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Introduction

This brochure explains what radiation therapy is, what to expect, and how you can help make your treatment as comfortable and successful as possible. You'll find information on managing any side effects you may experience and a glossary of terms that are used in radiation therapy.



Please feel free to discuss any questions and concerns you may have with the radiation oncology staff. Your radiation oncologist (physician), radiation therapist, clinical social worker, and nurse are all here to help you and those close to you through this difficult time.

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About radiation therapy

What is radiation therapy?

Radiation therapy is the use of high-energy rays to destroy abnormal cells, usually cancer cells. Radiation given externally (outside the body) may also be referred to as external beam treatment, X-ray therapy, cobalt treatment, irradiation, or electron beam. A machine positioned near your body beams these high-energy rays to the area of your body needing treatment.



How does radiation therapy work?

Radiation can destroy cancer cells because they divide more rapidly than normal cells, are more sensitive to radiation, and have a decreased ability to repair damage to themselves. Your radiation oncologist will design your treatment so that cancer cells will be destroyed while minimizing injury to surrounding normal tissues and organs. If normal tissue is injured, it will usually recover from the radiation therapy. Cancer cells, however, are unable to recover.

How is radiation therapy used to treat cancer?

External radiation therapy is used to treat people with different types of tumors (both malignant and benign). Sometimes the radiation therapy alone is enough to destroy the tumor. In other cases, it is used with other kinds of treatment. Radiation therapy can be effective before surgery to shrink a cancer tumor and make it easier to remove, or after surgery to keep any remaining cancer cells from growing. It is often used along with anti-cancer drugs called chemotherapy drugs. At other times, it may help to reduce pressure, pain, or bleeding caused by cancer.

Myths about radiation therapy

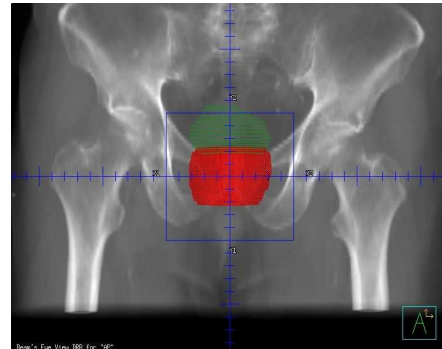
Cancer is not contagious. Your friends, relatives, and family can't catch cancer from you. You will not be radioactive, give off radiation, or endanger others while receiving treatment.

What to expect during your radiation therapy

You will come to the Rohnert Park Cancer Center as an outpatient to receive treatment and then return home the same day. First, we will set up a series of appointments for you. These visits may occur over several days and include consultation, CT scans, planning, treatment set-up, and treatment.

Visit one: Consultation

A radiation oncologist will examine you and review your medical chart, X-rays, and laboratory tests. The physician can then make a decision about whether or not you should receive radiation therapy, and if so, what type is best for you. Once the need for radiation therapy has been decided, the radiation oncologist will discuss with you the benefits of treatment and any possible side effects that might occur.



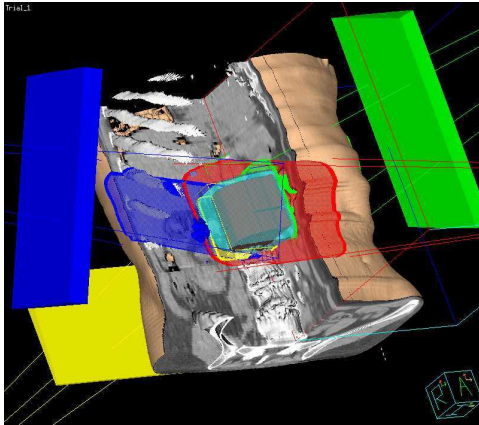
Visit two: Planning

This appointment, sometimes called a planning session or simulation, prepares you for your radiation treatment. The planning session will range from 30 minutes to two hours.

