

Introduction

Most people are aware of common side effects of cancer treatment such as nausea and hair loss. However, most people do not know that one-third of patients who undergo cancer treatment develop complications that affect the mouth. Complications are medical problems that occur as a result of a procedure, treatment or illness. Oral complications affect the mouth.

Cancer patients have a high risk of oral complications. Many cancer treatments, including chemotherapy and radiation, can affect an individual's dental and oral health. Dental and oral health refers to the well-being of the entire mouth, including the teeth, gums, lining of the mouth (mucosa), and glands that produce saliva (salivary glands).

Oral complications can make it difficult to eat, talk, chew or swallow. These problems can affect a patient's health and quality of life. They can even affect a patient's ability to complete treatment.

In some cases when oral complications are severe, the effects on cancer treatment can be significant, for example

- Treatment doses may need to be lowered.
- Treatment schedules may be changed.
- Treatment may be delayed.
- Treatment may be stopped altogether.

Oral complications occur in nearly 40 percent of patients who receive chemotherapy, approximately 80 percent who have a stem cell transplant, and in nearly all patients who receive radiation for head and neck malignancies.

Before treatment begins, it is important for patients to understand the causes of oral complications and how to treat them in order to reduce symptoms and improve quality of life.

Understanding How Treatment Affects Oral Health

Many cancer patients are at high risk for oral complications due to their cancer treatment or the side effects of their cancer treatment. The severity of side effects depends on the individual and on the cancer treatment itself. The following treatments may cause specific oral complications.

Chemotherapy. Chemotherapy drugs slow or stop the growth of fast-growing cells such as cancer cells. They may also harm normal, healthy fast-growing cells, including cells in the mouth. Chemotherapy can prevent the growth of normal cells in the lining of the mouth, which affects the ability of oral tissue to repair itself by making new cells. This results in mouth sores.

Chemotherapy may also cause a decrease in the number of white blood cells. These are the cells that fight infection. As a patient's white blood cell count gets lower, infections may occur more frequently. Over time, it can become more difficult for the body to fight off bacterial, viral and fungal infections.

Chemotherapy may disturb the healthy balance of bacteria in the mouth. There are many kinds of bacteria in the mouth. Some bacteria are helpful and some are harmful. The "good" bacteria keep the "bad" bacteria in balance. If that balance is disrupted, the resulting changes may lead to problems with a patient's oral health.

Most of the oral complications caused by chemotherapy are short term and typically resolve after treatment ends. Oral complications caused by chemotherapy include

- Mouth sores (oral mucositis)—Inflammation and ulceration of the mucous membranes cause pain and increase the risk of infection.
- Bleeding in the mouth—Oral bleeding may result from the decreased number of platelets in the blood due to the effects of chemotherapy on bone marrow.
- Dry mouth (xerostomia)/salivary gland dysfunction—Xerostomia occurs as a result of less saliva in the mouth and can affect speaking, chewing, opening the mouth and swallowing. Dry mouth for long periods of time can also increase the risk of tooth decay and cavities.
- Tooth decay and gum disease—Both can become significant issues.
- Infection—Viral, bacterial and fungal infections can become problematic because of low white blood cell counts, dry mouth, or damage to the mucosa (lining of the mouth). Infections that start in the mouth can travel throughout the bloodstream and affect cells in other parts of the body.

- Pain—Pain is associated with nearly all oral problems.
- Difficulty swallowing (dysphagia)—Occurs when a person has trouble getting food or liquid to pass down the mouth or throat. Some people may gag, cough or choke when trying to swallow, while others may feel like food is stuck in the throat.
- Changes in taste—These changes can be a side effect of chemotherapy.
- Neurotoxicity—This is a side effect of a certain class of drugs used in chemotherapy that causes a constant aching, burning pain similar to toothache.
- Changes in dental growth and development occur in children.
- Malnutrition or dehydration—Both can develop when a person cannot eat or drink due to mouth sores, dry mouth, pain, changes in taste, or difficulty swallowing.

Radiation to the head and neck. Radiation therapy may directly damage oral tissue, salivary glands and bone. Areas treated by radiation may scar or atrophy (waste away). While radiation therapy may cause short-term complications, it can also cause permanent tissue damage that puts a patient at risk for lifelong oral complications. Oral complications caused by radiation therapy include:

- Breakdown of tissue, bone or muscle in the area receiving radiation—This can make it difficult for patients to open their mouths.
- Tooth decay and gum disease—Both can become significant issues.
- Mouth sores (oral mucositis)—Inflammation and ulceration of the mucous membranes cause pain and increase the risk of infection.
- Infection—Viral, bacterial and fungal infections can become problematic because of low white blood cell counts, dry mouth, or damage to the mucosa. Infections that originate in the mouth can travel throughout the bloodstream and affect cells in other parts of the body.
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- Changes in dental growth and development occur in children.
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Cancer cells are particularly sensitive to radiation and are damaged by it; however, normal tissue cells will eventually repair themselves. Therefore, most of the side effects caused by radiation therapy will subside, in time, after treatment is completed.

