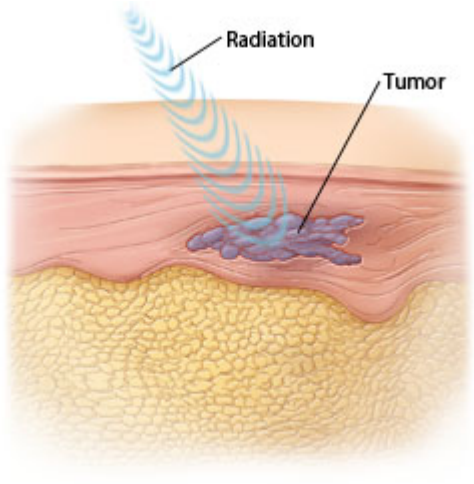
Intensity-Modulated Radiation Therapy (IMRT) for Cancer

Intensity-modulated radiation therapy (IMRT) is an advanced type of radiation therapy used to treat cancer. This sheet tells you more about IMRT, including how it works and what to expect. If you have more questions about the treatment, be sure to talk with your healthcare provider.

How IMRT works

A computer-controlled machine called a linear accelerator is used to send an exact amount (dose) of strong X-rays from several directions. These rays are shaped like the three-dimensional (3-D) shape of the tumor. The precise dose and shape of the beams helps to limit the damage to nearby tissue. So IMRT may cause fewer side effects.

This form of external radiation therapy is called "intensity modulated" because the strength or intensity of each beam can be controlled, or modulated. Many X-ray beams are aimed at the tumor from many angles. Both the shape and the strength (intensity) of the X-ray beams can be controlled to keep them focused exactly on the tumor. Each lower-dose beam points at the tumor from different angles. They all meet at the tumor to create a large dose of radiation in that spot. This means higher doses of radiation can be aimed at the tumor to kill more cancer cells, while less radiation goes through healthy tissues.



Planning your treatment

IMRT is done by a radiation therapy team. This team can include a radiation oncologist, a radiation oncology nurse, a radiation therapist, a medical physicist, and a dosimetrist. Before your first session, you and your team will meet to plan the details of your treatment. This planning process is called simulation. It might take a few hours. During simulation:

- CT scans or other imaging tests are done. The scans are used to map out exactly where the tumor is in your body.
- Devices might be made that will help hold you still and put you in the same position for each treatment. These can include molds, masks, casts, and cushions.
- Sometimes your breathing is tracked and a model of your breathing pattern is made to help plan treatment.
- Temporary ink or tiny dot tattoos might be put on your body. These marks help the therapist line up the X-ray beams from the machine with where they should go in your body for each treatment.

Having IMRT treatments

IMRT is usually given once a day, 5 days a week. Each session takes about 15 to 60 minutes. But the time that you are actually getting treatment is very short. You may need these treatments for 5 to 8 weeks. You and your team will discuss the schedule for your treatment in advance. Here's what you may expect before, during, and after each session:

- You might change into a hospital gown.
- The radiation therapist helps position you on the treatment table. You may lie on your back, stomach, or side. If positioning devices were made, they're used at this time.
- The therapist leaves the room and turns on the machine from outside. The therapist watches you on a TV monitor or through a window. You and the therapist can talk and hear each other through an intercom at all times.
- Imaging scans such as X-rays or CT scans might be used before each treatment to make sure that the beams from the machine are lined up with your body correctly.
- The machine moves around you. It directs the radiation beams at the tumor. You'll hear sounds from the machine and may smell an odor from the electronic equipment. But you won't feel anything and the machine won't touch you. Tell the radiation therapist if you have any problems during treatment. The machine can be stopped at any time.
- You can go home shortly after the treatment is finished. Your healthcare providers will let you know when to return for your next session. You are not radioactive after treatment. There's no risk to the people around you.

Possible side effects of IMRT

IMRT is more accurate than some other types of radiation therapy. But as with any form of radiation therapy, healthy cells and tissue around the tumor can also be damaged by the treatment. This can lead to side effects. Side effects from IMRT are usually limited to the area getting the radiation. More common side effects include:

- Skin in the treatment area becoming red, irritated, or swollen (a lot like a bad sunburn)
- Skin dryness, itching, peeling, or blistering
- Hair loss in the treatment area (may be permanent)
- Feeling very tired
- Eating or swallowing problems if the radiation is aimed at the head or neck
- Nausea or vomiting if the radiation is aimed at the brain, belly (abdomen), or digestive
- Diarrhea if the radiation is aimed at abdomen or gastrointestinal tract
- Difficulty urinating, such as pain and burning or blood in the urine

Most side effects go away over time after treatment ends. Some side effects may not happen until months or even years after treatment. For instance, radiation can damage nearby joints, cause fertility problems, cause brain, lung or kidney changes, and increase your risk of getting another cancer in the treated area later on. Some side effects may be permanent, such as hair loss or skin changes.

Your healthcare provider can tell you more about what side effects you might have and how to manage them. If needed, there are medicines to treat or control many side effects. Your healthcare team can also teach you ways to help cope with or even prevent certain side effects.

Call the healthcare provider

Contact your healthcare provider if you have any of the following:

- Fever of 100.4ºF (38ºC) or higher, or as directed by your treatment team
- Trouble focusing or memory problems
- Headaches
- Trouble breathing or shortness of breath
- Pain that doesn’t go away, especially if it’s in the same place
- A new or unusual lump, bump, or swelling
- Feeling dizzy or lightheaded
- Unusual rashes, bruises, or bleeding
- Uncontrolled nausea and vomiting
- Diarrhea that doesn’t get better with treatment
- Difficulty urinating
- Skin breakdown or severe pain due to skin irritation
- Any new symptom, or one that causes concern

Be sure you know what other problems you should watch for. And know how to get help any time, including after office hours, on weekends, and on holidays.