

## Oral Complications of Cancer Treatment: What the Oncology Team Can Do

Radiation to the head and neck and chemotherapy for any malignancy can cause oral side effects so debilitating that patients may tolerate only lower, less effective doses of cancer treatment, may postpone scheduled treatments, or may discontinue treatment entirely. Preventing and managing oral complications help support optimal cancer therapy, enhancing both patient survival and quality of life.

### Who Has Oral Complications?

Oral complications occur in almost all patients receiving radiation for head and neck malignancies, in up to 75 percent of blood and marrow transplant recipients, and in nearly 40 percent of patients receiving chemotherapy. Risk for oral complications varies with the treatment regimen. Patients administered minimally myelosuppressive or nonmyelosuppressive therapy are at low risk. As the aggressiveness of chemotherapy increases, so too does the likelihood of oral complications. At highest risk are patients receiving stomatotoxic chemotherapy resulting in prolonged myelosuppression, including patients undergoing blood and marrow transplantation, and patients undergoing head and neck radiation for oral and pharyngeal cancer.

Some complications occur only during treatment; others, such as xerostomia, may persist for years. Unfortunately, many patients with cancer do not receive medically necessary oral care until serious complications develop. You play a key role in helping patients understand that

### Oral Complications of Cancer Treatment

#### *General*

- Oral mucositis/stomatitis
- Xerostomia/salivary gland dysfunction
- Infection
- Xerostomia-associated cavities
- Taste alterations
- Nutritional compromise
- Functional disabilities
- Abnormal dental development in children

#### *Treatment-specific*

##### **Chemotherapy**

- Neurotoxicity
- Bleeding

##### **Radiation therapy**

- Radiation cavities
- Trismus/tissue fibrosis
- Osteonecrosis

good oral care can prevent or reduce oral complications. When you ensure that your patients receive oral care, you improve their chances of maintaining optimal cancer treatment doses and completing treatment.

By adding oral care to the pretreatment regimen, you can achieve the following:



- Reduce the risk and severity of oral complications.
- Improve the likelihood that the patient will successfully complete planned cancer treatment.
- Prevent oral infections that could lead to potentially fatal systemic infections.
- Prevent or minimize complications that can compromise nutrition.
- Prevent, eliminate, or control oral pain.
- Prevent or reduce the incidence of bone necrosis in patients receiving radiation therapy to the head and neck.
- Preserve or improve oral health.
- Improve the quality of life.
- Decrease the cost of care.
- Evaluate dentures and appliances for comfort and fit.
- Perform oral surgery at least 2 weeks prior to the initiation of radiation therapy to allow healing, and at least 7 to 10 days before myelosuppressive chemotherapy begins.
- In adults receiving head and neck radiation, extract teeth that may pose a future problem to prevent extraction-induced osteonecrosis.
- In children, consider extracting highly mobile primary teeth and teeth that are expected to exfoliate during treatment.
- Instruct patients on oral hygiene, use of fluoride gel, nutrition, and the need to avoid tobacco and alcohol.

## Oral Evaluation Before Cancer Treatment Makes a Difference

A pretreatment oral evaluation can identify potential problems and help educate the patient about the importance of good oral care. This evaluation can be conducted by a knowledgeable dentist in the community or by a hospital-based dental team. The evaluation includes a thorough examination of hard and soft tissues, as well as radiographs to detect trauma and possible sources of infection. Before cancer treatment begins, the dentist will take the following steps:

- Identify and treat existing infections, problem teeth, and tissue injury or trauma.
- Stabilize or eliminate potential sites of infection.
- Remove orthodontic bands if highly stomatotoxic chemotherapy is planned or if the bands will be in the radiation field.

During the examination, the patient will also learn a home care regimen to protect mouth tissues and minimize oral complications. The dentist or hygienist will instruct the patient on special brushing and flossing techniques, mouth rinses, and other approaches to keep the mouth as moist and clean as possible to reduce the risk of infection and pain.

## Oral Care During Treatment

Even with pretreatment evaluation, regular oral assessment and care are necessary during cancer therapy. Planning and communication between the oncology and dental teams can minimize the risk of oral complications and maximize the efficacy of dental and supportive care. Specific oral health considerations to remember when treating patients with chemotherapy or radiation include the following:

### Chemotherapy

**Consider oral causes of fever.** Fever of unknown origin may be related to an oral infection; dental consultation may be appropriate.

**Schedule dental appointments carefully.** Have the patient schedule appointments for times when blood counts will be at safe levels. If oral surgery is required, it should be performed 7 to 10 days before the patient receives myelosuppressive chemotherapy.

**Determine hematologic status.** Conduct blood work 24 hours before dental treatment to determine whether the patient's platelet count, clotting factors, and absolute neutrophil count are sufficient to prevent hemorrhage and infection.

**Plan prophylactic antibiotic treatment.** If the patient has a central venous catheter, consider implementing the American Heart Association prophylactic antibiotic regimen before any dental treatment. This regimen is online at <http://circ.ahajournals.org/cgi/content/full/96/1/358>.

## Radiation Therapy

**Treat infections.** Ulcerations and dry, friable tissues are prone to infection. Culture suspected infections and work with the dentist to manage the condition.

### Minimizing Oral Complications of Cancer Therapy

- Encourage patients to maintain the oral hygiene regimen recommended by the dentist.
- Work with oral health professionals to prevent and control infections with appropriate treatment before, during, and after cancer therapy.
- Teach patients to maintain good nutrition.
- Provide relief for mouth dryness and pain using the Agency for Healthcare Research and Quality clinical guidelines, *Management of Cancer Pain*, available online at <http://www.ahrq.gov/clinic/epcsums/canpainsum.htm>.

