

The Radiation Therapy Process: Image-Guided, Intensity-Modulated Radiation Therapy (IG-IMRT)

We suggest you read through this resource at least once before you start radiation therapy, and then use it as a reference in the days leading up to your treatments to help you prepare. Bring it with you for your simulation appointment and all future appointments with your radiation oncologist so that you and your healthcare team can refer to it.

About IG-IMRT

Radiation therapy uses high-energy rays to treat cancer. It works by damaging the cancer cells and making it hard for them to reproduce. Your body then is naturally able to get rid of these damaged cancer cells. Radiation therapy also affects normal cells. However, your normal cells are able to repair themselves in a way that cancer cells cannot.

IG-IMRT is a type of targeted external beam radiation therapy. During external beam radiation, a treatment machine will aim beams of radiation directly to the tumor. The beam passes through your body and destroys cancer cells in its path. You will not see or feel the radiation.

IG-IMRT uses images that are taken in real time to mold the radiation beams to your tumor. Because the normal movements of your body can cause your prostate to move slightly during or between treatments, your healthcare team will insert markers into your prostate. These allow your doctors to have a better view of your prostate during your treatments. The radiation machine moves around your body so the beams can be aimed from many angles. In addition, the shape of the beam changes while the treatment is being given. This changes the intensity of the beam, which allows your doctor to target your tumor and avoid your healthy tissue.

Your Role on Your Radiation Therapy Team

You will have a team of healthcare providers working together to provide the right care for you. You are a part of that team, and your role includes:

- Arriving on time for all your radiation therapy sessions.
- Asking questions and talking about your concerns.
- Letting someone on your radiation therapy team know when you have side effects.
- Telling your doctor, therapist, or medical assistant if you are in pain.
- Caring for yourself at home.
- Quitting smoking, if you smoke.

- Following your healthcare team's instructions to care for your skin.
- Drinking liquids as instructed.
- Eating the foods suggested by your radiation therapy team.
- Maintaining your weight.

CT Simulation

Before you begin your treatment, you will have a treatment planning procedure called a simulation. This is done to make sure that:

- Your treatment site is mapped out.
- You get the right dose of radiation.
- The amount of radiation that gets to your nearby tissues is as small as possible.

During your simulation, you will have CT imaging performed and your skin will be marked with little tattoo dots. These marks help your therapists to line you up correctly for your treatment.

Your simulation will take about 20-30 minutes, but can be shorter or longer depending on the treatment your doctor has planned for you.

What to expect

A member of your radiation therapy team will check you in. You will be asked to state your full name and date of birth. This is for your safety and part of our standard identification process. People with the same or similar name may be having care on the same day as you.

When you arrive for your appointment, your radiation therapist will greet you and take a photograph of your face. This picture will be used to identify you throughout your treatment.

Your therapist will review and explain the CT simulation to you. If you have not already signed a consent form, your radiation oncologist will review everything with you, and ask for your signature.

During your simulation

For your simulation, you will need to get undressed and change into a gown or medishorts (depending on the area being treated). You may keep your shoes on or off. If you decide to keep your shoes on during the simulation, you will be asked to keep them on for each of your treatments. Your therapists will help you lie down on your back on the table and make every effort to ensure your comfort and privacy.

Although the table will have a sheet on it, it is hard and has little to no cushion. If you have not taken pain medication and think you may need it, tell your therapists before your simulation begins. Also, the room is usually cool. If you feel uncomfortable at any time, let your therapists know.

Throughout your simulation, you will feel the table move into different positions. The lights in the room will be turned on and off and you will see red laser lights on each wall. Your therapists use these laser lights as a guide when they position you on the table. Do not look directly into the red beam because it may damage your eyes.

Although your therapists will walk in and out of the room during your simulation, there will always be someone who can see and hear you. You will hear your therapists speaking to each other as they work, and they will explain to you what they are doing. Do not move once your simulation begins, because it may change your position. However, if you are uncomfortable or need assistance, tell your therapists.

Positioning: VacLok mold or Orfit mask

VacLok Mold

- While you are lying on the table, a mold will be made of your body depending on the treatment area. Your therapist will place your determined anatomy on the mold. As the therapist vacuums the air out of the VacLok, the mold will harden. They will press on it to shape it to fit around your body. This procedure takes about 5 minutes.
- During your simulation, and every day of your treatment, this mold will be used to help position you as well as limit extra motion. This helps ensure that you are in the correct position each time you receive your treatment.

Orfit Mask (ONLY FOR INTRACRANIAL TREATMENTS)

- While you are lying on the table, a mask will be made of your head. Your therapist will adjust your head position with a variety of head holders. Once the head is in the correct position, the therapist will place the Orfit mask in the warming bath. This softens the mask so that it can be molded specifically to your head. The mask will harden as it cools. This procedure takes about 5 minutes. Once the mask is created and your positioning is verified, a CT scan will be taken of the anatomy of interest.
- During your simulation, and every day of your treatment, this mold will be used to help position you as well as limit extra motion. This helps ensure that you are in the correct position each time you receive your treatment.

