Third Edition

Quality Resource Guide

Women's Health: Issues for Consideration in Dental Practice

Author Acknowledgements

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Educational Objectives

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

1. Identify common oral health and systemic health issues important to the dental care of women.
2. Understand evidence-based dental practice protocols for women across the life span.
3. Apply best practice to the dental care of women.
4. Understand the impact of systemic disease on the oral health of women.

MetLife designates this activity for **1.0 continuing education credits** for the review of this Quality Resource Guide and successful completion of the post test.

The following commentary highlights fundamental and commonly accepted practices on the subject matter. The information is intended as a general overview and is for educational purposes only. This information does not constitute legal advice, which can only be provided by an attorney.

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Introduction

It is widely acknowledged that both biologic and social determinants impact differences in health expression in males and females.[1] This report focuses on women's unique oral health and general health issues that require consideration in providing oral health care across the adult lifespan. There are many unique influences on oral health in women including specific chronic diseases, altered presentation of disease, hormonal influences as well as psychosocial and cultural impacts. Women may experience excess consequences of poverty and lower educational attainment at a higher rate than men because of cultural and social factors. The value of females in certain cultures may reflect low social status, impact freedoms, limit access to health care and impact quality of care. Such social factors may play a greater role than biology in determining gender-based differences in health characteristics in certain cultures.[2] These factors, individually or combined, create different considerations for oral care issues in women of all ages. By examining oral health issues in women across the life span, the unique aspects of disease and the context of psychosocial factors define considerations for assuring and preserving oral health for women **(Table 1)**.

Oral Health Behaviors

Recent data examining gender effect on oral health behaviors suggests important differences that may impact approaches for helping patients improve oral health. Women often perceive oral health as having a greater impact on quality of life, have greater oral health literacy and have more positive perceptions of dental visits than men.[3,4] Using 2017-2018 National Health and Nutritional Examination Survey (NHANES) data, researchers found that males floss less, visit the dental office less and for emergency care, had more coronal caries, rated their oral health as poorer, were informed of the value of oral cancer screenings more, but were screened less than females. Women were found to have better oral health practices, more frequent visits, oral cancer screening, and restorations. Women were found

Table 1 - Health and psychosocial factors impacting health and oral health in female patients[1]

Factors Impacting Unique Oral Health Considerations For Health Related Issues	Major Impact
Disease	• unique to disease; increased prevalence; severity
Disease presentation	• altered presentation of disease
Sex hormones	• contribute to inflammation and periodontal disease
Psychosocial Issues	
Propensity for health care seeking behaviors	• often higher than for males
Eating disorders	• higher prevalence in females
Socio-economic factors	• impact burden of oral disease/care seeking
Longevity	• females have longer life expectancy impacting disease experience

Table 2 - Recommendations for adolescent females

Strategies for the Adolescent Female	
Oral hygiene education	Explanation of hormonal influence on oral health
Caries risk assessment	Reinforce oral hygiene
Mild gingivitis	Prophylaxis, stress oral hygiene
Moderate to severe gingivitis	Scaling/root planing, antimicrobial agents, potential additional therapy
Topical fluoride	Applications at home and/or at recall as indicated

Table 3 - DSM-5 (2013) classification of eating disorders of APA[12]

Disorder	Sub-types	Diagnostic Criteria
Anorexia Nervosa	2	• Caloric restriction • Low body weight for developmental stage • Fear of weight gain • Persistent behavior that interferes with weight gain
Bulimia Nervosa	2	• Recurrent episodes of binge eating • Recurrent compensatory behavior: (vomiting, use of laxatives, diuretics, enemas, fasting, excessive exercise) at least once per week • Body shape and weight unduly influence self-evaluation
ED not otherwise specified: Binge-Eating Disorder		• Recurring episodes of eating significantly more food in a short period of time than most people under similar circumstances

to follow the recommendations of oral health professionals to a greater extent. The study found that there were significant differences for behavioral variables of access to care, receiving treatment for periodontal disease and being told of bone loss.[5]

Adolescent Females

With the onset of puberty, increasing sex hormones, estrogen and progesterone are documented to increase blood flow to the gingiva. In the presence of plaque and poor oral hygiene, hormonal increases can lead to increased gingival inflammation and bleeding.[6] At this time, there may also be an alteration of the oral microflora that, in combination with poor oral hygiene, can lead to inflammatory gingival response (**Table 2**).

