Fourth Edition

Quality Resource Guide

Dental Care for Pregnant and Nursing Patients

Author Acknowledgements

MICHAELL A. HUBER, DDS

Department of Comprehensive Dentistry
UT Health San Antonio
School of Dentistry
San Antonio, Texas

Dr. Huber has no relevant relationships to disclose.

Educational Objectives

Following this unit of instruction, the learner should be able to:

1. Understand basic physiologic elements of normal pregnancy.
2. Recognize the importance of the medical history in assessing the pregnant dental patient.
3. Recognize common oral findings associated with pregnancy.
4. Develop an appropriate protocol to manage the pregnant dental patient.

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Introduction

For 2022, there were 3,667,758 births registered in the United States, a modest increase over the 3,664,292 registered in 2021.[1] Pregnancy poses a unique set of management considerations for the dental practitioner. Reports noting an association of periodontal disease and adverse pregnancy outcomes such as preterm delivery, low birth weight and preeclampsia remain a topic of ongoing interpretation and underscore the importance of maintaining oral health throughout pregnancy.[2-4] A recent National Consensus document concluded that, in general, dental care can be safely delivered during all trimesters of pregnancy.[5] Unfortunately, patients often avoid routine dental care during pregnancy and many healthcare providers continue to believe dental procedures are either unnecessary or unsafe during pregnancy.[6,7] The Quality Resource Guide briefly summarizes the physiologic changes associated with pregnancy and reviews contemporary dental management considerations.

Review of Physiology

Pregnancy is a dynamic transient physiologic process which places unique physiologic, metabolic, and psychological demands on the mother. Most changes support the requirements necessary for normal fetal growth and the preparation for delivery.[8,9] While not considered a condition of medical compromise, the pregnant patient should receive supportive care throughout the gestational period, including medical, dental, and preventive care.[4] The most common complaints observed in pregnancy include nausea, vomiting, heartburn, altered sense of taste, food cravings, nasal congestion, hyperventilation, dyspnea, and fatigue.[8]

The timeline of gestation is often separated into thirds.[10] A pregnant woman often experiences anticipation, fatigue, and morning sickness during the first trimester. It is during this period that fetal organs are formed (organogenesis) and as a consequence the potential for developmental malformation is highest. The second trimester is characterized as a period of maternal well-being and fetal growth and maturation. During the final trimester continued fetal growth and maturation occurs and the mother may experience increasing fatigue, discomfort and mild depression. **Table 1** presents a brief summary of the physiologic changes observed during pregnancy.

Table 1 - Common Physiologic Changes Observed in Pregnancy[8,9]

Respiratory	Gastrointestinal
• Increased oxygen demand • Upward pressure on the diaphragm of up to 4cm • Up to 18% decrease in functional residual capacity • Increased respiratory rate • Dyspnea in up to 70% of patients	• Decreased peristalsis / intestinal motility, constipation • Nausea, vomiting in up to 66% of patients • Heartburn in 30% -70% of patients • Hypersalivation • Edema of lining of the nose, larynx, and oral cavity • Altered sense of taste & smell • Hunger, altered food cravings
Circulatory	**Endocrine**
• 40% - 50% increase in total blood volume • 30% increase in cardiac output • 15% - 20% increase in RBC volume • Decreased hematocrit (dilutional anemia) • Tachycardia and benign systolic ejection murmur • Hypercoaguable state	• Increased levels of progesterone, estrogen, cortisol, and chorionic somatomammotropin hormones • Increased thyroid gland activity • Elevated levels of glucose, lipid and triglycerides in blood • Increased insulin resistance • ~ 4% of patients develop gestational DM
Musculoskeletal	
• Leg cramps • Sacroiliac pain	• Lower back pain • Transient decrease in coordination

Major complications of pregnancy are relatively uncommon in otherwise healthy women. However, significant complications can occur, including gestational diabetes (GDM), hypertension (HTN), preeclampsia, eclampsia, and miscarriage.[10] GDM increases the risk of maternal infection and higher birth weight babies (≥4 kg). HTN may occur as an isolated condition or may be the initial sign of preeclampsia; a condition characterized by new onset HTN after 20 weeks of gestation.[11] Potential complications include stroke, retinal detachment, and HELLP (hemolysis, elevated liver enzyme levels, and low platelet counts) syndrome. Fetal complications of preeclampsia include growth restriction, placental abruption, stillbirth, and neonatal death.

