.
  - esophagus.
- Effects to the respiratory system such as hyperventilation, dyspnea, and hypoxia may be exacerbated when:**
  - the patient is in the supine position.
  - the patient is receiving local anesthesia.
  - x-rays are being taken of the patient.
  - pregnancy granulomas are being treated.
- During pregnancy, elevated pathogenicity and/or a higher response by the host to plaque biofilm leads to:**
  - premature birth.
  - low birth weight.
  - increased gingival inflammation.
  - an increased risk of acid erosion.
- Pregnant patients should be recalled and reviewed more frequently and given prophylaxis or scaling and root planing as necessary if they exhibit signs of:**
  - nausea.
  - gingivitis.
  - dentin exposure.
  - All of the above
- Which of the following is safe to administer during pregnancy?**
  - radiographs
  - pain medication
  - local anesthesia
  - All of the above
- After delivery, pyogenic granulomas will generally:**
  - persist.
  - grow larger.
  - subside.
  - almost always need to be referred to a periodontist.

Course is valid from February 1, 2018 to February 28, 2021. Participants must attain a score of 70% on each quiz to receive credit. Participants receiving a failing grade on any exam will be notified and permitted to take one re-examination. Participants will receive an annual report documenting their accumulated credits, and are urged to contact their own state registry boards for special CE requirements.

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