Eating Disorders

The onset of eating disorders (ED) typically occurs at ages ranging from 17.1 - 20.8 years, but often begin in early adolescence.[7] The prevalence ranges from 8-10% in industrialized Western countries in females.[7] Physical and emotional changes young women experience at this stage of their development including the influence of peers, media, cultural and social norms for ideal body weight and image may influence the increasing prevalence of eating disorders prevalent today. Dental professionals may be the first to see a patient with these disorders and therefore may be in a position to identify the disorders and facilitate the patient gaining access to appropriate medical treatment, including professional counseling and pharmacologic interventions. These disorders may require psychotherapy; and treatment with Serotonin-reuptake inhibitors when mental illness underlies the disorder, or antidepressants.[8] Along with the psychosocial implications, eating disorders range across a spectrum of symptoms and diagnostic criteria, affecting multiple organ systems. Individual, family, socio-cultural and iatrogenic factors may predispose, precipitate or perpetuate ED.[7] The primary behaviors associated with ED include: restricting, purging and binge eating.[8] Caries risk data is conflicting in ED, but assessment of medical and medication history is important in understanding some of the complexities that may contribute to caries, excessive salivation or xerostomia.[8-11] Nutritional habits, including frequent use of sugary beverages to decrease hunger combined with poor oral

Table 4 - Eating disorders

Disorder Type	Impact/Symptoms		Oral Care Support
Restricting	Vitamin B deficiency	• Glossitis • Decreased epithelial cells turnover • Sore burning tongue	• Assess overall caries risk • Assess xerostomia risk
	Bilateral parotid enlargement	• Chronic malnutrition/excessive salivation • Sialadenosis	
	Dental erosion	• Perimolysis - palatal surface of anterior and posterior teeth and occlusal surfaces	• Decrease acidic sports drinks/caffeinated or carbonated drinks
Purging	Vomiting	• Thinning of oral epithelium • Loss of dorsal tongue papillae • Erosion of palatal surface of maxillary teeth-polished, spoon-like appearance • Restorations appear as plateaued • Relief above tooth surfaces	• Symptomatic treatment of burning mouth • Assess adequacy of salivary flow • Restorative care as needed
Binging	Obesity		• Evaluate overall oral health and hygiene • Nutritional counseling

Table 5 - Guidelines for patients with ED targeted towards prevention of erosion

- Daily fluoride application
- Avoid acidic food and drink
- Saliva substitutes if xerostomia is present
- Sugar free gum to stimulate saliva
- Mouth rinses with sodium bicarbonate or fluoride
- Evaluate xerostomic medications

hygiene habits may contribute to caries risk. Dental erosion from acidic beverages or purging behaviors may also predispose individuals to higher caries risk. Pharmacologic treatment, including some antidepressant drugs, may cause xerostomia and impact caries risk. Food restricting behavior in Anorexia Nervosa may cause bilateral parotid gland enlargement with excessive salivation, or chronic malnutrition.[7,8]

Adult Women

Ethnicity

It is well known that general health and oral health disparities exist across racial groups. A recent study of a national cohort of African American women confirmed that those with self-acknowledged fair or poor oral health were more likely to have medical conditions including diabetes, hypertension, obesity, smoking history and tooth loss, among others.[13] They tended to be older, less educated, reported recent tooth loss, poorer diet and higher parity than women reporting excellent or good oral health, as well. Lower educational attainment was associated with lower odds of reporting periodontal disease diagnosis but higher rates of reporting fair to poor oral health. In this group, the rate of reporting of fair to poor oral health was lower than for other studies of Black women in the US. Differences in demographic variables of the study populations likely contributed to the difference. It remains that oral health related disease, characteristics and causes require additional study to provide new approaches to prevention and access in both general and minority populations that may have unique risks.[13]

