# Dental Provider's Oncology Pocket Guide

*Prevention and management of oral complications*

- **Head and Neck Radiation Therapy**
- **Chemotherapy**
- **Hematopoietic Stem Cell Transplantation**

Oral Health, Cancer Care, and You
**Fitting the Pieces Together**

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**
NATIONAL INSTITUTES OF HEALTH
National Institute of Dental and Craniofacial Research

## ♦ Head and Neck Radiation Therapy

Patients receiving radiation therapy to the head and neck are at risk for developing oral complications. Because of the risk of osteonecrosis in irradiated fields, oral surgery should be performed before radiation treatment begins.

### Before Head and Neck Radiation Therapy

- Conduct a pretreatment oral health examination and prophylaxis.
- Schedule dental treatment in consultation with the radiation oncologist.
- Extract teeth in the proposed radiation field that may be a problem in the future.
- Prevent tooth demineralization and radiation caries:
  - Fabricate custom gel-applicator trays for the patient.
  - Prescribe a 1.1% neutral pH sodium fluoride gel or a 0.4% stannous, unflavored fluoride gel (not fluoride rinses).
  - Use a neutral fluoride for patients with porcelain crowns or resin or glass ionomer restorations.
  - Be sure that the trays cover all tooth structures without irritating the gingival or mucosal tissues.
  - Instruct the patient in home application of fluoride gel. Several days before radiation therapy begins, the patient should start a daily 10-minute application.
  - Have patients brush with a fluoride gel if using trays is difficult.
- Allow at least 14 days of healing for any oral surgical procedures.
- Conduct prosthetic surgery before treatment, since elective surgical procedures are contraindicated on irradiated bone.

### During Radiation Therapy

- Monitor the patient's oral hygiene.

## ♦ Head and Neck Radiation Therapy *(continued)*

- Watch for mucositis and infection.
- Advise against wearing removable appliances during treatment.

### After Radiation Therapy

- Recall the patient for prophylaxis and home care evaluation every 4 to 8 weeks or as needed for the first 6 months after cancer treatment.
- Reinforce the importance of optimal oral hygiene.
- Monitor the patient for trismus: check for pain or weakness in masticating muscles in the radiation field. Instruct the patient to exercise three times a day, opening and closing the mouth as far as possible without pain; repeat 20 times.
- Consult with the oncology team about use of dentures and other appliances after mucositis subsides. Patients with friable tissues and xerostomia may not be able to wear them again.
- Watch for demineralization and caries. Lifelong, daily applications of fluoride gel are needed for patients with xerostomia.
- Advise against elective oral surgery on irradiated bone because of the risk of osteonecrosis. Tooth extraction, if unavoidable, should be conservative, using antibiotic coverage and possibly hyperbaric oxygen therapy.

## ♦ Chemotherapy

The oral complications of chemotherapy depend upon the drugs used, the dosage, the degree of dental disease, and the use of radiation. Chemoradiation therapy carries a significant risk for mucositis.

### Before Chemotherapy

- Conduct a pretreatment oral health examination and prophylaxis.

## PRE-CANCER TREATMENT ORAL HEALTH EXAMINATION

### Objectives

1. Conduct evaluation 1 month, if possible, before cancer treatment begins.
2. Establish a schedule for dental treatment.
   - Complete invasive procedures at least 14 days before head/neck radiation therapy starts; 7 to 10 days before myelosuppressive chemotherapy.
   - Postpone elective oral surgical procedures until cancer treatment is completed.
3. Identify and treat sites of low-grade and acute oral infections:
   - Caries
   - Periodontal disease
   - Endodontic disease
   - Mucosal lesions.
4. Identify and eliminate sources of oral trauma and irritation such as ill-fitting dentures, orthodontic bands, and other appliances.
5. Identify and treat potential oral problems within the proposed radiation field before radiation treatment begins.
6. Instruct patients about oral hygiene.
7. Educate patients on preventing demineralization and dental caries.

### ♦ Chemotherapy *(continued)*

- Schedule dental treatment in consultation with the oncologist.
- Schedule oral surgery 7 to10 days before myelosuppressive therapy begins.

## ♦ Chemotherapy *(continued)*

- Consult the oncologist before conducting any oral procedures in patients with hematologic cancers; do not conduct procedures in patients who are immunosuppressed or have thrombocytopenia.

## During Chemotherapy

- **Consult the oncologist before any dental procedure, including prophylaxis.**
- Ask the oncologist to order blood work 24 hours before oral surgery or other invasive procedures. Postpone when
  - the platelet count is less than 75,000/$mm^3$ or abnormal clotting factors are present
  - absolute neutrophil count is less than 1,000/$mm^3$, or consider prophylactic antibiotics (www.americanheart.org).
- Check for oral source of viral, bacterial, or fungal infection in patients with fever of unknown origin.
- Encourage consistent oral hygiene measures.
- Consult the oncologist about the need for antibiotic prophylaxis before any dental procedures in patients with central venous catheters.

## After Chemotherapy

- Place the patient on a dental recall schedule when chemotherapy is completed and all side effects, including immunosuppression, have resolved.
- Confirm normal hematologic status prior to dental treatment.
- Ask if the patient has received intravenous bisphosphonate therapy.