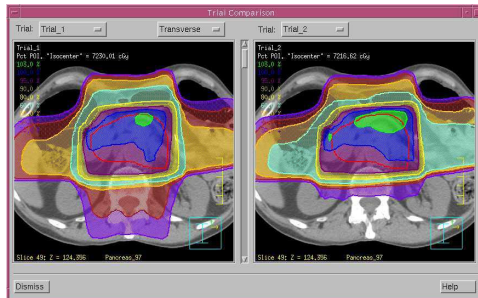


CT Scanner

In order to direct treatment to the cancer site and minimize damage to surrounding cells, your radiation oncologist will use a CT Scanner to locate the area of your body to be treated.



The CT scan shows a cross section of the body. A radiation therapist will then put marks on your skin to identify the precise area to be treated. We ask that you do not remove the marks placed on your body. In most cases, the marks remain intact until treatment begins. If the marks come off before treatment begins, do not put the marks back on yourself. We will refresh the marks when you come in to begin your radiation treatment.



Once the CT has been taken, it is imported into a 3-dimensional treatment-planning tool to assist in determining the most appropriate method in treating the cancer while protecting the healthy tissues. The purpose of any radiation therapy program is to deliver a lethal amount of radiation to the cancer - but from the beginning we must consider how this can be done safely.

We must avoid delivering equally high doses to the normal tissues next to or intimately involved with tumor. In external beam radiation therapy we are treating a deep-seated tumor from outside the body, and the radiation beams will pass through normal structures on the way. It is usual to treat the tumor from two or more entry points with radiation beams that meet and "crossfire" the target volume deep within the patient's body; this limits the radiation dose to the organs and tissues passed through to a safe level. Normal tissues like brain, spinal cord, liver, lung, or kidney can be particular problems because they are more sensitive to the radiation effect than common tumors nearby might be, and may not recover from radiation damage.

Photographs will be taken of your face, the area to be treated, and the position in which you will be placed for every treatment. These pictures will be put in your chart and used to identify you before each treatment and to verify your treatment area and position. Usually, you will not receive a radiation treatment during this visit. At this time, the length of your treatment, the amount of radiation you will receive, and the number of treatment days each week are prescribed by your radiation oncologist.

You can rest assured that you will feel no pain during either the planning session or the radiation treatments. At the end of the planning session, we will set up your next appointment.

Visit three: Treatment Set-up Check & Confirmation

During this appointment, we will verify your treatment by taking an X-ray of you in the position you were placed during the CT scan. A second X-ray may be taken to ensure that this is the proper position for your treatment.

All information collected in previous visits will be reviewed and confirmed. If the information indicates that the set-up for treatment is satisfactory, actual treatment will begin on your next visit.

Often, your attending physician will also be called in to see you at the machine to make sure that your position is correct. This should not cause you any concern as it is a standard part of our practice to ensure the most accurate delivery of the radiation treatments.

Treatment

The length of treatment time varies, but is typically five minutes or less. However, please allow 30 minutes for each appointment to give yourself time for undressing and dressing. Treatments are usually given once per day from Monday through Friday. Usually, your treatment is given promptly at the time scheduled. Each treatment will be at the same time at each visit. Again, you will feel no pain during the radiation treatment.

End-Of-Treatment Visit

Once your radiation treatments have been completed, you will have a final visit with your physician. This will occur just after your last treatment has been administered. During this visit, your doctor will perform an examination and discuss follow-up care. Additional follow-up appointments will also likely be scheduled with your Physician and these are routine as well.

What about the treatment machine?

The Rohnert Park Cancer Center utilizes a state of the art treatment system with the latest technological advances. The treatment system is an advanced linear accelerator designed for verifiable conformal therapy and Intensity Modulated Radiation Treatment (IMRT). These advanced form of treatment delivers



complex doses of radiation while minimizing the effects on healthy tissue. The machines are large and, like most people, you may feel overwhelmed the first time you see one. Sometimes the machines make noises like a vacuum cleaner or move up and down or around you so the radiation can reach your tumor from different angles.

What happens during a treatment?