**Provide dietary counseling.** Instruct the patient on the importance of healthy eating to maintain nutritional status, emphasizing the need to avoid foods that irritate sore tissues or cause dental decay.

**Teach exercises to reduce trismus.** Fibrosis may develop if the chewing muscles are in the direct field of radiation. Work with the dentist to teach patients how to exercise and stretch these muscles properly.

## Follow-up Oral Care

Once all complications of chemotherapy have resolved and blood counts have recovered, patients may resume their normal dental care schedule. It is essential that the dentist know the patient's hematologic status before initiating any dental treatment or surgery.

Once radiation therapy has been completed and acute oral complications have abated, the patient should be evaluated by a dentist every 4 to 8 weeks for the first 6 months. Thereafter, the dentist can determine a schedule based on the needs of the individual patient.

## Long-Term Problems Following Head and Neck Radiation Therapy

Radiation therapy to the head and neck can cause oral complications that continue or emerge long after treatment has ended. Although patients may no longer be under an oncologist's care at that time, what they learn about oral health during their treatment will affect how they deal with subsequent complications. Patients receiving radiation therapy need to know about its risks:

- High-dose radiation treatment carries a lifelong risk of osteonecrosis, xerostomia, and dental cavities.

## Helping Patients with Xerostomia

- Encourage patients to sip water often.
- Suggest using liquids to soften or thin foods.
- Recommend using sugarless gum or sugar-free hard candies to help stimulate saliva flow.
- Suggest using a commercial oral lubricant (saliva substitute).
- Consider prescribing a saliva stimulant when appropriate.

## Helping Patients with Mouth Pain

- Detect and treat oral infections early.
- Prescribe topical anesthetics and systemic analgesics.
- Encourage patients to avoid eating irritating or rough-textured foods.

- Because of the risk of osteonecrosis, people who have received radiation should avoid invasive surgical procedures (including extractions) that involve irradiated bone.
- Radiation to the head and neck may permanently reduce the quantity and quality of normal saliva, so ongoing oral care is crucial to oral health. Daily fluoride application, good nutrition, and oral hygiene are especially important.
- Radiation may alter oral tissues, so dentures may need to be reconstructed after treatment is completed and the tissues have stabilized. Some people can never again wear dentures because of friable tissues and xerostomia.
- A dentist should closely monitor children who have received radiation to craniofacial and dental structures for abnormal craniofacial growth and skeletal development.

## Blood and Marrow Transplant Patients

Because of the pronounced immunosuppression that accompanies blood and marrow transplantation, patients receiving this treatment have a high risk of

developing acute oral complications, particularly mucositis, ulcerations, hemorrhage, infection, and xerostomia. Although these problems begin to resolve when hematologic status improves, immunosuppression may last for up to a year after the transplant, so the risk of complications continues. The oral cavity and salivary glands are also commonly involved in graft-versus-host disease in allograft recipients. Careful attention to oral care in the posttransplant period is important to the overall health of these patients.

## Oral Complications: Glossary of Terms

**Abnormal dental development:** Altered tooth development, craniofacial growth, or skeletal development in children secondary to radiotherapy and/or high doses of chemotherapy before age 9.

**Functional disabilities:** Impaired ability to eat, taste, swallow, or speak because of mucositis, xerostomia, trismus, or infection.

**Neurotoxicity:** Persistent, deep aching and burning pain that mimics a toothache, but for which no dental or mucosal source can be found. This complication

is a side effect of certain classes of drugs, such as the vinca alkaloids.

**Oral mucositis/stomatitis:** Inflammation and ulceration of the mucous membranes; can increase the risk for pain, oral and systemic infection, and nutritional compromise.

**Osteonecrosis:** Blood vessel compromise and necrosis of bone exposed to high-dose radiation therapy, resulting in decreased ability to heal if traumatized and in extreme susceptibility to infection.

**Radiation cavities:** Lifelong risk of rampant dental decay that may begin within 3 months of completing radiation treatment if changes in either the quality or quantity of saliva persist.

**Trismus/tissue fibrosis:** Loss of elasticity of masticatory muscles that restricts normal ability to open the mouth.

**Xerostomia/salivary gland dysfunction:** Dryness of the mouth because of thickened, reduced, or absent salivary flow; increases the risk for infection and compromises speaking, chewing, and swallowing. Medications other than chemotherapy agents, such as psychotropic and some antihypertensive drugs, can also cause salivary gland dysfunction. Persistent dry mouth increases the risk of dental cavities.

## Additional Readings

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## Publications

This brochure is part of *Oral Health, Cancer Care, and You: Fitting the Pieces Together*, an awareness campaign sponsored by the National Institute of Dental and Craniofacial Research (NIDCR) through its National Oral Health Information Clearinghouse (NOHIC). The following publications are part of the campaign and can be ordered from NOHIC.

### For patients:

- Chemotherapy and Your Mouth
- Quimioterapia y la Boca  
(Chemotherapy and Your Mouth)
- Head and Neck Radiation Treatment and Your Mouth
- Su Boca y el Tratamiento de Radiación en la Cabeza y el Cuello  
(Head and Neck Radiation Treatment and Your Mouth)
- Three Good Reasons To See a Dentist (tip sheet)
- Tres Buenas Razones Para Ver a un Dentista (tip sheet)  
(Three Good Reasons To See a Dentist)
- Three Good Reasons To See a Dentist (illustrated booklet, appropriate for adults with reading skills at the 2nd grade level or below)
- Who's on My Cancer Care Team? (wallet card)

### For professionals:

- Oral Complications of Cancer Treatment: What the Oral Health Team Can Do
- Oral Complications of Cancer Treatment: What the Oncology Team Can Do
- Oral Care Provider's Reference Guide for Oncology Patients
- Oncology Reference Guide to Oral Health

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