



Stereotactic Body Radiation Therapy

What it is and how it works

This handout explains **stereotactic body radiation therapy**. It describes how it works and what you can expect before, during, and after your treatments.

What is stereotactic body radiation therapy?

Stereotactic body radiotherapy (SBRT) is a radiation treatment that uses a *linear accelerator* (Linac) to deliver a very high dose of therapeutic radiation. SBRT allows us to aim the radiation beam very precisely. It is most often used to treat tumors in the spine, lungs, liver, and abdomen.

SBRT is *noninvasive* (it is done with equipment from outside the body). It may be used instead of surgery.

SBRT can be used to treat tumors that have recurred in patients who have already had radiation therapy. It may also be used to treat tumors that are close to or inside an organ that is very sensitive to radiation. The precise radiation beam allows doctors to treat small tumors that are close to sensitive areas with less risk to their patient's health.

Knowing the type, location, and size of your tumor will help your health care team determine if SBRT is the best treatment for you.

Your Health Care Team

SBRT involves a health care team that includes nurses and these specialists:

- *Radiation oncologist* – doctor who treats cancer with radiation therapy.
- *Radiologist* – doctor who has special training in taking and reading medical images.
- *Radiation physicist* – specialist who ensures that radiation equipment is safe and working correctly.
- *Dosimetrist* – specialist who plans the treatment based on the radiation oncologist's prescribed radiation dose.
- *Radiation therapists* – specialists who provide the actual treatments after your doctor has approved your treatment plan. Board-certified radiation therapists work in teams to operate our radiation treatment machines.

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- *Radiation nurse* – nurse who is the link between you and the rest of your care team. Your nurse will also help you manage any side effects caused by your treatment.

How does SBRT work?

Some patients are treated in 1 day, but most receive up to 5 treatments over several days.

Because a large dose will be delivered during each session, we will need to position you very carefully for your treatments. To help do this, we will first do a type of X-ray called a *computerized tomography* (CT) scan. This scan takes pictures of your body from many angles and creates cross-sectional pictures.

The CT scan will be used to verify the size and location of your tumor, and to see how it relates to your other body tissues. We will create your treatment plan based on this information.

How is SBRT different from standard radiation treatments?

- SBRT uses the same type of radiation that is used in standard radiation treatments. But, SBRT is so precise, we are able to lessen the risk of damage to the healthy tissues around the tumor.
- SBRT is often given every day or every other day for only a few days. Standard radiation treatment usually lasts several weeks.
- SBRT delivers a high dose of radiation to a very small area. It is like removing a tumor with surgery, but without an incision or *general anesthesia* (medicine to make you sleep during surgery).

Before Treatment

Simulation

Before you start your radiation treatments, you will have a *simulation*. Simulation is the first step of your treatment planning process. Plan to be in the department for a few hours for this procedure.

During the simulation:

- You will be asked to change out of your street clothes and into a hospital gown.
- You will be asked to lie very still on a table.
- You will be placed in the best possible position for treatment, and the target area will be mapped out for treatment planning.

- A special CT scanner will be used for taking images of the area where your radiation therapy will be aimed. You may or may not be given a *contrast material*, a liquid that can help your doctor see the tumor more clearly.

If your tumor is in an area of your body that may move when you breathe, your doctor will also need to watch your normal breathing pattern during the CT scan. Seeing your breathing motion will help your doctor make adjustments in your treatment as needed. Some patients have a compression or clamp-like device placed over their stomach during treatment to help the area of the tumor stay as still as possible.

- Once you are in the therapy room, a special *immobilization* device called a *cradle*, or *vacloc*, will be made to keep your body in exactly the right position during your treatments. We will also take more images of the tumor area to help us further develop your treatment plan.

To create your immobilization device:

- You will lie inside a plastic bag on top of material that conforms to the shape of your body, like a beanbag chair.
 - A special vacuum will suck out the extra air from the bag. This will create a comfortable, stable, and exact mold of your body.
- After the simulation is done, you will be able to go home.

Planning Your Treatment

- Based on the results of your CT scan during the simulation, your health care team will plan your SBRT treatment. This is a very complex process and can take several days. Treatment planning systems will help your health care team create the best plan for you.
- When the plan is ready, you will be scheduled to have a practice session we call a “dry run.” This will ensure that your treatment can be done as planned.

Treatment

- Treatments usually last 30 to 90 minutes. They are not painful, but you may have side effects later. The radiation oncologist will explain any possible side effects before the radiation treatment starts.

During your treatment:

- You will lie in your custom-made immobilization device. Your position will be exactly the same every time you have these radiation treatments.

- Special imaging equipment will take several measurements to ensure that the radiation is delivered to exactly the right place.
- The table may be adjusted if needed, based on these measurements. The radiation oncologist and radiation physicist will confirm that these adjustments are accurate before your actual treatment begins.
- Once your team is satisfied that you and the equipment are ready, the radiation therapists will position the treatment table so that the treatment can be given exactly as planned. The set-up for SBRT is complex and can take up to 15 minutes. It is important that you stay very still during this time.
- After set-up is done, the radiation therapists will leave the room and close the door. They will operate the radiation equipment from a computer outside your treatment room. The therapists will be able to see and hear you at all times. You will be able to talk with them through an intercom. Therapists can also stop the treatment and enter the room at any time, if needed.
- You will not feel the radiation during treatment.
- The equipment will not touch you, but you may see or hear the accelerator as it moves.
- You may also feel the treatment table move during your treatment.
- Your radiation therapists may come into the room during your treatment to re-position the accelerator.

How many treatments will I need, and when will they be given?

- Your doctor will tell you how many treatments you will need and will talk with you about your treatment schedule before you start actual treatment.
- Treatments are given either every day or every other day Monday through Friday. They can start or end on any day of the week.

What happens after the treatments are done?

- After your last treatment, your health care team will talk with you about any instructions you need to follow.
- You will be given a follow-up appointment. This visit may include tests such as a CT scan or *magnetic resonance imaging* (MRI). MRI uses radio waves and a strong magnetic field to provide clear and detailed images of the body's organs and tissues.

Questions?

For questions that are not urgent:

- Weekdays 8 a.m. to 6 p.m., call your Radiation Nurse at:

- After hours and on weekends and holidays, call 206-598-6190 and ask for the Radiation Oncology Resident on call to be paged.

If you need to speak with someone right away:

- During office hours, call 206-598-4100 and press 1 when the message gets to the phone tree. Your call will be directed to the right person.
- After hours and on weekends and holidays, call 206-598-6190 and ask for the Radiation Oncology Resident on call to be paged.

If the Resident does not call you back within 10 minutes, call again. Tell the operator that you need to speak to someone right away.

When to Call Your Radiation Oncologist

All of the symptoms below can occur weeks or even months after treatment.

Radiation Pneumonitis

Radiation pneumonitis is different from standard pneumonia and has a different treatment plan. If it occurs, it is usually 4 to 6 weeks after radiation treatment, and only if you received radiation to your chest.

Call your radiation oncologist if you have any of these symptoms of radiation pneumonitis:

- Cough
- Chest pains
- Shortness of breath
- Any fever

Also call your radiation oncologist if you have any of these symptoms:

- Pain in your rib cage
- Heartburn
- Tar-colored stools
- Any other symptoms that you are worried about

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