A radiation therapist will administer all your radiation treatments. You will be placed on the treatment table and carefully positioned for treatment. It's very important that you remain

in this position *without moving* while you receive treatment. You will be alone in the treatment room, but the therapist will be watching you on a video screen and can talk with you through an intercom. Stay in position even after the machine shuts off, and wait until the therapist enters the room to assist you off the table. The radiation oncology staff will provide you with written instructions about how to care for the area being treated.

Are there any side effects from radiation therapy?

Certain side effects may occur, depending mainly on the area being treated on the individual and the amount of radiation given. Your radiation therapist will give you specific information at the beginning of your treatment. You may tire easily because your body is using a lot of energy to fight the cancer, get rid of unhealthy cells, and rebuild injured healthy cells. If you do feel tired, try to rest as much as you can, and plan quiet activities on those days. It's especially important to eat properly during your entire treatment to maintain your weight and strength. Do not use this time to begin a reducing diet.

Will I see a doctor during treatment?

A physician will see you every five to 10 treatment days to check your progress. The doctor may recommend tests to make sure the radiation is destroying only cancer cells and not healthy tissues. You may have blood tests to check the effect radiation is having on your white blood cells. If your white blood cell count gets too low, you may have to stop treatment until the count increases.

For some kinds of cancer, regular X-rays are like progress reports that tell the radiation oncologist whether or not the radiation is shrinking the tumor. Other kinds of tests may be done if you are experiencing specific problems. Physicians are available every day of your treatment to discuss your questions and concerns.

Preparing for your radiation therapy

What time and how often do I come in for my treatments?

After the first planning appointment, you will be given a regular appointment scheduled at the same time each day. It's important to remember that the number of treatments prescribed during your planning session is only an estimate and may change as your treatment progresses.

Should someone drive me to my appointments?

Since there will be no medical reason related to your radiation therapy to prevent you from driving, it's up to you whether you prefer that someone drive you to your appointments or you drive yourself. Most people are able to drive themselves to and from their appointments.

Can I take medications during my treatment?

Most likely, you'll be able to take your routine medications during treatment. Be sure to tell your radiation oncologist all the medications you are taking, including prescription medicines, aspirin, laxatives, cold remedies, vitamins, or other over-the-counter medications. Check with the radiation oncologist before taking any new medicines during your treatment.

Can I work and continue my normal activities while I'm having radiation therapy?

We encourage most people to continue work and normal activities, as long as they feel well enough. If you find that you are fatigued at any time, rest until you feel stronger.

Self-care during your radiation therapy

Dress in clothes that are easy to remove.

How to care for your skin during treatments

Do not remove marks around the treatment area.

Skin in the treatment area may appear reddened, tanned, or even sunburned. This is a *normal* reaction and should clear up after your treatments are finished. During radiation treatment it's important to take care of your skin. We recommend that you:

Wear old underclothes (the marks may rub off on your underwear).

- Be gentle with the skin in the treated area. Wash with lukewarm water and a mild soap, and gently pat the skin dry with a soft towel. Do not rub the skin.
- Don't use cosmetics, perfumes, ointments, heat lamps, hot water bottles, heating pads, or very hot water on the treated area.
- Avoid tight or coarse clothing, which might irritate the treated area (e.g., straps, tight collars, tight jeans, panty hose, etc.).
- Use gentle detergents to wash clothes that come in contact with the treatment area.
- Wear clothing with a high cotton content to allow the skin to "breathe."

If you feel your energy **level** is low, take it easy and accept help from family and friends.

Plan easy-to-cook meals that can be prepared in advance.

- Protect the area being treated from sunlight or extremely cold weather.
- If you shave the treated area, use only an electric razor to prevent skin cuts. Two weeks after treatment is completed, you may use a safety razor.
- Apply a pure aloe vera lotion as directed by the radiation oncology department. Be sure to ask your doctor or therapist about any lotion before use, because some may contain ingredients that irritate the skin.
- Avoid swimming in chlorinated or salt water.
- If any signs of skin breakdown appear in the treatment area, such as extreme redness, drainage, or a break in the skin, report it immediately to your radiation oncologist.