Stem cell transplant. The high doses of chemotherapy typically used before a stem cell transplant may cause dental and oral side effects. Patients who receive an allogeneic stem cell transplant have an increased risk of graft-versus-host disease (GVHD). GVHD occurs when transplanted donor cells attack the patient's body. Symptoms of oral GVHD include:

- mouth sores that are red and ulcerated
- dry mouth due to a decrease in saliva flow
- pain from spices, alcohol, or other flavorings
- problems swallowing
- change in taste
- tightness in the skin or in the lining of the mouth.

Bone-modifying drugs. Bisphosphonates are a class of drugs that prevent bone loss. They are often prescribed to myeloma patients, because myeloma can dissolve, weaken and even break bones. Bisphosphonates can help bones stay strong by slowing down this destructive process. The standard bisphosphonates for treating bone problems in people with myeloma are pamidronate (Aredia®) and zoledronic acid (Zometa®). Patients should understand that although bisphosphonates are effective, these drugs also carry risk to their dental health.

Bisphosphonate treatment can cause a rare but serious side effect called “osteonecrosis of the jaw (ONJ).” ONJ causes part of the jaw bone to die, which can lead to pain, open sores and higher risk of tooth loss and infection. Patients should have a dental check-up before starting treatment with this class of drugs and address any dental problems before treatment begins. Doctors will stop the bisphosphonate treatment if ONJ occurs.

Before Cancer Treatment

Good dental hygiene, before and during cancer treatment, may help to either prevent or decrease the associated oral complications. Patients should learn about proper dental care so that they can lessen side effects and manage symptoms. The goal is to treat existing oral problems before treatment begins and to become educated about the potential risks, side effects and complications of therapy.

When treatment is not urgent, patients should visit a dentist at least four weeks before treatment starts. A pretreatment oral evaluation will identify problems such as cavities, fractured teeth, loose crowns or fillings, or gum disease. These problems should all be addressed in order to reduce the risk of complications.

During the pretreatment evaluation, the patient and dentist should discuss

- potential oral complications caused by cancer treatments
- ways to improve dental and oral health during treatment
- steps to maintain healthy nutrition
- how to prevent infection and decrease risks
- any concerns regarding oral health.

It is important that patients tell their dentists about all of their medications and cancer treatments so that they can avoid adverse side effects during dental treatment.

Cancer treatment can lower the body's immune response, making it easier for bacteria to spread. Since dental cavities and gum disease are bacterial infections, they should be treated before, during and after cancer therapies to reduce the risk of bacteria infecting other parts of the body. If dental problems are treated before cancer treatments begin, there may be fewer or less severe oral complications.

During Cancer Treatment

To decrease the risk of complications such as cavities, mouth sores and infections during treatment, it is important to keep the mouth, teeth and gums clean. Patients can take the following steps to help improve their oral health:

- Brush teeth and gums two to three times a day.
- Use a fluoride toothpaste with a mild taste—flavorings can irritate the mouth.
- Gently floss once a day.
- Every 2 hours, rinse the mouth with a solution of water, salt and baking soda to prevent soreness.
- Use an antibacterial rinse two to four times a day to prevent gum disease.

- Use a lip-care product to prevent your lips from drying and cracking.
- Brush dentures every day, clean with a denture cleaner recommended by the dentist, and keep dentures moist when not being worn.
- Pay attention to diet. Try to
 - Choose healthy foods that are mild, soft, and easy to chew and swallow.
 - Avoid hot, spicy, highly acidic and crunchy foods that may irritate your mouth.
 - Avoid sugary foods, like candy or soda, that can cause cavities.
 - Avoid alcohol and tobacco products.
- Keep your mouth moist during cancer treatments so that you are more likely to avoid mouth sores. You can
 - Drink a lot of water.
 - Suck on ice chips to prevent dryness.
 - Use sugarless gum or hard candy.
 - Use a saliva substitute.
- Ask about fluoride treatments that may be recommended to prevent cavities or tooth sensitivity.
- Talk with your doctor about ways to improve bone health with vitamin D and/or calcium supplements.
- Look in your mouth every day and note sores or other changes. Take steps to help prevent and treat a sore mouth.

Management of Complications

Call your doctor, nurse, or dentist if you notice oral complications. The patient and doctor or dentist should work together to manage symptoms and treat complications, either with medication or supportive care.

