

Radiation Therapy

Radiation therapy uses intense energy to kill cancer cells and shrink tumors by damaging the cells' DNA so they cannot repair themselves or divide. It can take days or weeks of treatment before the cancer cells start to die, but they also keep dying weeks to months after radiation therapy ends. Radiation therapy for colon and rectal cancer might be given before or after surgery, depending on the location and size of your cancer. The amount and location of radiation you are exposed to is carefully planned and monitored.

There is a whole team of specialists who create your treatment plan and administer your treatment; your radiation oncologist reviews and approves your plan and treatment at specific points along the way.

Unlike chemotherapy which provides treatment to the cells in your whole body (systemically), radiation therapy is directed to just the tumor cells and surrounding tissues (locally). Think of radiation as a large, powerful flashlight shining on your tumor. Surrounding healthy tissue can be affected. Since normal cells are often better able to heal from radiation injury than are cancer cells, most side effects from radiation will improve over time. Side effects from radiation vary depending on which area(s) of your body are treated.

Like many aspects of cancer treatment, radiation therapy techniques continue to improve over time. More accurate planning techniques and modern technology have improved the precision and safety of radiation treatment. Therefore, some of what you may have heard about radiation therapy in the past may no longer be true. The side effects of radiation therapy to the colon, rectum and anus differ from the side effects of radiation therapy to other parts of the body.

The information in this section will help you plan and prepare for your radiation therapy treatment. However, it is not meant to replace the individualized attention, advice and treatment planning of your radiation oncologist and medical team.

What is Radiation Therapy Used For?

- For **colon cancer**, depending on the location and stage of your cancer, radiation therapy can lower the chance of recurrence.
- For some **rectal cancers**, radiation therapy is given before surgery, with or without chemotherapy, to make the tumor smaller so it can be removed more easily. In some cases, radiation and chemotherapy are given after surgery instead of before surgery.
- **Anal cancer** can often be treated with radiation therapy and chemotherapy, as an “organ-preserving” approach that avoids the need for surgery.
- For **anal or rectal cancer**, frequently, the goal of treatment is “organ-preservation”. With organ preservation, the anus (the part of your body that controls your bowel movements), is not removed. Radiation therapy is often used in organ-preserving approaches, with the goal that you will continue to be able to have bowel movements through your anus. If the anus needs to be removed, you would have surgery to divert your colon and wear an ostomy bag on the outside of your abdomen to collect waste from your bowels.

The Radiation Therapy Process

What to Expect Before Treatment

Your initial visit

Before beginning radiation therapy, you will consult with a radiation oncologist (a doctor trained to use radiation to treat cancer). During your first visit, the radiation oncologist will review your medical history, imaging studies and pathology report. He or she will also perform a physical exam and discuss the risks and benefits of radiation therapy with you. This is your initial chance to share your concerns and fears and ask questions of your doctor and radiation oncology staff. It is a good idea to bring another person to this appointment since you will receive a lot of information about your treatment plan.

Simulation

Radiation therapy must be aimed precisely at the treatment target each and every time treatment is given. Simulation is the process of measuring your body and tumor to help your team direct the beams of radiation safely and accurately to their intended locations.

During simulation, your radiation oncologist and radiation therapist will place you on the simulation machine in the exact position you will maintain during the actual treatment. Devices such as molds, casts and headrests (also called immobilization devices) are customized to help you remain in the same position during the entire treatment. The radiation therapist marks the area to be treated on the immobilization devices and/or your skin with either a bright temporary paint or a set of small permanent tattoos about the size of a freckle or small mole. Do not wash these marks off when you bathe until your radiation oncologist or therapist says you can. Often, a special treatment planning CT scan is done to help with the treatment planning. This CT scan is only used to help with radiation treatment planning; it is not used to monitor your cancer.

Your simulation visit typically lasts approximately one hour and you will be lying on a firm surface most of the time. This can be uncomfortable. You

may want to take some mild pain medication before your visit if you have difficulty lying in one position for an extended time.

Treatment simulation/planning is a very precise and technical process. After it is completed, the radiation oncologist then reviews and approves your simulation. It will take a little time before you start your actual treatment. Your doctor and radiation center staff have not lost sight of you, but are concentrating on providing the safest and most effective treatment possible.

Treatment Planning

Once you have finished simulation, your radiation oncologist and other members of the treatment team review information obtained during simulation along with your previous medical tests to develop a treatment plan. The goal of radiation therapy is to develop a plan that maximizes the dose to the cancer and minimizes the dose to normal tissues. Radiation treatment technique, radiation dose, as well as beam angles and shapes will be selected during the planning process. A team of experts including your radiation oncologist, medical physicist and dosimetrist will work together to develop the radiation treatment plan. A sophisticated treatment-planning computer and associated software is used to help design the best possible treatment plan. After reviewing all of this information, your radiation oncologist will write a prescription that outlines exactly how much radiation you will receive and to what parts of your body.

Quality Assurance Before Treatment

Once your radiation oncologist approves the radiation therapy plan developed in treatment planning, members of the radiation treatment team work together to ensure that your specific treatment plan works correctly on the linear accelerator (the machine that delivers the radiation) before treatment begins. A 'dry run' is often completed for more complex treatments by a medical physicist to ensure that the radiation treatment designed for you is as accurate and as safe as possible.

