

Patient Education

Pediatric External Beam Radiation Therapy: A Guide for Parents

What is radiation therapy and how does it work?

Radiation therapy is the use of x-rays for the treatment of cancer. It destroys tumor cells. There are many forms of radiation. The choice in your child's case will depend on the type of cancer your child has and its location in his or her body. Various types of cancer react to radiation in different ways, so treatment will be different for each case.

Radiation therapy is designed to kill the tumor cells, but allow normal cells to heal. Although the normal or healthy cells may be affected by the radiation therapy, they can repair themselves more easily than tumor cells. In addition, with careful treatment planning, the radiation treatment can be directed to the cancer (tumor) while keeping it away from most normal tissues.

Your child **will not** become radioactive after receiving radiation therapy from a machine. There are no special precautions to take for dressings or for body waste products. There is no danger to you or to others who come in contact with your child.

Who will give the radiation therapy?

A team of health care professionals will work together to give the radiation therapy to your child. The information that follows describes each team member and explains their individual roles in the treatment of your child.

The Pediatric Radiation Oncologist

This is a doctor who is specially trained in the use of radiation for the treatment of cancer. At Baptist MD Anderson there are radiation oncologists who care for all children receiving radiation. This enables them to devote their attention to pediatric cancer research and to the treatment of children with cancer. They will communicate with all members of your child's health care team as they plan the treatment for your child. The pediatric radiation oncologist is the person referred to as "your doctor" throughout this guide.

The Radiation Oncology Nurse

This is a registered nurse (R.N.) who has received additional training in the use of radiation for the treatment of cancer. They are sometimes called the radiation oncology nurse. These nurses work with pediatric radiation oncologists and will see your child at least once a week. During these visits they may weigh your child and ask questions about your child's health history. They will also monitor your child's progress during radiation therapy.

The Radiation Therapist

The radiation therapist is the professional who controls the radiation treatment machine, and prepares a patient for therapy. Radiation therapists are specially trained to understand the operation of the treatment machine. The radiation therapist treats your child daily, and notifies the doctor or nurse if there is a problem.

Although you are not allowed to be in the room with your child during the treatment, your child is with well-trained professionals who care about his or her emotional and physical needs. During treatment, your child is constantly watched by closed-circuit television.

What will happen on our first visit to the Radiation Treatment Center?

Before your child begins radiation therapy, the doctor will talk with you about your child's treatment. This visit will include a discussion of expected results of treatment, and the possible side effects from radiation. You will also be asked to sign a consent form before your child's treatment begins. This form states that you have been informed of treatment and possible side effects from receiving radiation therapy. Please read it carefully and ask your doctor or nurse any questions you may have about treatment and possible side effects.

It is necessary for children to remain still and follow simple verbal commands during radiation treatment. If your radiation doctor decides it might be necessary, you may visit with an anesthesiologist to discuss possible sedation for your child. The anesthesiologist and radiation doctors will determine whether sedation is necessary. In cases where sedation might be avoided, anesthesiologists remain on standby and step in if needed.

Simulation

Next, a pre-treatment procedure called a simulation will be performed on your child. The radiation therapist will perform a computerized tomography (CT) scan of the area to be treated. Simulation is done with your child in the treatment position so that your child will get an idea of what to expect during the actual treatments.

After the doctor identifies the area to be treated, colored lines may be drawn on your child's skin. The marking fluid will stain clothing, so old clothing should be worn. **Please do not wash these lines off.**

What will happen on our other visits?

Your child will be taken to the radiation machine, where treatment will begin. The radiation therapist will position him or her on a table. It is important that your child not move during the set-up or during the treatment itself. For this reason, anesthesia may be used if it is needed.

Actual treatment time takes only a few minutes, but the set-up and preparation may take an additional 15 to 20 minutes. Your child will be alone in the treatment room but will be watched closely through closed-circuit television or mirrors and will have a two-way intercom system to communicate.

When will my child receive radiation therapy?

Your child will be given a scheduled appointment for treatment, Monday through Friday. Your doctor will examine your child and review his or her progress with you once a week. The radiation oncology nurse will also see your child during the weekly visit. Your child's doctor and nurse will also be available during the week if you have any questions or problems.

Does radiation therapy cause side effects?

Even though most of the damage to healthy cells is repaired, some damage remains and leads to side effects. Your child should not have any symptoms outside the treated area. The strength of the side effects varies with each child, and may be mild, moderate or severe.

The following are examples of the types of side effects that commonly occur during treatment to the various parts of the body. Possible delayed complications of treatment will be discussed with you on an individual basis.

Mouth or Neck

Radiation to the mouth or neck may cause dryness or soreness of the mouth, loss of taste, sore throat, hoarseness, or difficulty in swallowing. Medication may be prescribed for any soreness that develops. Your child's teeth should be routinely checked by a dentist. You may be instructed to limit certain foods during your child's treatment.