Mouth rinses. Doctors may suggest mouth rinses to treat mouth sores. Mouth rinses that contain baking soda and salt, over-the-counter brands, or prescription rinses may soothe sore spots in the mouth.

Pain medications. Pain medications, including some narcotics, may be used to relieve mouth pain.

Antibiotics. Antibiotics, antiviral drugs, or antifungal drugs are used to treat infections.

Other prescription medications. Oral gels and medications that will increase saliva may be prescribed because they can help to prevent or lessen mouth sores and tooth decay.

Financial Implications

Paying for dental care is a concern for many cancer patients. Not everyone can afford dental insurance, and dental benefits are not always an option. This lack of dental healthcare coverage and financial strain have made access to proper dental care for cancer patients a common problem in the United States.

It is important that patients educate themselves about their medical and dental insurance coverage and its limitations before they begin cancer treatments. For instance, Medicare does not cover dental care. Medicaid may not either, depending on your state. Patients should share their financial concerns with their medical and dental teams and find out if there are any financial resources available to them. See Other Resources on page 5, for organizations that may be able to help.

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We're Here to Help

LLS is the world's largest voluntary health organization dedicated to funding blood cancer research, education and patient services. LLS has chapters throughout the United States and in Canada. To find the chapter nearest to you, visit our Web site at www.LLS.org/chapterfind or contact

The Leukemia & Lymphoma Society

3 International Drive, Suite 200

Rye Brook, NY 10573

Contact an Information Specialist at (800) 955-4572

Email: infocenter@LLS.org.

LLS offers free information and services for patients and families touched by blood cancers. The following lists various resources available to you. Use this information to learn more, to ask questions, and to make the most of your healthcare team's knowledge and skills.

Consult with an Information Specialist. Information Specialists are master's level oncology social workers, nurses and health educators. They offer up-to-date disease and treatment information. Language services for non-English speakers are available. For more information, please

- Call: (800) 955-4572 (M-F, 9 a.m. to 9 p.m. EST)
- Email: infocenter@LLS.org
- Live chat: www.LLS.org
- Visit: www.LLS.org/information specialists.

Free Information Booklets. LLS offers free education and support booklets that can either be read online or downloaded. Free print versions can be ordered. For more information, please visit www.LLS.org/booklets.

Información en Español (LLS information in Spanish). For more information, please visit www.LLS.org/espanol.

Telephone/Web/Video Education Programs. LLS offers free telephone/Web/Video education programs for patients, caregivers and healthcare professionals. For more information, please visit www.LLS.org/programs, www.LLS.org/educationvideos, and www.LLS.org/professionaled.

Online Blood Cancer Discussion Boards and Chats. Online discussion boards and moderated online chats can provide support and help cancer patients to reach out to others in similar circumstances and share information. For more information, please visit www.LLS.org/chat or www.LLS.org/discussionboard.

LLS Community. LLS Community is an online social network and registry for patients, caregivers and supporters of those with blood cancer. It is a place to ask questions, get informed, share your experience and connect with others. To join, visit www.LLS.org/community.

Sign Up For an E-newsletter. Read the latest disease-specific news, learn about research studies and clinical trials, and find support for living with blood cancer. Please visit www.LLS.org/signup.

LLS Chapters. LLS offers community support and services in the United States and Canada including the *Patti Robinson Kaufmann First Connection Program* (a peer-to-peer support program), in-person support groups, blood cancer conferences and other great resources. For more information, please

- Call: (800) 955-4572
- Visit: www.LLS.org/chapterfind.

Clinical Trials (Research Studies). New treatments for patients are ongoing. Patients can learn about clinical trials and how to access them. For more information, please call (800) 955-4572 to speak with our LLS Information Specialists who can help conduct clinical-trial searches.

Advocacy. The LLS Office of Public Policy (OPP) engages volunteers who advocate for policies and laws that

encourage the development of new treatments and improve access to quality medical care. For more information, please

- Call: (800) 955-4572
- Visit: www.LLS.org/advocacy.

Other Resources

Bureau of Primary HealthCare

<http://bphc.hrsa.gov/about/index.html>

(877) 974-2742

HRSA Health Centers are for patients, even if they do not have health insurance. Patients pay what they can afford based on income. Health centers provide services that include checkups and treatment but also may provide oral health services.

Patients should contact the health center organization directly to confirm the availability of specific services and to make an appointment.

Dental Lifeline Network

www.dentallifeline.org

(888) 471-6334

To provide access to comprehensive dentistry for society's most vulnerable individuals with disabilities or those who are elderly or medically at-risk and have no other way to get help.

Medicare Rights Center

www.medicarerights.org

(800) 333-4114

The Medicare Rights Center works to ensure access to affordable healthcare for older adults and people with disabilities through counseling and advocacy, educational programs and public policy initiatives.

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