Hormonal Impact

Estrogen and its fluctuating levels during childbearing years and its decrease at menopause has been documented to impact women's physiology. The level of estrogen has implications for oral health across women's lifetime. The variation of estrogen levels during childbearing years potentiates facial pain while high levels during pregnancy promote gingivitis, especially in the presence of poor oral hygiene. Low estrogen levels during menopause increase alveolar bone loss and predispose the temporomandibular joint to degenerative changes. While women are approximately three times as likely to develop Temporomandibular joint disease (TMD), research on the effect of estrogen on TMD remain contradictory. Analysis of studies of estrogen on TMD suggest that there may be a biphasic effect on TMD with high and/or changing levels of promoting specific types of TMD while low levels may potentiate other forms of TMD. Recent studies suggest that TMD pain is reduced when estrogen levels are high.[14]

Pregnancy

Pregnancy is a time of significant physiological change for women. Promotion of oral health during pregnancy is known to positively impact

Table 6 - Pharmacologic considerations for pregnant women[15]

Pharmacologic Agent	Considerations
Analgesics	
Acetaminophen Acetaminophen with codeine, hydrocodone, or oxycodone Codeine Meperidine Morphine	• May be used during pregnancy
Aspirin Ibuprofen Naproxen	• May be used in short duration during pregnancy - 48-72 hrs. • Avoid in first and third trimester.
Antibiotics	
Amoxicillin Cephalosporins Clindamycin Metronidazole Penicillin	• May be used during pregnancy
Ciprofloxacin Clarithromycin Levofloxacin Moxifloxacin	• Avoid during pregnancy
Tetracycline	• Always avoid during pregnancy
Anesthetics	
IV sedation or general anesthesia	• Consult with prenatal care health professional prior to using
Local anesthetics with epinephrine (Bupivacaine, Lidocaine, Mepivacaine)	• May be used during pregnancy
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
Antimicrobials (use alcohol-free products during pregnancy)	
Cetylpyridinium chloride mouth rinse Chlorhexidine mouth rinse Xylitol	• May all be used during pregnancy

The pharmacologic agents listed are to be used only for indicated medical conditions and with appropriate supervision. Reprinted from: Oral health during pregnancy expert workgroup. Oral health during pregnancy: a national consensus statement—summary of an expert workgroup meeting. Washington, DC: National Maternal and Child Oral Health Resource Center; 2012.

women's health and that of their fetuses. A national consensus statement was issued in 2012 by the Maternal and Child Health Bureau (HRSA), the American College of Obstetricians and Gynecologists and the American Dental Association recommending guidance for health care professionals.[15] Significant work has been published related to dental care during pregnancy. Recent literature confirms that dental care throughout pregnancy, including the use of radiographs, pain medication and local anesthesia, is safe.[15,16] Additionally, despite the recommendations, there remain gaps in the translation of evidence around best practice protocol implementation on a widespread basis. Consultation with the patient's physician is indicated when:

- The patient has medically complex history or comorbid conditions that may impact oral problems (diabetes, hypertension, pulmonary or cardiac disease, bleeding disorders).
- The use of intravenous sedation or general anesthesia is anticipated.
- The use of nitrous oxide is being considered as an adjunctive analgesic to local anesthetics.

When providing oral disease management and treatment for pregnant women:[17]

- Provide emergency or acute care at any time in the pregnancy, as indicated by the oral condition.
- Develop, discuss and provide a comprehensive care plan that includes prevention, treatment and maintenance throughout pregnancy. Discuss benefits and risk of treatments and alternatives.
- Use standard practice when placing restorative materials such as amalgam and composite.
- Use a rubber dam during endodontic procedures and restorative procedures.
- Position pregnant women appropriately during care:
  - ◊ Keep the woman's head at a higher level than her feet
  - ◊ Place in semi-reclining position, as tolerated and allow frequent position changes.
  - ◊ Place small pillow under the right hip, or have the woman turn slightly to the left, as needed to avoid dizziness or nausea resulting from hypotension.
- Follow up with pregnant women to determine whether preventive and restorative treatment has been effective.