The cause of preeclampsia is unknown and it is difficult to prevent. Preeclampsia affects an estimated 2%-8% of pregnant patients and about 1% to 2% of cases progress to eclampsia, a serious life-threatening condition marked by seizures, coma, pulmonary edema, placental abruption, disseminated coagulopathy, acute renal failure and sudden death.[8,11] Miscarriage before the 20th week of gestation occurs in approximately 15% of pregnancies and usually represents the spontaneous abortion of a significant fetal morphologic or chromosomal abnormality.[10]

Dental Management Considerations

The dental practitioner has an obligation to provide safe and effective dental care that addresses the mother's needs, while also ensuring the well-being of the developing fetus. As with all patients, the dentist has the responsibility to inform and educate pregnant mothers of proposed treatment options and obtain consent for specific treatments.[12] When managing a pregnant patient less than the age of majority, the practitioners must be familiar with local state statutes that govern consent for care.[13]

Routine diagnostic, preventive, restorative care and periodontal therapy may be safely delivered during all stages of pregnancy.[5] The clinician's first step in dental management is to establish good rapport and attain a thorough medical history. Information should include: name and contact information for the managing physician; drug profile (prescription, OTC, supplemental drugs); presence of comorbid illnesses or conditions; use of tobacco, alcohol, or recreational drugs, and; any past pregnancy complications (GDM, preeclampsia). The mother should be educated during the interview process regarding the importance of maintaining good health and eliminating detrimental risk behaviors. This is also an opportune time to review and reinforce appropriate oral hygiene guidance with the patient (see **Table 2**) and proactively educate her regarding her role in ensuring her child's oral health.[13,14]

Consultation with the patient's physician is warranted if: 1) the patient has potentially complicating comorbid conditions such as diabetes, HTN, pulmonary or cardiovascular disease, and bleeding disorders or; 2) the anticipated dental therapy involves the use of general anesthesia, intravenous sedation, or nitrous oxide.[5] Specific considerations regarding dental-related issues are:

Vital Sign Monitoring: Vital signs (BP and pulse) should be checked at each appointment. A pregnant patient who experiences an systolic BP increase of 30 mm Hg or a diastolic elevation of 15 mm HG compared top pre-pregnancy values may have preeclampsia.[11] The patient should also be queried concerning any rapid weight gain, upper right quadrant or epigastric pain, migraine-type headaches, or visual problems as these may represent early additional clues to preeclampsia.[8] A patient reporting such symptoms should be promptly referred to their physician for evaluation.

Patient Positioning: Supine hypotensive syndrome is a condition associated with the later stages of pregnancy and affects an estimated 15% to 20% of pregnant patients.[5] When placed in a supine position, the patient's gravid uterus impinges on the inferior vena cava to impair venous return to the heart, resulting in abrupt hypotension, bradycardia, diaphoresis, nausea, weakness and dyspnea. Placing a small pillow under the patient's right hip and keeping the head above the feet when reclined is often sufficient to prevent supine hypotensive syndrome. If the patient reports feeling dizzy, faint, or nauseous, she should be rolled onto her left side to restore circulation.

Treatment Timing: While the most recent information confirms the safety of routine dental care throughout pregnancy, some authorities continue to recommend deferring elective care, except for oral hygiene and plaque control instruction, during the first trimester of pregnancy.[8,10] Urgent, or emergent conditions, such as pain and/ or infection should be promptly addressed to ensure patient comfort and health regardless of the stage of pregnancy. Dental care that is deemed necessary to control active oral disease or eliminate potential or predictable problems that may arise during the later stages of pregnancy is best delivered during the second trimester extending into the first half of the third trimester. Extensive elective surgical procedures should be deferred until after parturition.

Radiography: As with all patients, the dental practitioner must always weigh the benefits of obtaining a radiograph as an adjunct to the diagnostic process against the risk of patient exposure.[15]

Table 2 - Recommended Oral Hygiene Protocol during Pregnancy[5,14]

- Brush teeth with fluoridated toothpaste twice daily
- Clean between teeth daily with floss or an interdental cleaner.
- Rinse daily with an over-the-counter fluoridated, alcohol-free mouth rinse. After eating, chew xylitol-containing gum or use other products, such as mints, with xylitol to help reduce bacteria that can cause decay.
- After vomiting, rinse the mouth with 1 teaspoon of baking soda dissolved in a cup of water to stop acid from attacking teeth. Wait 1 hour after rinsing before brushing teeth.
- Eat healthy foods and minimize sugar consumption.