Nutrition during treatments

It's especially important to eat properly while you are having radiation treatments. Your body needs wholesome food to restore its strength and repair injured cells. It's also important to maintain your weight. Even if you are overweight, do not try to lose weight until you have finished all your treatments. If you find that you have lost your appetite:

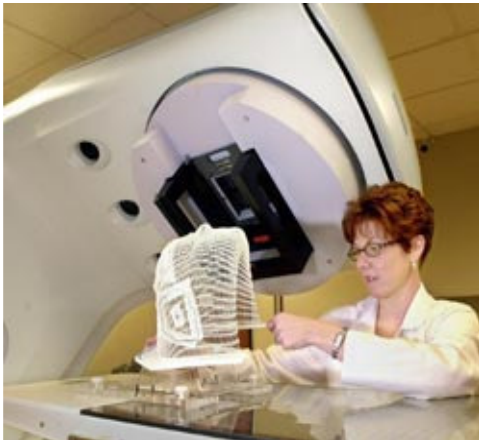
- Eat when you are hungry, even if it is not mealtime.
- If you are very tired, rest for 15 to 20 minutes before trying to eat.
- Eat smaller meals more often.
- Try high protein foods, such as custards, eggnog, and milk shakes.



- Unless you're having radiation to the abdominal areas, you can eat unsweetened nutritious snacks such as fresh or dried fruit and vegetables, cottage cheese, milk, and fruit juices.
- About half an hour before a meal, exercise for a few minutes to increase your hunger.
- Create a pleasant dining atmosphere with soft light, quiet music, and/or brightly colored table accessories.
- Vary your diet, and try new recipes.
- Dine with family or friends; if you must eat alone, turn on the radio, television, or stereo for company.
- Ask your radiation oncologist if you may have one glass of wine or beer with your meal. It may increase your appetite.
- Stock up on convenience foods that are easy to make.

- If you live alone, you might want to arrange for "Meals on Wheels," to deliver your meals. Ask your radiation oncology nurse to assist you with this and for information on other community services.
- When you have more energy, make some meals and freeze them to use later.
- If you find that your appetite is at its best in the morning, eat a nutritious and substantial breakfast.
- If these suggestions don't help, ask your doctor to refer you to a nutritionist for information about diet supplements and other eating suggestions.

About radiation therapy for specific body areas



Radiation therapy may cause different side effects depending on the area of the body being treated. These side effects may occur gradually, or not appear until several days-or even weeks-after treatment has begun. Sometimes there are no side effects at all.

Treatments to the head or neck area

What side effects occur as a result of treatment to the head or neck?

The radiation treatment you will receive may cause the following:

- Skin reaction, perhaps like a mild sunburn
- Loss of taste
- Dryness of the mouth
- Sore throat
- Difficulty in swallowing or a lump in the throat
- Small sores in the mouth
- Skin irritation

Will I lose my hair?

If your head is being treated, you may temporarily lose some or all of your hair (called alopecia). Occasionally, hair loss will be permanent. Depending on the radiation dose you have received, your hair will usually start growing back after you have finished your treatments. If you want to cover your head, you can wear hats, turbans, or scarves, or you might want to buy a wig or toupee. These hairpieces are tax deductible medical expenses.

Is there special care I should give my mouth before and during treatments?

Depending on the area being treated, you may need to be checked by a dentist before beginning treatment. The dentist may ask you to visit him or her often during your radiation treatment for preventive mouth care. He or she can order pain medication for sores in your mouth and talk with you about foods that won't irritate the sores. It's extremely important to keep your mouth as clean as possible to prevent an infection or dental cavities. The following methods are highly recommended:

- Clean your teeth and gums with a brush with soft, rounded bristles four times a day, including after meals.
- Use fluoride toothpaste and make sure the toothpaste does not contain rough grains.
- Floss twice a day or use a Water Pik (tooth brushing alone does not clean between the teeth).
- Rinse your mouth well with water six to 10 times a day.
- Apply fluoride on a daily basis during treatment. Depending on your needs, your dentist will give you instructions for one of the following methods: fluoride rinse, fluoride gel, or fluoride tablets.
- After your radiation treatment is completed, continue your fluoride treatments and see your dentist regularly.