## Questions to Ask the Medical Oncologist

- What is the patient's complete blood count, including absolute neutrophil and platelet counts?
- If an invasive dental procedure needs to be done, are there adequate clotting factors?
- Does the patient have a central venous catheter?
- What is the scheduled sequence of treatments so that safe dental treatment can be planned?
- Is radiation therapy also planned?

## Questions to Ask the Radiation Oncologist

- What parts of the mandible/maxilla and salivary glands are in the field of radiation?
- What is the total dose of radiation the patient will receive, and what will be the impact on these areas?
- Has the vascularity of the mandible been previously compromised by surgery?
- How quickly does the patient need to start radiation treatment?
- Will there be induction chemotherapy with the radiation treatment?

# ♦ Hematopoietic Stem Cell Transplantation

Most stem cell transplant patients develop acute oral complications, especially patients with graft-versus-host disease.

## Before Transplantation

- Conduct a pretreatment oral health examination and prophylaxis.

## ♦ Hematopoietic Stem Cell Transplantation *(continued)*

- Consult the oncologist about scheduling dental treatment.
- Schedule oral surgery at least 7 to 10 days before myelosuppressive therapy begins.
- Prevent tooth demineralization and radiation caries:
  - Instruct the patient in home application of fluoride gel (not fluoride rinses).
- Instruct the patient about an oral hygiene regimen.

### After Transplantation

- **Consult the oncologist before any dental procedure, including prophylaxis.**
- Monitor the patient's oral health for plaque control, tooth demineralization, dental caries, and infection.
- Watch for infections on the tongue and oral mucosa. Herpes simplex and *Candida albicans* are common oral infections.
- Delay elective oral procedures for 1 year.
- Follow patients for long-term oral complications. Such problems are strong indicators of chronic graft-versus-host disease.
- Monitor transplant patients carefully for second malignancies in the oral region.

## ♦ Advice for Your Patients

- Brush teeth, gums, and tongue gently with an extra-soft toothbrush and fluoride toothpaste after every meal and at bedtime. If brushing hurts, soften the bristles in warm water.
- Floss teeth gently every day. If your gums bleed and hurt, avoid the areas that are bleeding or sore but keep flossing your other teeth.

## ♦ Advice for Your Patients *(continued)*

- Follow instructions for fluoride gel applications.
- Avoid mouthwashes containing alcohol.
- Rinse the mouth several times a day with a baking soda and salt solution, followed by a plain water rinse. Use ¼ teaspoon each of baking soda and salt in 1 quart of warm water. Omit salt during mucositis.
- Try the following if dry mouth is a problem:
  - Sip water frequently.
  - Suck ice chips or use sugar-free gum or candy.
  - Use saliva substitute spray or gel or a prescribed saliva stimulant if appropriate.
  - Avoid glycerin swabs.
- Exercise the jaw muscles three times a day to prevent and treat jaw stiffness from radiation treatment.
- Avoid candy, gum, and soda unless they are sugar-free.
- Avoid spicy or acidic foods, toothpicks, tobacco products, and alcohol.

## ♦ Special Care for Children

Children receiving chemotherapy and/or radiation therapy are at risk for the same oral complications as adults. Other actions to consider in managing pediatric patients include the following:

- Extract loose primary teeth and teeth expected to exfoliate during cancer treatment.
- Remove orthodontic bands and brackets if highly stomatotoxic chemotherapy is planned or if the appliances will be in the radiation field.
- Monitor craniofacial and dental structures for abnormal growth and development.

## Dental Care for Oral Complications of Cancer Treatment

**Oral Mucositis:** Culture lesions to identify secondary infection. Prescribe topical anesthetics and systemic analgesics. Consult the oncologist about prescribing antimicrobial agents for known infections. Instruct the patient to avoid rough-textured foods and to report oral problems early.

**Xerostomia/salivary gland dysfunction:** Advise the patient to soften or thin foods with liquid, chew sugarless gum, or suck ice chips or sugar-free hard candies. Suggest using commercial saliva substitutes or prescribe a saliva stimulant.

**Taste changes:** Refer to a dietitian.

**Etched enamel:** Advise the patient to rinse the mouth with water and baking soda solution after vomiting to protect enamel.

## Complications Specific to Chemotherapy

**Neurotoxicity:** Provide analgesics or systemic pain relief.

**Bleeding:** Advise the patient to clean teeth thoroughly with a toothbrush softened in warm water; avoid flossing the areas that are bleeding but keep flossing the other teeth.

## Complications Specific to Radiation

**Demineralization and radiation caries:** Prescribe daily fluoride gel applications before treatment starts. Continue for the patient's lifetime if changes in quality or quantity of saliva persist.

**Trismus/tissue fibrosis:** Instruct the patient on stretching exercises for the jaw to prevent or reduce the severity of fibrosis.

**Osteonecrosis:** Avoid elective invasive procedures involving irradiated bone, particularly the mandible.

## Oral Health, Cancer Care, and You

This guide is part of a series on managing and preventing oral complications of cancer treatment developed by the National Institute of Dental and Craniofacial Research in partnership with the National Cancer Institute, National Institute of Nursing Research, and the Centers for Disease Control and Prevention.

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