Table 3 - Priority Practice Considerations[15]

1. Familiarity with and adherence to all applicable local, state, and federal laws.
2. Radiographs should be ordered based on diagnostic and treatment planning needs, and dentists shall make a good-faith attempt to obtain radiographs from previous dental examinations
3. Use digital receptors instead of film for intraoral, panoramic, and cephalometric imaging
4. Use rectangular collimation whenever possible for intraoral imaging
5. Use cone-beam computed tomography only when lower-exposure options will not yield the needed diagnostic information

Obtaining radiographs during pregnancy should be avoided unless necessary to diagnose or guide management of an acute or urgent concern. Once attainment of a radiograph is deemed necessary, the dentist must employ the ALARA principle (As Low as Reasonably Achievable) to minimize patient exposure. A recent update optimizing radiation safety in dentistry recommends discontinuation of the use of thyroid shielding and establishes priority practice-level considerations to reduce exposure to ionizing radiation while optimizing diagnostic quality.[15] (**Table 3**)[1]

The pregnant dental patient may have anxiety concerning any form of radiographic exposure.[10] For such cases it is important that the dentist carefully explain and reassure the patient that: 1) the radiograph is being ordered because it is necessary to manage the acute/urgent problem at hand; 2) the ALARA principles are being utilized to minimize exposure, and; 3) the level of radiation exposure from the typical dental radiograph is far less than natural daily background radiation exposure.

Drug Administration: Drug administration during pregnancy and lactation represents an area of understandable concern.[5,9,16,17] During pregnancy there is concern that prescribed drugs may cross the placenta and potentially harm the fetus. Additionally, respiratory depressant drugs may predispose to maternal hypoxia and subsequent fetal hypoxia. The clinician must always realize the absence of adverse data regarding drug administration during pregnancy does not imply safety. Necessary medications should be prescribed at the minimum effective dose and only when the expected benefits outweigh the risks. In addition, the pregnant patient should be advised to always check the package label for any potential risks associated with over-the-counter medications.

There is concern that drugs may pass to the infant through the breast milk during lactation.[16] Factors that increase the transfer of drugs through breast milk include the drug: 1) being a weak base, 2) having a low molecular weight, 3) having a low protein binding, and 4) having high lipid solubility. Instructing the mother to take medications immediately after nursing and avoid nursing for 4 hours or more after taking medication, if possible, minimizes the risk of drug transfer to the nursing child.

Table 4 - Pregnancy and Lactation Labeling Requirements of Prescription Drugs and Biological Products[18]

Subsection	Requirement
Pregnancy	• Information relevant to the use of the drug in pregnant women, such as dosing and potential risks to the developing fetus. • Information about whether there is a registry that collects and maintains data on how pregnant women are affected when they use the drug or biological product. • Subheadings addressing: “risk summary”, “clinical considerations” and “data”.
Lactation	• Information about using the drug while breastfeeding, such as the amount of drug in breast milk and potential effects on the breastfed child. • Subheadings addressing: “risk summary”, “clinical considerations”, and “data”. • Increased insulin resistance. • ~ 4% of patients develop gestational DM.
Females and Males of Reproductive Potential	• Information about pregnancy testing, contraception and about infertility as it relates to the drug.

The Food and Drug Administration (FDA) instituted a product labeling schema (A, B, C, D, X) in 1979, to categorize drugs according to their teratogenic risk to the fetus.[17] The FDA issued a new rule on December 3, 2014, addressing pregnancy and lactation labeling information for prescription drug and biologic products.[18] The new labeling requirement, to be phased in starting June 2015, replaces the letter categories with three detailed subsections that more accurately explain the real-world risks associated with a given drug exposure for a pregnant woman. (**Table 4**)