What to Expect During Treatment

Most radiation therapy for colon and rectal cancers is non-invasive, meaning nothing is inserted inside of your body. There is a target dose of radiation that has been shown to be effective but it is too big to give at one time. The dose is divided up into small amounts (fractions) to reduce the side effects to your body.

External Beam Radiation Therapy Treatments

Generally, radiation therapy treatments are given daily, Monday through Friday, allowing your body to recover over the weekends. It is important not to interrupt your treatment schedule or to skip appointments. If you know that you will not be available during part of the time you are scheduled to receive your treatments, let your radiation oncologist know before you start your treatments. Some adjustments to the start time may be acceptable. It may be better for you to start your treatments a little later rather than interrupt your schedule.

After checking in at each visit, you may be asked to change into a hospital gown. You may then have to wait a bit before being called to the treatment area.

When you undergo external beam radiation therapy treatment, each session is painless, just like getting an X-ray. The radiation is directed at your tumor from a machine called a linear accelerator that will rotate around your body.

The radiation therapist will deliver your external beam treatment following your radiation oncologist's instructions. If an immobilization device was made during simulation, it will be used during every treatment to make sure that you are in the exact same position every day. The radiation therapist may move the treatment machine and treatment table to target the radiation beam to the exact area of the tumor.

Once you are positioned correctly, the therapist will leave the treatment room and enter the control room next door to begin your treatment. During your treatment, your therapist will closely monitor you on a screen. There is a microphone in the treatment room so you can always speak with the therapist if you have any concerns. The machine can be stopped at any time if you are feeling sick or uncomfortable. The radiation therapist is in complete control of the machine at all times. The machine makes clicking, knocking or whirring sounds; this is normal.

Total time in the treatment room will vary depending on the type of radiation, but treatments are typically between 10 - 20 minutes. Most of the time is spent positioning you for precise treatment using lasers to align you on your paint marks or tattoos. The actual radiation delivery usually takes only three to five minutes. Radiation has a cumulative effect and its best if you keep the schedule you have worked out with your physicians. It is best to arrive on time and show up to all of your appointments. Sometimes a course of treatment may need to be interrupted for a day or more. This may happen if you develop side effects that require a break in treatment. Unscheduled machine maintenance may also cause a missed treatment. These missed treatments may be made up by adding treatments at the end. However, it is best to arrive on time and not miss any of your appointments.

In some cases, you may receive chemo/immuno/targeted therapy and radiation therapy at the same time. Your treatment team will help coordinate these therapies and care for potential side effects. The chemotherapy may make the cancer cells more sensitive to radiation, thus making the radiation work better. Therefore, it is very important to let your radiation therapy team know if you miss a chemotherapy dose.

Weekly Checkups

You will meet with your radiation oncologist once a week during your treatment period. Each week you will have another opportunity to ask questions, discuss side effects and their management and share your concerns. You can also meet with other members of the radiation oncology team. Many centers have nurses, nurse navigators, social workers and dietitians available to help. If you have any concerns between weekly visits with your radiation oncologist, let your radiation therapist know.

Quality Assurance During Treatment

During your course of treatment, the positions of the treatment beams will be regularly verified to ensure accuracy. Images (e.g. CT scans) are obtained and represent an important quality assurance check, but do not evaluate the tumor itself. The type of images used may vary depending upon what kind of treatment you receive and what your doctor thinks will work best.

Side Effects

You may experience side effects from radiation therapy. When it is delivered to the abdomen and pelvis, it may cause more frequent bowel movements (occasionally with diarrhea) abdominal cramping and/or rectal discomfort and pain. It may also cause more frequent urination, sometimes with a burning feeling. Treatment may also cause a small amount of blood to appear in the urine or stool. These should gradually go away several weeks after treatment ends. Some patients may also feel tired or lose their appetite. This is temporary as well.

Every day your radiation therapist will be checking your side effects. It is important to let them know if they are worsening.

Talk with your doctor and treatment team (including the nurse and radiation therapist operating the radiation machine) about any new symptoms you experience during treatment.

Caring for your bottom

- During the last 3 weeks of radiation, many patients have found comfort from using perianal wipes or incontinence wipes with skin protectant. These medicated wipes can be more comforting than baby wipes.
- Look for a gentle product that has dimethicone 3% or higher. Dimethicone is a skin protectant helping to preserve fragile skin.
- Look for a product that is thick, soft and hypoallergenic. Products should also be alcohol free and fragrance free so that it doesn't dry or irritate skin.
- Use these wipes to clean and then apply cream given to you by radiation nurses. These can be expensive but you can cut them in half to help decrease cost.
- Do not flush these wipes, but dispose of them in the trash. These wipes are not kind to plumbing.

Here are examples of some brands:

- Sage Shield Barrier Cream Cloths
- Medline AloeTouch PROTECT skin protectant cleansing cloth wipes
- Medline Remedy Phytoplex
- Sensi-Care Skin Protectant Incontinence wipes