For guidance on pharmacologic considerations during pregnancy, see **Table 6.**

Complete medical history documentation is important when caring for pregnant patients so important individualized preventive strategies and patient educational information can be implemented and provided. For example, a 2021 study from the NHANES data found an association of higher caries experience in US women with increasing parity (which is the number of pregnancies resulting in live births).[18]

One of the most common oral health related conditions experienced during pregnancy is gingivitis.[19] Sixty to 75% of women have inflammation of the gingiva during pregnancy. Exacerbated response to irritants such as plaque and calculus in the presence of elevated levels of progesterone and estrogen contribute to its development.[20] A localized, exaggerated response to irritants may lead to pregnancy tumor or granuloma (*Epulis Gravidarum*). These usually occur in the second or third trimester, grow rapidly and are painless.[21] They often regress after delivery however, if the lesion bleeds easily during function or is painful, it may need to be excised. Patients should be informed that lesions excised prior to the post-partum time may recur.[22] Oral health providers should encourage good oral hygiene and routine dental care during pregnancy (**Table 7**).

Table 7 - Consensus statement recommendations for oral hygiene during pregnancy[15]

Home Regimen During Pregnancy
• Brush teeth with fluoridated toothpaste twice daily, clean between teeth daily with floss or interdental cleaner
• Rinse daily with 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
• After vomiting, rinse mouth with 1 teaspoon of baking soda dissolved in a cup of water to stop acid from demineralizing the teeth
• Eat healthy foods and minimize sugar consumption

Table 8 - Management of dry mouth in Sjogren's Syndrome patients

Strategies	Foods to Avoid
Assess hydration	Cinnamon
Salivary stimulation with xylitol gum or lozenges	Caffeine
Recall visits 3-4 times per year	Strong Mint
Saliva substitutes	Alcohol
Non-fluoride remineralizing agents (as adjunctive therapy)	Lemon
1.1% sodium fluoride; professionally applied fluoride varnish	

Oral health professionals should be aware of the potential for perimylolysis (loss of enamel) due to acid induced erosion in a pregnant patient with ongoing severe nausea and vomiting.[23] Such a patient may require additional topical fluoride applications and should be instructed to rinse their mouth with 1 teaspoon of baking soda dissolved in 1 cup water after vomiting.[23]

It is important for dental care to proceed during pregnancy and oral health issues to be addressed.[24] The Consensus Statement advises that radiographic imaging is not contra-indicated during pregnancy. Use of radiographs, when required, should follow guidelines ensuring that they are necessary for diagnosis and treatment.[25]

A recent meta-analysis of scaling and root planning (SRP) treatment for periodontitis to reduce preterm birth and low birth weight concluded a significant reduction of risk for preterm birth in pregnant women with periodontitis and at high risk of preterm birth when SRP therapy was completed.[26] Evidence continues to suggest that treatment of periodontitis during pregnancy is safe and appropriate and may have a positive impact for women at risk for pre-term birth.

COVID-19, Pregnancy and Oral Health

Physiologic adaptive changes during pregnancy may place women at additional risk of respiratory pathogens such as COVID-19 and susceptibility to pneumonia as a consequence when women are infected with severe forms of the disease. Few studies are available to provide guidance. Therefore, special care in observing known protocols when caring for a pregnant woman is advised.[27]

In a brief study of oral related symptoms in patients with COVID-19, women were found to experience a different group of symptoms than males. All symptoms were found to be more frequent among women with runny nose as the only statistically significant difference ($p = .018$). When comparing between the sexes, cough and runny nose were the most common symptoms in women, along with anosmia (loss of smell) and facial pain ($p < .001$; $p = .01$, respectively).[28]