Radiation to the mouth may cause your child to get dental cavities more easily. Regular brushing with a soft toothbrush and good oral hygiene are very important. If chewing is a problem, a soft diet may be suggested by the dietitian. A mouthwash made up of 1 teaspoon of salt and 1 teaspoon of soda in 2 quarts of water can be used as often as needed.

Sugarless gum and sugarless hard candy may be helpful in making saliva flow. Popsicles, cool beverages, or ice cream may be soothing to the mouth. Your child may not be able to tolerate citrus fruits (like oranges or lemons) or spicy foods.

Chest

Radiation to the chest area may cause difficulty in swallowing, due to irritation of the esophagus. This can be relieved by medication. Patients may develop a temporary dry cough and breathing very cold air may make this condition worse. Using cool air humidifiers and staying away from pollutants may relieve these symptoms.

If your child develops a fever, the doctor should be notified. Avoid the use of deodorants or perfumes and shaving in the underarm region if this is in the area of treatment. This area may be more sensitive to radiation. If skin soreness occurs, please contact your doctor or nurse.

Abdomen

The child receiving abdominal radiation may experience nausea, vomiting, or diarrhea. Medications can be prescribed to help control these symptoms. Avoid foods that make your child feel nauseated. You may find that the best time for feeding your child is 3 to 4 hours before or after radiation. Your child may want to rest immediately after treatment.

Small, numerous meals; toast or crackers may relieve the nausea and decrease vomiting. Try to give your child high calorie, high protein foods. He or she may not be able to eat rich, fried or spicy food. If you have any questions about your child's diet, you can ask your doctor or nurse to speak to a dietitian.

If your child has nausea or vomiting, it is important to give him or her plenty of fluids to replace those lost from his or her body. Beverages such as Gatorade®, Pedialyte® or ginger ale may be given. Prolonged nausea is not good for your child and will be watched closely by your doctor.

Pelvis

Pelvic radiation may also cause nausea, vomiting or diarrhea. These symptoms are discussed in the *Abdomen* section. Girls may have a delay in their menstrual period. This delay may or may not be permanent, depending upon the dose of radiation. The doctor will discuss this with you.

Occasionally, an irritation of the urethra or bladder may occur. It is recommended that you give your child increased amounts of fluids to prevent urinary tract or bladder infections.

Also, if your child is receiving chemotherapy at the same time he or she receives radiation treatment, he or she may have a decrease in his or her blood counts. Therefore, your child's blood counts will be taken at regular intervals and closely monitored for any important changes.

Spine

Radiation to the spine and head may also result in a lowered blood count. Again, your child's blood counts will be taken at regular intervals, and closely monitored for any important changes. Therapy may be temporarily stopped if your child's blood counts drop below a safe number.

Head

Cranial (head) radiation usually results in a loss of hair in the treatment area. If your child wants to, we suggest the use of wigs, scarves, or caps. Hair loss usually occurs after the second week of treatment. The hair will generally begin to grow back 3 months after completing cranial radiation.

Some children become sleepy when they are receiving radiation to the head. This period of sleepiness is temporary and may continue to occur up to 6 weeks after completion of therapy. If this happens, tell your doctor or nurse.

Skin

Skin reactions may be mild, such as drying or darkening of the skin in the treatment area. If skin reactions become severe, tell your child's oncology nurse. Sometimes a special cream will be prescribed by your doctor.

Be sure to leave the ink marks on until your child's radiation therapy is completed. Please **do not use anything** on your child's skin unless prescribed by his or her doctor or nurse.

These are a few of the side effects that may occur while your child is undergoing therapy. Please remember that side effects from radiation will only occur in the area of radiation treatment. Your child may be receiving chemotherapy and radiation therapy at the same time. The side effects of chemotherapy may be very similar to those of radiation therapy. This may cause some difficulty in determining which therapy is causing the side effects. Your child's doctor will be watching him or her very closely and looking for signs of side effects. Your child's health care team will work to control side effects.

What are some other things that I should be aware of during my child's treatment?

Activity Level

Some tiredness is expected during treatment and your child should take naps. Allow your child to be as active as he or she wants. There are no special limitations on activity. If there are any exceptions, your child's doctor will tell you.

Bathing

You may have to rely on sponge baths for your child during the course of treatment because it is important to leave the ink marks outlined on the treatment area. Your child may use a mild soap such as Dove[®] (non-perfumed) during his or her treatment. Rinse your child's skin well and gently pat dry with a soft towel.

Shampooing

If radiation is being given to the head, we ask that your child shampoo only occasionally with a mild shampoo (such a baby shampoo).

Sun Exposure

Avoid exposing your child's treated area to the sun. If your child should go outside, make sure that he or she wears protective clothing and applies sunscreen (SPF 15 or higher). Even after completion of your child's treatment, these areas are more sensitive to sunlight. You should cover the treated area during sun exposure or ask your child's doctor about using a sunscreen lotion.

This document was adapted from, *Radiation Therapy: A Family Handbook*, Indiana University School of Medicine, Department of Radiation Oncology, James Whitcomb Riley Hospital for Children

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