The Oral Health During Pregnancy Expert Workgroup (sponsored by the National Maternal and Child Oral Health Resource Center) released evidenced-based guidance relating to pharmaceutical agents commonly used in dentistry in 2012.[19] (**Table 5**) Fortunately, most drugs commonly used in dentistry pose minimal risk to the developing fetus or nursing child, and can be prescribed with confidence. Three notable exceptions are the benzodiazepine, barbiturate, and NSAID class of drugs.[16,17,20] Benzodiazepine exposure during the first trimester may result in functional deficits, fetal malformations, and fetal death. Near term exposure may lead to dependence and withdrawal symptoms characterized by muscular hypotonia, low Apgar scores, hypothermia, impaired response to cold, and neurologic depression (“floppy infant syndrome”). Barbiturate exposure during pregnancy may increase the risk of fetal abnormalities and use during the third trimester may result in respiratory depression and withdrawal symptoms such as seizures and hyperirritability in the newborn. Avoidance of NSAIDs has traditionally been recommended during the first and third trimesters of pregnancy.[19] However, in October 2020, the

FDA released updated guidance recommending against the use of NSAIDs at 20 weeks or later in pregnancy, due to an increased risk of fetal kidney dysfunction and subsequent low amniotic fluid levels.[20] NSAIDs are best avoided throughout pregnancy.

Potential Pregnancy-Associated Oral Findings

Perimylolysis: Up to 2% of pregnant patients experience acid-induced enamel erosion from hyperemesis.[5] Measures to manage perimylolysis include following a recommended oral hygiene protocol (**Table 2**) and rinsing with baking soda after vomiting to help neutralize the acidic environment and avoiding brushing for one hour after rinsing. To avoid potential dehydration associated with hyperemesis, the patient may be advised to sip salty liquids such as sports beverages.[9]

Pregnancy Gingivitis: Pregnancy gingivitis is observed in up to 75% of pregnant patients.[5] It tends to peak during the third trimester and begins to regress during the last month of pregnancy and after parturition. It is postulated the increased levels of sex hormones associated with pregnancy suppress the immune response, compromise local defense mechanisms, and reduce the natural protection of the gingival environment. Inattention to oral hygiene likely increases the risk. The American Academy of Pediatric Dentistry recommends that a dental prophylaxis be provided during the first trimester and again during the third trimester if the patient's oral hygiene is inadequate or periodontal conditions warrant professional care.[13]

Pregnancy Tumor: Up to 5% of pregnant patients develop a pyogenic granuloma (pregnancy tumor, epulis gravidarum).[9] These rapidly growing lesions typically arise from inflammatory gingivitis during the second or third trimester. They usually regress after parturition, but excision either during pregnancy or after parturition may be necessary.

Caries: There is no convincing evidence that pregnancy per se increases the patient's risk of caries.[5] However, the altered food cravings and dietary changes often observed during pregnancy combined with inattention to oral hygiene does increase caries risk. Women with high caries risk harbor high levels of the *Streptococcus mutans*, and vertical transmission of the cariogenic *Streptococcus mutans* from mother to child with subsequent caries risk is well documented.[13] The hygiene protocols recommended in **Table 2** benefit not only the mother, but also the newborn. Professionally applied topical fluoride treatments (gels, pastes, varnishes) are considered safe and may be used when indicated. The use of prenatal fluoride supplements is not beneficial to the developing fetus and is not recommended.[13]

Dry mouth: The patient may experience temporary oral dryness during pregnancy.[5] The patient should be advised to sip water and use sugar-free gums or candy to stimulate salivary flow.

Tooth mobility: The increased gingival inflammation and mineral changes affecting the lamina dura during pregnancy are believed to underlie the generalized tooth mobility that may be observed.[5] The mobility typically regresses after parturition but may persist in situations of unmasked periodontal disease.

Summary

Pregnancy represents a unique phase in a woman's life and presents unique challenges for the dental practitioner to consider when rendering dental care. The pregnant patient should be educated on the importance of establishing and maintaining good oral health for the well-being of both herself and her developing child. Withholding necessary dental care during pregnancy is neither recommended nor justified. This Guide briefly reviewed the physiologic changes observed in pregnancy and suggested management strategies to allow for the delivery of safe and effective dental care.