Diseases with Propensity for Female Gender

A number of medical diseases have a predilection for affecting women. Autoimmune diseases represent one such category of illnesses. Sjogren's Syndrome (SS) affects women at a rate of 9:1 compared to males and is most often diagnosed after the age of 50.[29] Characteristics of the disease include dry mouth, dry eyes and possible association with rheumatoid arthritis or lupus.[30] It is a chronic inflammatory disease that effects salivary and lacrimal glands plus extraglandular structures. Patients with SS may experience xerostomia, risk of caries and may require consideration of attenuating caries risk and managing the dry mouth via mechanical stimulation or chemotherapeutics (**Table 8**).

Temporomandibular Disorder (TMD)

Temporomandibular disorder (TMD) has been described as the experience of pain in the masticatory muscles, with pain being the primary reason individuals seek care.[31,32] The prevalence of TMD is much greater in women.[33-35]

In the past, bruxism (tooth grinding and clenching) was considered a predominant risk factor for TMD.[36] However, recent research using TMD cases and matched controls, along with objective data (polysomnographic recordings - PSG) versus only self-reporting, rejects bruxism as a causative factor.[31,36] Analysis of the PSG data of TMD participants versus matched controls found no difference in bruxism rates.

Table 9 - Evidence-based management of patients with TMD

Management Strategies	Strength of Evidence	Treatment
Occlusal adjustment	No evidence[40,41]	Not recommended (non- reversible treatment).
Oral splints	Insufficient evidence[40,42]	May lead to short-term improvement, but more high-quality studies are needed.
Pharmacological interventions	Insufficient evidence[32]	Lack of evidence to decide which medicines are effective in reducing pain due to chronic TMD. If patient requests recommendation for pain relief, a conservative approach such as NSAIDS would be a consideration if tailored to individual symptoms and patient characteristics.
Physical therapy (acupuncture, TENS, exercise and mobilization)	Insufficient evidence[42]	While acupuncture shows promise, more high quality studies are needed before the effectiveness can be determined. Overall, more research is needed to establish the efficacy of the various physical therapy management strategies.
Self-management (education, self-exercise therapy, thermal modalities, self-massage therapy, diet and nutrition, parafunctional behavior)	Insufficient evidence[43]	First step or approach after diagnosis. Most importantly, it involves non-invasive strategies.

For more detailed information on TMD, see: Metlife Quality Resource Guides: Assessing Orofacial Pain, Evaluation and Treatment of TMD Patients and Temporomandibular Disorders: Etiology and Management Considerations.

The Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) was recently revised and deemed appropriate for use in both clinical and research settings. Along with comprehensive instruments are short and simple screening tools that meet the criteria as evidence-based and validated for identifying patients with a range of TMD presentations.[37] Specifically, the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) is appropriate for use in the clinical setting.[38] A short six-item version of the DC/TMD has been found to be a valid measure for screening for TMD.[39] However, it would be necessary for the clinician to perform a comprehensive pain assessment, including interview and clinical examination, if the goal is to provide a diagnosis.

Management of TMD has included a variety of modalities consisting of occlusal equilibration to pharmacological interventions (**Table 9**). The primary intervention for pain in patients with TMD is the use of pharmacotherapy. A Cochrane Systematic Review published in 2010 examined drug interventions for pain in patients with TMD.[32] The authors concluded that there was insufficient evidence to support or not support the effectiveness of pharmacological interventions for management of pain in TMD patients and called for more randomized controlled trails (RCTs) in the management of TMD. With recent research debunking the relationship between TMD and occlusal interferences, occlusal equilibration should not be a strategy that is used. The literature calls for reversible treatments that are tailored to individual symptoms and patient characteristics.[40]