Are there other instructions I should follow?

- During your treatment, we strongly urge you not to smoke tobacco or drink alcoholic beverages. Both will further irritate tissues in the mouth and throat.
- If you are receiving radiation therapy to your head, ask your radiation oncologist or therapist whether or not you may use shampoo.
- Shave only with an electric razor to prevent skin irritation. You can probably use a safety razor again after treatments are finished and the skin has healed.

What can I do about side effects?

Before you begin treatment, your radiation oncologist, radiation oncology therapist, or nurse will explain any possible side effects. The following tips may help you cope with some of them:

If you have a sore throat, sore mouth, or trouble chewing or swallowing:

- Try a soft, bland diet, and cook solid foods until they are soft and tender. You may want to put foods in a blender or food processor.
- Cut foods into bite-sized pieces and moisten them with gravy, salad dressing, sour cream, yogurt, or mayonnaise.
- Chew food thoroughly.
- Soak foods in milk, cocoa, or warm drinks.
- Try to eat frequent, small meals served cold or at room temperature.
- Try to include applesauce, soft canned fruits, cold liquids, cooked cereals, strained cream soup, custard, soft-cooked eggs, smooth ice cream (without nuts or chunks), gelatin, milk shakes, mashed potatoes, pudding, and sherbet in your diet.
- Avoid spices, such as pepper, chili powder, nutmeg, and clove. Also avoid spicy or acidic foods, such as meat broths and citrus drinks.
- Avoid rough or coarse foods such as raw vegetables, whole grain cereals, crackers, and nuts.
- Avoid citrus juices and acid-type vegetables, such as tomatoes and fresh pineapple, which can irritate sore areas.
- If your mouth or throat is extremely sore, try cold, bland foods that have a numbing effect, such as ice cream and popsicles.
- Try Aspergum or Cepacol lozenges if your throat is sore. If they don't work, use viscous lidocaine mixed with a juice drink for pain on swallowing.
- Use a liquid, high-protein diet supplement and thicken it with ice cream, if necessary, to ensure that you are getting enough protein and calories.
- Use a straw to drink liquids, then tilt your head back to make swallowing easier.

Radiation to the area around the salivary glands may cause them to produce less saliva. If you have a dry mouth:

- During and between meals, drink as much water and other liquids as possible.
- At meals, take small sips of liquid with each bite.
- Drink liquid supplements between meals.
- Dunk dry foods in beverages such as coffee, tea, or milk before eating them.

- Rinse your mouth often to remove debris, stimulate your gums, or moisten your mouth. • Suck on ice cubes or ice chips.
- Use wet gauze sponges frequently to stimulate your gums or wet your mouth.
- Do not use commercial mouthwashes—they usually contain alcohol, which has a drying effect on the tissues lining the mouth. They will also burn your mouth. If allowed by your radiation oncologist, use a mouthwash made with salt, baking soda, and water. Mix one quart of warm water with one teaspoon each of salt and baking soda.
- Use gravy, sauces, or a favorite salad dressing to moisten food and add a more pleasant taste.
- Ask your radiation oncologist or dentist about a fluoride mouthwash or artificial saliva.

You may notice a loss of taste or a change in the way foods taste to you. Certain foods may taste bitter or sour, and you may find that you suddenly dislike eggs, fish, fried foods, meat, poultry, or tomatoes and tomato products. If so, the following tips may help:

- Eat bland cheeses, cottage cheese, fresh fruits, gelatin, salads, ice cream, lettuce, or peanut butter.
- Prepare foods that look and smell appetizing.
- If red meat does not taste right, try chicken, turkey, fish, eggs, and dairy products; however, stay away from fish that has a strong smell.
- Try fruit stuffed with nut butters.
- To increase flavor and visual appeal, use fruit or fruit sauces over protein-rich desserts, such as ice cream, milk shakes, puddings, and custards.
- Between meals, eat high-calorie snack foods and fruits high in Vitamin C, such as strawberries and melon.
- Maintain your weight during treatment, and try not to lose more than two pounds per week (not more than 10 percent total of your original weight). If you are having difficulty planning healthy, appealing meals, ask your doctor to refer you to a nutritionist.

