

Dental Health Following Childhood Cancer Treatment

Treatment for cancer during childhood often increases the risk for dental problems. As a childhood cancer survivor, it is important for you to understand the reasons why dental care is especially important for maintaining your health.

What are the risk factors for dental problems after childhood cancer treatment?

- **Treatment with chemotherapy** before your permanent teeth were fully formed, especially if you were younger than 5 years old at the time of your treatment.
- **Radiation that included the mouth and/or salivary glands**
- **Treatment with azathioprine** (sometimes given to patients receiving a hematopoietic cell transplant [HCT])
- **Chronic graft-versus-host disease (cGVHD)** associated with HCT

What dental problems can occur following treatment for cancer in childhood?

- Problems that may be a result of **chemotherapy or HCT** during childhood include:
 - Increased risk for cavities
 - Shortening or thinning of the roots of the teeth
 - Absence of teeth or roots
 - Problems with development of tooth enamel resulting in white or discolored patches on the teeth, grooves and pits in the teeth, and/or easy staining of the teeth

Because teeth develop slowly, these problems are more likely to develop in people who received chemotherapy over a long period of time (several years) during childhood.

- **Problems that may be a result of radiation** to the mouth and/or salivary glands include:
 - Increased risk for cavities
 - Shortening or thinning of the roots of the teeth
 - Absence of teeth or roots
 - Abnormal development of tooth enamel resulting in white or discolored patches on the teeth, grooves and pits in the teeth, and/or easy staining of the teeth
 - Small teeth
 - Early loss of teeth
 - Baby teeth not falling out
 - Problems with tooth development or delayed eruption of permanent teeth
 - Increased risk of tooth sensitivity to hot and cold sensation
 - Xerostomia (dry mouth due to decreased production of saliva)
 - Alteration in taste
 - Trismus (limited ability to fully open the mouth)
 - Temporomandibular joint dysfunction (causing pain in front of the ears)

- Malocclusion (bite problem, such as overbite or underbite)
- Abnormal growth of bones of the face and neck
- Periodontal (gum) disease
- Osteoradionecrosis (problem with healing of the jawbone after dental surgery or extraction of teeth) (see related Health Link: “Osteoradionecrosis”)

What can be done for these problems?

Taking care of teeth and gums is always important, and it is even more important if you have had radiation or chemotherapy at a young age. If your gums are not healthy, they can shrink away from your teeth, causing infection in the bone supporting the roots. This bone can dissolve away slowly, causing the teeth to become loose. This condition is called **periodontitis** (inflammation surrounding a tooth). Periodontitis can be prevented by proper brushing of your teeth and gums and by flossing between your teeth at least once a day. Taking good care of your teeth and gums, combined with routine visits to your dentist, can prevent the development of cavities and gum disease.

If your permanent teeth do not develop normally, you may need caps or crowns in order to improve your smile and the function of your teeth. Sometimes reconstructive surgery is needed to correct poor bone growth of the face or jaw. Radiation can sometimes make it difficult to open your mouth fully (**trismus**), or cause some scarring and hardening of the jaw muscles (**fibrosis**). Stretching exercises for the jaw may reduce fibrosis and improve your ability to open your mouth. Your dentist will be able to instruct you or refer you to occupational therapy to learn these exercises. If you have crooked or small teeth, this may be improved by bonding (applying a thin coating of plastic material on the front surface of the teeth to cover any flaws). If braces are needed, your dentist will do a panoramic x-ray of the teeth to see if the teeth, roots and supporting bone are strong enough for braces. If you had high doses of radiation to the face or mouth and you require dental surgery, you may be at increased risk of developing a bone-healing problem (**osteoradionecrosis**) after the surgery. Your dentist should discuss this potential problem with a radiation oncologist before any dental surgery. If you had an allogeneic bone marrow or stem cell transplant (from a donor other than yourself), it is important to let your dentist know, so that the dentist can check for changes indicating chronic graft-versus-host disease.

What is xerostomia and what should I do if I have it?

Dry mouth, also called “xerostomia” can occur after radiation to the head or neck. Other problems related to xerostomia include persistent sore throat, burning sensation in the mouth and gums, problems speaking, difficulty swallowing, hoarseness, or dry nasal passages. Dryness of the mouth is a result of decreased saliva and/or thickening of the saliva, and can lead to the development of cavities.