Aging Women

Altered Presentation of Disease

Recent literature has documented the importance of altered disease presentation in females.[44] Women have a life expectancy of five years longer than their male counterparts.[45] They therefore have additional years to experience acute and chronic diseases that increase with increasing age. In aging males and females there is increased heterogeneity in both health and disease. Cardiovascular disease is the leading cause of death in both males and females. Yet, women may present with symptoms that are less traditional compared to males. Women may have atypical and non-anginal pain and may present with neck, jaw, or back pain; fatigue; and dyspnea.[46]

A recent study found that women were less likely to receive testing following presentation to an emergency room with chest pain and were less likely to receive selected life-supporting treatments. These disparities suggest that health screening and patient education when visiting a dental care provider could be especially important for females. Since women are more likely to be prevention oriented and to participate in healthcare, such opportunities in the dental office could be especially important to health preservation. Dental office updates of the patient's health history, medication history plus screening for hypertension, diet counseling and other health risk assessments would be helpful. Based on patients' behavior and risk profile, motivational interviewing techniques may provide an encouraging way to communicate needed behavior change.[47]

The premise of motivational interviewing (MI) is to bring the patient into the conversation about change rather than resorting to provider directives about what change is "needed". MI uses a person-centered form of interviewing to elicit what is important to the patient, thus strengthening the motivation for change. MI has been shown to lead to better health outcomes and patient satisfaction.[47]

During menopause women experience the effects of decreased estrogen production. Reported oral related symptoms may include dry mouth, oral discomfort, burning mouth and dry gingiva that easily bleeds, among other symptoms. Oral changes can also be associated with osteoporosis.[48]

Osteoporosis

Osteoporosis is a systemic chronic degenerative skeletal disease that primarily impacts post-menopausal women; increasing their risk of fracture due to loss of bone mineral density.[49] Common fracture sites include wrist, hip, and vertebrae. Decrease in estrogen peri-menopausally and in the following years accelerates bone loss in women and decreases bone mineral density (BMD).

The relationship between periodontal disease and osteoporosis has been debated for a number of years. There is evidence supporting the relationship, yet each disease has both common risk factors and independent confounding factors complicating understanding.[50] A recent report suggests decreasing BMD may be a shared risk factor rather than a causal factor for periodontal disease.[51]

Therapeutic treatment of osteoporosis may include antiresorptive medication including oral bisphosphonates. The implications of various agents are well established with regards to potential for medication-related osteonecrosis of the jaw (MRONJ) in dental patients who undergo dental surgical procedures.[46] Patients taking oral antiresorptive therapy may have some risk of MRONJ but to a much lesser degree than those being treated with intravenous antiresorptive therapy.

Guidance in the management of patient's taking bisphosphonates recommended by the ADA Council on Scientific Affairs note current screening and diagnostic tests are unreliable for predicting a patient's risk of developing MRONJ. Recommendations also indicate early screening for dental disease prior to the initiation of antiresorptive therapy decreases the incidence of MRONJ and can improve oral health. Recommendations for dental patients taking oral bisphosphonates include:[52]

- Routine dental treatment generally should not be modified solely because of the patient's use of oral bisphosphonates.
- All patients should receive routine dental examinations.
- Patients who are prescribed oral bisphos-phonates and are not receiving regular dental

care likely would benefit from a comprehensive oral examination before or during the early portion of their bisphosphonate therapeutic regimen.

- All patients taking the drug should be informed that:
  - ◊ oral bisphosphonate use places them at very low risk of developing MRONJ (the actual incidence is unknown, with estimates ranging from 0.1%-.21%. The latter increased prevalence was in patients with greater than 4 years of oral bisphosphonate exposure);
  - ◊ the low risk of developing MRONJ may be minimized but not eliminated;
  - ◊ an oral health program consisting of sound oral hygiene practices and regular dental care may be the optimal approach for lowering the risk of developing MRONJ;
  - ◊ there is no validated diagnostic technique available to determine if patients are at increased risk of developing MRONJ;
  - ◊ discontinuing bisphosphonate therapy may not eliminate or reduce the risk of developing MRONJ;
  - ◊ if any problem develops in the oral cavity during oral bisphosphonate therapy, the patient should contact a dentist.