Table 5 - Pharmacologic Considerations for Common Drugs Used in Dentistry During Pregnancy & Lactation[10,19,20]

Drug	During Pregnancy	During Lactation
Analgesics		
Acetaminophen	Safe for use during pregnancy	Safe
Acetaminophen with Hydrocodone, Oxycodone, or Codeine	Use with caution*	Use with caution
Codeine		
Aspirin	Avoid during first trimester and after 20 weeks of pregnancy	Avoid
NSAIDs		Safe
Antibiotics		
Amoxicillin	Safe for use during pregnancy	Safe
Azithromycin		
Cephalosporins		
Clindamycin		
Erythromycin		Use with caution
Metronidazole		Safe
Nystatin		
Penicillin		
Fluconazole	Single dose regimen may be used	Safe
Ciprofloxacin	Avoid	Avoid
Clarithromycin		Use with caution
Doxycycline		Avoid
Levofloxacin		
Moxifloxacin		
Tetracycline		
Anesthetics		
Lidocaine†, Prilocaine†	Safe for use during pregnancy	Safe
Articaine, Bupivacaine, Mepivacaine	Use with caution	Use with caution
Topical Dyclonine or Lidocaine	Safe for use during pregnancy	Safe
Topical Benzocaine or Tetracaine	Use with caution	Use with caution
Nitrous oxide (30%)	May be used during pregnancy when topical or local anesthetics are inadequate. Pregnant women require lower levels of nitrous oxide to achieve sedation; consult with prenatal care health professional.	Safe
IV sedation or general anesthesia	Consult with a prenatal care health professional before using intravenous sedation or general anesthesia	Safe
Anxiolytics & Sedatives		
Benzodiazepines (alprazolam, diazepam, lorazepam, midazolam, triazolam)	Avoid	Avoid
Barbiturates (amobarbitol, butbarbitol, pentobarbital, phenobarbital)		
OTC‡ antimicrobials		
Chlorhexidine rinse	Safe for use during pregnancy	Safe
Cetylpyridinium chloride rinse		

* If deemed necessary, use the lowest dose for the shortest duration (usually less than 3 days) and avoid issuing refills to reduce risk for dependency.

† With or without vasoconstrictor

‡ Over the counter

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(1.0 CE Credit Contact Hour) Please circle the correct answer. 70% equals passing grade.

1. **In general, dental care cannot be safely delivered during pregnancy and many healthcare providers believe receiving dental care is unnecessary during pregnancy.**
   a. The first part of the statement is true, but the second part of the statement is false.
   b. The first part of the statement is false, but the second part of the statement is true.
   c. Both statements are true.
   d. Both statements are false.

2. **Physiologic changes observed during pregnancy include:**
   a. Increased hematocrit
   b. Tachycardia
   c. Increase in total blood volume
   d. a & b
   e. b & c
   f. a, b, & c

3. **Signs and symptoms of preeclampsia include:**
   a. Hypertension
   b. Seizures
   c. Blurred vision
   d. a & b
   e. a & c
   f. a, b, & c

4. **Measures to manage perimylolysis include:**
   a. Good oral hygiene
   b. Rinsing with a baking soda solution after emesis
   c. Prescribing antiemetic drugs
   d. a & b
   e. a, b & c

5. **The best measure to manage supine hypotensive syndrome is to:**
   a. Provide oxygen.
   b. Quickly have the patient sit up.
   c. Roll the patient onto her right side to relieve pressure on the aorta.
   d. Roll the patient onto her left side to relieve pressure on inferior vena cava.

6. **Drug characteristics that increase the risk of drug transfer through breast milk include:**
   a. High molecular weight
   b. High lipid solubility
   c. High protein binding
   d. Being a weak acid

7. **If deemed necessary, acetaminophen with a narcotic may be prescribed for managing severe pain associated with an emergency tooth extraction in the pregnant dental and no more than 3 should be provided.**
   a. The first part of the statement is true but the second part of the statement is false.
   b. The first part of the statement is false but the second part of the statement is true.
   c. Both statements are true.
   d. Both statements are false.

8. **Consultation with the patient's physician is warranted if:**
   a. The patient has (a) potentially complicating comorbid condition(s)
   b. The patient requires general anesthesia
   c. The patient desires intravenous sedation
   d. All the above
   e. None of the above

9. **Recent FDA guidance recommends against the use of NSAIDs at 20 weeks of later in pregnancy due to:**
   a. Potential fetal kidney dysfunction
   b. Ineffectual anti-inflammatory activity
   c. Potential low amniotic fluid levels
   d. All the above
   e. a & c

10. **Which of the following anxiolytic drugs is (are) considered safe to administer during pregnancy:**
    a. Alprazolam
    b. Lorazepam
    c. Triazolam
    d. All the above
    e. None of the above

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