X-rays and CT scan

While you are lying in your position, you will get x-rays of the area to be treated. If you had markers placed, they will be seen on these images. These will be done on a CT scan machine. These scans are used only to map your treatment. They are not used for diagnosis or to find tumors. If you need other imaging, your doctor, therapist, or medical assistant will explain this to you.

It will take about 2-5 minutes to get your scan. During the scan, you will hear the machine turn on and off. Even if the noise seems loud, your therapists will be able to hear you if you speak with them.

Magnetic resonance imaging (MRI)

Your doctor may order an MRI to be done the same day as the CT Simulation.

Skin markings (tattoos)

Your therapists will draw on your skin in the area being treated with a felt marker and make about 4 to 6 permanent skin markings called tattoos. Your therapists will use a sterile needle and a drop of ink to make the tattoo. The sensation of getting one feels like a pinprick. The tattoo marks are no bigger than the head of a pin. The felt markings can be washed

off after your simulation. The tattoos are permanent and will not wash off. If you are concerned about receiving tattoos as part of your radiation treatment, talk with your doctor.

After the tattoos are made, your therapists will take several photographs of you in your simulation position. The photographs and tattoo marks will be used to position you correctly on the table each day of your treatment.

After Your Simulation

At the end of your simulation, we will give you an appointment for your set-up procedure. This is the final appointment before your treatment begins.

Scheduling your treatment

Radiation treatments may be given Monday through Friday, for 8 to 10 weeks. Your treatment will be given for about _____ days/weeks. You will be in the department about 15 to 30 minutes each day.

You must come in every day that you are scheduled for your treatment. Treatment may not be as effective if you skip or miss appointments. If you for some reason you can't come in for treatment, you must call your radiation oncologist's office to let your team know. If you need to change your schedule for any reason, speak with your radiation therapist.

Treatment planning

During the time between your simulation and your set-up procedure, your radiation oncologist will work with a team to plan your treatment. They will use the images taken during your simulation to plan the angles and shapes of the radiation beams. They will also determine the dose of radiation that you will receive. These details are carefully planned and checked. This may take up to 2 weeks.

Your treatment plan is based on your body shape and size at the time of your simulation. Try to keep your weight within 5 to 10 pounds of your usual weight to ensure that the plan remains accurate.

Vitamins and dietary supplements

Many people ask about taking vitamins during treatment. You may take a daily multivitamin, if you wish. Do not take more than the recommended daily allowance of any vitamin. Do not take any other vitamins or any supplements without talking to your doctor. This includes both nutritional and herbal supplements.

Set-up Procedure

Before your first treatment, you will be scheduled for a set-up procedure. This generally takes about 20 minutes. If pain medication was helpful during your simulation, you may want to take it before this procedure.

When you come for your set-up procedure, you will be shown to the dressing room and asked to change into a gown. Your therapists will bring you to the room where you will receive your treatment each day. They will position you on the treatment table. You will lie exactly as you did on the day of your simulation.

Special images (CT scans) called beam films will be taken to make sure that your position and the area being treated are correct. If you had markers placed, these can be seen on the x-rays and will help us position you correctly. The beam films will be repeated throughout your treatment. They are not used to see how your tumor is responding to the treatment.

During Your Treatment

After you check in at the reception desk, have a seat in the waiting room. When they are ready for you, your radiation therapists will ask you to undress from the waist down and change into a gown. You should keep your shoes on during the treatment.

*Some people will need to have a full bladder for their treatment. If your doctor tells you this is needed, your therapist will tell you how much water to drink and when to begin drinking it.

Your radiation therapists will bring you into the treatment room and help you lie on the table. You will be positioned exactly how you were during your set-up procedure.

Once you are positioned correctly, your therapists will leave the room, close the door, and begin your treatment. A CT scan will be taken daily to ensure you are in the correct position. The beams of radiation are shaped by many small leaves of tungsten (a type of metal) sitting at the opening of the treatment machine. The computer will move the leaves into different positions to block the radiation. The radiation that passes through the opening between the leaves creates the beam that is directed toward your body. The leaves move while the beam is passing through. This varies the intensity of the beam and ensures that you receive the exact doses prescribed by your radiation oncologist.

You will not see or feel the radiation, although you may hear the machine as it moves around you and is turned on and off. You will be in the treatment room for 10 to 30 minutes, depending on your treatment plan. Most of this time will be spent putting you in the correct position. The actual treatment only takes a few minutes.

Although you are alone during your treatment, your therapists can see you on a monitor and hear you through an intercom at all times. Your radiation therapist will make sure that you are comfortable during the treatment. Breathe normally during your treatment, but do not move. However, if you are uncomfortable and need help, speak to your radiation therapists. They can turn off the machine and come in to see you at any time, if necessary.

Neither you, nor your clothes will become radioactive during or after treatment. It is safe for you to be around other people.

Weekly visits during treatment (status checks)

Your radiation oncologist and radiation medical assistant will see you each week to evaluate your response to treatment, ask about any side effects you may be having, and answer your questions. This visit will be before or after your treatments each **Tuesday**. You should plan on being in the department about 20 minutes extra on those days.

If you need to speak with your radiation oncologist, radiation therapist, or radiation medical assistant any time between these weekly visits, call your radiation oncologist's office or ask your therapists to contact them when you come in for treatment.