In 2014, the American Association of Oral and Maxillofacial Surgeons published a position paper on Medication-related Osteonecrosis of the jaw.[53] The management strategies for patients treated with antiresportives additionally suggested:

- Early consultation with an appropriate dental professional for complete examination
- Examination for both acute infection and the potential for infection to minimize risk of future sequelae
- Informing patients both of low risk with drug therapies and risks incurred by not undergoing recommended dental preventive measures before consenting to treatment

There is no evidence to support the interruption of bisphosphonate therapy for osteoporosis in order to minimize risk of MRONJ following invasive dental surgery. However, for patients with greater than 4 years of therapy, there is a suggestion that patients may theoretically benefit from a bisphosphonate drug holiday of 2 months prior to an invasive dental procedure or alternative strategies.[54]

In osteoporosis patients experiencing MRONJ, a study published in 2017 found that patients treated with a more comprehensive surgical intervention had lower rates of relapse compared to patients treated more conservatively. The authors indicate a surgical treatment goal aims to prevent relapse in treatment of MRONJ. Frequent follow up

Table 10 - Staging and management of medication-related osteonecrosis of the jaw (MRONJ)[53,55,56]

Staging	Managment Strategies	Treatment
At risk (asymptomatic patients, no necrotic bone, history of previous anti-resorptive/anti-angiogenic therapy)	Educate patient about the risk of developing osteonecrosis and the clinical signs and symptoms	No treatment is recommended
Stage 0 (non-specific symptoms, clinical or radiographic findings present but no evidence of necrotic bone)	Provide information and educate patient. Conservative management of local factors such as caries and periodontitis.	Treatment of symptoms only, including analgesics for chronic pain and antibiotics for control of infection
Stage 1 (asymptomatic without evidence of infection but with exposed and necrotic bone or fistula that probes to bone)	Patient education and review of indications for continued bisphosphate therapy, and frequent clinical follow-up	Antimicrobial mouth rinses (chlorhexidine 0.12%), no surgical therapy is indicated
Stage 2 (symptomatic, pain and clinical evidence of infection with exposed and necrotic bone or a fistula that probes to bone)	Clinical follow-up needed to determine response to treatment	Symptomatic treatment, including antibacterial mouth rinses, analgesics for pain control, and antibiotics to control the infection, superficial debridement for the relief of soft tissue irritation and infection control.
Stage 3 (pain and clinical evidence of infection with exposed and necrotic bone or a fistula that probes to bone and one or more of the following: exposed necrotic bone beyond the region of the alveolar bone resulting in pathologic fracture, broad osteolysis extending to the inferior border of the lower jaw, or to the floor of the maxillary sinus, extra-oral fistula, oral antral or oral nasal communication)	More frequent and careful clinical follow-up, including immediately after the procedure(s)	Same as Stage 2, but also surgical debridement/resection of the necrotic bone is also indicated

of patients after surgical intervention is indicated since relapse often occurs soon after surgical intervention but may also occur long after the initial surgical intervention.[55]

For more detailed information on Bisphosphonate considerations, see: Metlife Quality Resource Guides: *Bisphosphonate-Related Jaw Necrosis Part 1 - Background, Incidence and Rick Factors* and *Bisphosphonate-Related Jaw Necrosis Part 2 - Clinical Management*

Summary

The complexities of health, well being and disease in women present challenges that may require unique strategies to understand and care for oral health across the female life-span. Genetics, physiology, hormonal levels and socio-demographic variables create a complex interplay of disease expression and experience. Efforts to characterize the variability and distinct impact of the female gender on health have placed greater focus on research resulting in the emergence of evidence-based practice recommendations. This guide provides a baseline for understanding some of the most important issues that impact both oral health and general health for female patients. By applying evidence-based approaches to care, women's health issues impacting oral health may be more easily addressed.