Treatments to the brain

What side effects can occur as a result of treatment to the brain?

Headache and fatigue may occur as a result of radiation treatment to the brain. Sometimes this can be relieved with mild pain medicines, or it may require Decadron, a steroid medication. If your physician has prescribed Decadron for you, *DO NOT stop the medication abruptly prior to or during treatment.* You will be seen regularly by a radiation oncologist while you are receiving treatments and Decadron. If you are having any problems, let your radiation oncologist know. Hair loss can be expected with this area of radiation treatment, but it's usually temporary.

Treatments to the chest area

What side effects can occur as a result of treatment to the chest area?

Radiation to this area may cause the following side effects:

- Difficulty swallowing
- Feeling of a lump in the throat
- Reddening of the skin over the chest
- Upset stomach or "heartburn"
- Possible nausea or loss of appetite
- Increased coughing

What can I do about these side effects?

The following are suggestions on how to cope:

- If nausea persists, try smaller, more frequent meals of bland foods. You may also want to ask your doctor to prescribe a mild anti-nausea medication.
- Use antacids if nausea, heartburn, or painful swallowing occur. Take them one hour before meals, three hours after meals, and at bedtime. Keep liquid antacid chilled-it tastes better cold.
- If you have difficulty swallowing, drink high-protein liquids, such as milk shakes and eggnog, and eat soft foods, such as yogurt and custard.

If these suggestions do not work, tell your radiation oncologist, therapist, or nurse.

Treatment to the abdomen and pelvic area

What side effects can occur as a result of treatment to this area?

Radiation therapy to this area may cause:

- Nausea, upset stomach (if your stomach is irradiated)
- Vomiting
- Diarrhea (if your intestine or rectum is irradiated)
- Lack of appetite
- Cramping

- Urinary irritation (if your pelvis is irradiated)

What can I do about these side effects?

If your stomach is upset before radiation therapy, try eating lightly (toast or crackers and juice) before your treatment. Ask your doctor about anti-nausea medicine.

If you don't feel well after radiation therapy, try not eating for several hours before your next treatment. Also, consider these hints:

- Be sure to follow any recommended special diets.
- Eat and drink slowly, and chew food thoroughly.
- Avoid liquids at meal times when eating solid foods. Instead, take liquids 30 to 60 minutes before eating.
- Do not make yourself eat more than you can or want to eat.
- Eat small, low-fat meals more often and rest after eating, but do not lie down flat for at least two hours after eating.
- Try a clear liquid diet, such as broth, apple, or cranberry juice. Or try easily digested foods, such as soda crackers, bananas, or toast.
- Eat salty foods and avoid overly sweet ones, especially if you have been vomiting.
- Eat dry foods, such as toast or crackers, before getting up in the morning.

Be sure to report any nausea, vomiting, or cramping when you come in for your treatment. All these symptoms can be treated with medications. The following suggestions may help you control diarrhea:

- Try a clear liquid diet to allow your bowels time to rest.
- Include lots of mild liquids, such as apple juice, peach or apricot nectar, soda, water, weak tea, or clear broth. Liquids should be taken warm or at room temperature; they should never be iced or very hot. Let carbonated drinks lose their fizz before drinking them.
- Avoid foods that may cause cramps, such as coffee, beans, cabbage, broccoli, cauliflower, highly spiced foods, sweets, and chewing gum.
- Drink plenty of fluids to replace those you have lost.
- Eat smaller amounts of food more often.
- When you are feeling better, gradually add foods, which are low in fiber, such as rice, cream of rice cereal, bananas, applesauce, mashed potatoes, dry toast, and crackers.

- Because you may lose an important mineral called potassium when you have diarrhea, include high-potassium items-bananas, potatoes, or apricot or peach nectar in your diet
- Avoid milk and milk products if they seem to make the diarrhea worse.
- Eat only cooked fruits and vegetables. Avoid those with seeds and tough skins, such as beans, broccoli, corn, onions, garlic, breads, and nuts.
- Avoid fatty foods.