Drinking liquids frequently and the use of artificial saliva can help relieve the symptoms of xerostomia. Sugar-free candy stimulates saliva production. Proper brushing habits are very important for people with xerostomia, as is limiting the intake of candy and other sweets. Your dentist may recommend application of a fluoride gel to your teeth at least once a day. The fluoride acts on the enamel of your teeth to make it more resistant to decay. Ask your dentist about whether you should use daily fluoride.

Should I take any special precautions when having dental work done?

Always let your dentist know if you have the following health conditions:

- **Shunt** (surgical placement of a tube to drain fluid from the brain)
- **Limb salvage procedure** (replacement of bone with a metal rod or bone graft)

- **Leaky or scarred heart valve** (this sometimes happens after radiation to the chest)
- **Splenectomy** (surgical removal of the spleen)
- **High doses of radiation to the spleen** (40 Gy–4000 cGy/rads or more)
- **Currently active chronic graft-versus-host disease** (cGVHD) following hematopoietic cell transplant

In any of these situations, bacteria that normally enter the bloodstream during dental work may increase the risk of serious infections. As a precaution against infection, if you have any of these conditions, antibiotics may be needed before any dental work is done.

When dental work is planned, ask your dentist if you need to take antibiotics before the procedure. (Also see the following related Health Links: “Splenic Precautions,” “Limb Salvage after Bone Cancer,” and “Heart Problems Following Treatment for Childhood Cancer”).

What is the risk of developing oral cancer?

People who have had radiation to the head and neck during childhood, or who have cGVHD after bone marrow or stem cell transplant, may be at increased risk for oral cancers. Using tobacco in any form or using alcohol in combination with smoking greatly increases this risk. Infection with certain forms of the human papillomavirus (HPV) also increases this risk. Your dentist should perform an oral cancer screening exam during each visit.

If you notice any of the following, notify your dentist immediately:

- **A sore that does not heal** or that bleeds easily
- **A change in the color** of your mouth tissues
- **A lump, thickening or rough spot** in the mouth
- **Pain, tenderness or numbness** anywhere in the mouth or on the lips

Most of the time, these symptoms do not indicate any problem, but a dentist can tell if they are the sign of a serious problem.

What should I do to keep my teeth and mouth as healthy as possible?

Follow these recommendations (unless your dentist recommends otherwise):

- **See your dentist regularly at least every six months.** Make sure that your dentist knows your health history and the treatment you received. (Ask your oncologist for a summary of your treatment). Be sure that your visit includes an oral cancer screening, and be sure to notify your dentist if you notice any warning signs of oral cancer.
- **Have a panorex x-ray done before dental/orthodontic procedures** to evaluate the root development of your teeth and determine if any modifications need to be made to your dental treatment plan.
- **Brush your teeth at least twice a day.**
 - Use a fluoride-containing toothpaste to help prevent tooth decay.
 - Place your brush at a slight angle toward the gum when brushing along the gum line.
 - Use a soft-bristle toothbrush, as recommended by your dentist.
 - Clean all surfaces of the teeth.
 - Brush your tongue to remove bacteria that can cause bad breath.

- **Floss your teeth once or twice a day**
 - Floss carefully between teeth because brushing alone does not remove plaque between teeth.
 - Use a gentle touch to avoid injury to gums.
 - It is normal to have a small amount of bleeding when flossing, but if the bleeding increases or your gums are red and puffy, this may be a sign of infection and you should notify your dentist.
- **Use antibacterial, alcohol-free fluoride mouth rinses** (your dentist can recommend the best ones for you).
- **Drink liquids frequently and/or use artificial saliva** (available at most pharmacies without a prescription).
- **Apply fluoride frequently.** Your dentist may recommend a daily fluoride rinse or gel that you can use at home after brushing, in addition to the special fluoride application you may receive at your regular dental cleanings.
- **Limit sweets and carbohydrate-rich foods.**
- **Do not use tobacco products and use alcohol only in moderation** (check with your healthcare provider to see if you should drink alcohol at all, since alcohol may increase other problems following childhood cancer treatment).
- **Notify your dentist immediately if you develop any signs of infection** in your mouth or gums, such as redness, tenderness, excessive bleeding of gums, painful teeth, and/or increased areas of sensitivity.

For more information about dental health issues following childhood cancer treatment:

- American Dental Association's dental health website at www.mouthhealthy.org

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Additional health information for childhood cancer survivors is available at
www.survivorshipguidelines.org

Note: Throughout this *Health Links* series, the term "childhood cancer" is used to designate pediatric cancers that may occur during childhood, adolescence, or young adulthood. Health Links are designed to provide health information for survivors of pediatric cancer, regardless of whether the cancer occurred during childhood, adolescence, or young adulthood.

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