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POST-TEST

Internet Users: This page is intended to assist you in fast and accurate testing when completing the "Online Exam." We suggest reviewing the questions and then circling your answers on this page prior to completing the online exam.

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

1. **Factors that are proportionately represented to a higher degree in women than men, and are considered important determinants of health and oral health include all of the following EXCEPT:**
   a. Social determinants (poverty, lower educational attainment)
   b. Cardiovascular disease rates
   c. Hormonal influences (puberty and beyond)
   d. Life expectancy

2. **Eating disorders typically emerge in early adolescence with adverse outcomes to the person's health and well-being. Guidelines that target the oral consequences include the following strategies EXCEPT:**
   a. Custom night guard protection
   b. Mouth rinses with sodium bicarbonate
   c. Vigorous brushing following vomiting
   d. Sugar free gum to stimulate saliva

3. **Which of the following statements is correct about oral health practices by gender?**
   a. Men seek oral health care preventive services equally compared to females
   b. Men and women may require different oral health promotion strategies to preserve and improve oral health.
   c. Women have higher rate of seeking emergency care but lower rate of routine care seeking behaviors than males
   d. Differences in oral health promotion seeking behaviors between men and women become less pronounced with age.

4. **Of the following management strategies for patients with temporomandibular disorder (TMD), which has no evidence to support its efficacy?**
   a. Oral splints
   b. Occlusal adjustment
   c. Pharmacological interventions
   d. Acupuncture

5. **The American Association of Oral and Maxillofacial Surgeons (AAOMS) staging and management strategies for medication-related osteonecrosis of the jaw (MRONJ) suggests that for stage _____ the patient is asymptomatic but with exposed and necrotic bone or a fistual that probes to the bone.**
   a. Stage 0
   b. Stage 1
   c. Stage 2
   d. Stage 3

6. **Therapeutic treatment of osteoporosis can include bisphosphonates. The following information should be discussed with patients taking bisphosphonates, (choose all that apply):**
   1) Oral bisphosphonate use places patients at a very low risk of developing osteonecrosis of the jaw
   2) Good oral hygiene practices and regular dental care are recommended for lowering the risk of developing osteonecrosis
   3) The risk of developing osteonecrosis may be minimized but not eliminated
   4) Daily rinses with chlorhexidine gluconate have been shown to decrease risk of oral lesions prodromal to osteonecrosis development
   5) Hydrogen peroxide rinses are a preventive over-the-counter therapeutic decreasing the risk of osteonecrosis of the jaw
   6) Males are more likely to develop osteonecrosis of the jaw when prescribed oral bisphosphonates.

   a. 1, 2, and 3
   b. 1, 4 and 5
   c. 2, 4 and 5
   d. 3, 5 and 6

7. **Adolescent females present with unique challenges for the oral healthcare provider. With the onset of puberty increasing sex hormones occurs. Each statement below is true EXCEPT:**
   a. Increased inflammatory response to plaque
   b. Increased blood flow to the gingiva due to age-related growth spurt
   c. Caries risk assessment indicated
   d. Adjunctive therapeutic rinses indicated by level of gingivitis

8. **Which of the following medications may be used during pregnancy?**
   a. Mepivocaine, ciprofloxacin, acetaminophen
   b. Amoxicillin, codeine, clarithromycin
   c. Tetracycline, Cetylpryridinium chloride rinse, penicillin
   d. Cephalosporins, Lidocaine, chlorhexidine rinse

9. **The hallmark symptoms of the auto-immune disease, Sjogren's Syndrome include:**
   a. Heat intolerance and weight loss
   b. Dry eyes and dry mouth
   c. Joint pain and fatigue
   d. Weight gain and sensitivity to cold

10. **Recent research has documented differences between males and females in how disease and illness manifest. In the case of cardiovascular disease, women may present with which of the following *less traditional* symptoms?**
    1) Dyspnea
    2) Back pain
    3) Chest pain
    4) Nausea

    a. 1, 2 and 3
    b. 2, 3 and 4
    c. 1, 2 and 4
    d. All of the above

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