If your diarrhea persists or has blood in it, be sure to report this to your radiation oncologist.

What if treatment is directed to my pelvis?

You can expect some diarrhea and urinary irritation to result from irradiation to this area of your body. It's best to avoid hot, spicy foods which act as irritants. You may find some foods, such as cooked cereals, eggs, gelatin, potatoes, and some juices to be helpful.

If you are a woman being treated for a tumor in your female organs, use the dilator provided by your radiation therapy department once every other day. It will help you to keep your vaginal canal open. Lubricate the dilator with sterile lubricant. Insert the dilator into your vagina while lying down and leave in place for several minutes. Cleanse the dilator after each use. Lubricant can be purchased at any drug store. If you are having sexual intercourse at least once a week during treatments, you do not need to use a dilator. There is no restriction on sexual activity during your treatment, but use a lubricant during sexual intercourse to prevent soreness.

When your treatments are completed

What happens after I finish my treatments?

Your therapist will tell you when your treatment will be completed. You will be scheduled for a visit with your radiation oncologist on the last day of your treatment to plan your follow-up care.

After I have finished my radiation treatments, are there any special instructions?

Yes. The following applies to all patients who have received radiation therapy to any part of the body:

- Use a moisturizing cream, such as an aloe vera-based cream, on the treated skin after treatments are finished and your skin is healed. Do not use a lotion with alcohol in it.
- When showering, lightly sponge your skin in the treated
- area with a mild soap for the first two weeks after your treatment ends.

- Keep treated skin out of the sun and use a sunscreen on any areas exposed to the sun. Ask your radiation oncologist to recommend a specific product.
- Eat a regular diet unless your physician has given you other instructions.
- If you feel able, continue normal activities, including sex.
- Make an appointment with your personal physician in the next *two months*, or sooner if you plan to start other cancer treatments.
- A follow-up appointment with your radiation oncologist may be scheduled within one month after your radiation therapy.

How long after my treatments end will I still have side effects?

Radiation therapy treatments have a cumulative-or additive-effect. This means that radiation therapy will continue to affect your body for 10 to 14 days after you receive the last treatment. Therefore, if you have experienced reactions such as mouth sores or inflamed skin, healing may not begin until several weeks after your treatment ends.

Remember that treated skin is more sensitive to sun and heat than the rest of your body for a long time after treatments are completed. That means sun bathing, gardening without protective clothing, and heat applications must be avoided for at least one year after you finish treatment. Immediately report any reddening, irritation, or skin breakdown in the treated area to your radiation oncologist.

When will I know if the radiation therapy worked?

It's normal to wonder how soon your radiation oncologist can tell whether or not the radiation therapy has "worked." Some cancers will get smaller during the course of treatment, and can no longer be felt after five to seven weeks. Some take much longer to shrink perhaps months. The first two years after treatment will be important in determining if the cancer recurs. Only time, patience, and observation by your radiation oncologist can reveal the final results of your treatment.

Glossary

Adjuvant Therapy:	Radiation therapy, chemotherapy, or both, given as additional treatment for a cancer which has been or will be removed surgically.
Block:	A thick piece of metal used to shield certain areas of the body from the X-ray or electron beam. Blocks are customized for each patient, but not all treatments require blocks.
Brachytherapy:	The general term for a type of radiation therapy in which the radiation source is placed within the body. One type of brachytherapy is <i>interstitial radiation</i> , in which a radioactive substance is implanted in the area needing treatment. Another type is <i>intracavitary radiation</i> , where the radioactive source is placed in a body cavity. Special orthovoltage X-ray machines can also be used to give intracavitary radiation.
Cancer:	A general term for more than 200 diseases characterized by abnormal and uncontrolled growth of cells. The resulting mass, or tumor, can invade and destroy surrounding normal tissues.
CT Scanner:	A computerized diagnostic X-ray machine that gives images of the inside of the body. Also known as a "Cat" scan, CT scans can be used during simulation.
Chemotherapy:	Treatment with anti-cancer drugs. Chemotherapy is usually given by vein, but some drugs are given by mouth. <i>Concomitant chemotherapy</i> is chemotherapy given at the same time as radiation. <i>Sequential chemotherapy</i> is chemotherapy given before or after radiation therapy.
Cobalt 60:	A machine, which contains a radioactive form of cobalt to make gamma rays, which are used to treat cancer. Cobalt 60 machines are no longer widely used.
Dosimetrist:	A specially trained technologist who helps design external beam radiation treatments. The dosimetrist works closely with the radiation physicist.
Electron Beam:	A type of penetrating radiation generated by a linear accelerator, where electrons are accelerated to high energies. Electron beams have the ability to kill cancer cells.
External Beam Radiation:	Radiation therapy using a machine that focuses radiation on the part of the body receiving treatment.
Field:	The part of the body getting radiation. Also known as a port.

Fluoride Therapy:	Daily self-application of fluoride gel in a custom-fitted mouthpiece. This will prevent excessive tooth decay for patients whose teeth are in the radiation field.
Gamma Knife:	A form of stereotactic radiation therapy using gamma rays.
Gamma Rays:	A type of penetrating radiation that is used to treat cancer. The source of the ray is a radioactive substance. Gamma rays have the ability to kill cancer cells.
Hormone:	One of many naturally occurring chemicals in the body, which regulate body systems. For example, insulin is a hormone, which regulates the level of sugar in the body.
Hormone Therapy:	Also known as endocrine therapy, hormone therapy is the use of hormone-like drugs to control certain cancers. Prostate and breast cancers are examples of cancers that may be treated with hormone therapy.
Implant:	A small container of radioactive material, which is placed inside the tumor.
Internal Radiation:	(Interstitial and intracavitary radiation) A type of radiation therapy in which a radioactive substance is implanted in the body in the area needing treatment.
Linear Accelerator:	A machine that creates and uses high-energy X-rays or electron beams to treat cancer.
Mask:	A custom-made plastic mold of the patient's head used to keep the head in the proper position during treatment in the head and neck region.
Multi-leaf Collimation	A series of lead leaves within the linear accelerator designed to automatically shield the healthy tissues from the radiation during the treatment process.
Orthovoltage:	X-rays of relatively low power, which are used to treat superficial tumors, such as skin tumors.
Port Film:	An X-ray picture taken at the start of and during treatment to make sure that the treatment beam is correctly aimed.
Radioactive:	Something that gives off radiation.
Radiation Oncologist:	A doctor who has had additional specialized training in using radiation to treat human disease.
Radiation Oncology Nurse:	A nurse who has specialized training in the care of patients receiving radiation therapy.

Radiation Oncology Social Worker:	A social worker who has had special training to provide support and counseling to people with cancer.
Radiation Oncology Therapist:	A specially trained technologist who administers external radiation treatment using the plans prepared by the doctor for each individual patient.
Radiation Physicist:	A person trained in the physics of radiation therapy. Radiation physicists prepare treatment plans, run the treatment computers, and make sure the machines are running properly.
Radiation Therapy:	The use of high-energy penetrating rays to treat disease. Sources of radiation include linear accelerator, cobalt, and cesium.
Radiosurgery:	See Stereotactic Radiation Therapy.
Simulation:	Also known as planning, simulation is the process of designing the treatment fields and calculating the details of treatment.
Stereotactic Radiation Therapy:	Also known as radiosurgery or x-knife. A technique of giving radiation therapy using many small beams which focus on a precise area. Most often used for treating brain tumors or abnormal arteries in the brain.
Tamoxifen:	A form of hormone therapy using an estrogen-like drug which blocks estrogen from reaching cancer cells.
Total Body Irradiation:	Irradiation given to the whole body, typically as preparation for a bone marrow transplant.
X-Rays:	A type of penetrating radiation generated by a machine, usually a linear accelerator, but can also be produced by orthovoltage machines. X-rays have the ability to kill cancer cells.