

Total Body Irradiation for Adults

You are getting radiation to your entire body, called total body irradiation (TBI), as part of your cancer treatment. This factsheet is about the process and side effects that could happen. It also tells you ways to help manage the side effects.

TBI is part of the treatment for bone marrow and stem cell transplants. It can kill cancer cells. TBI also weakens your immune system. This helps people who get bone marrow or stem cells donated from someone else. Your body is less likely to reject donated cells when your immune system is weaker.

Your transplant team from the Utah Blood and Marrow Transplant (BMT) Program at Huntsman Cancer Institute (HCI) sets up an overall schedule for your cancer treatment. The schedule includes these dates:

- Admission to the HCI Cancer Hospital
- TBI consultation and treatment sessions
- Infusion of bone marrow or stem cells

Pre-Treatment Visit

Before your TBI treatments begin, you will meet with the Radiation Oncology team. They will review your medical history and do a physical exam.

The team will talk to you about TBI and its possible side effects. They will then ask you to sign a form that says you agree to have the TBI procedure. The visit takes about 2 hours.

TBI can make it hard for you to have children after the treatments. It is important that you talk with your cancer care team about this BEFORE the TBI treatments begin.

TBI Treatments

Most people get six TBI sessions, twice a day for three days. Some people need only one. The number depends on several factors:

- The type of cancer you have
- The type of transplant you will receive
- Your cancer care plan

Getting ready for TBI treatments. Here are some tips about what to wear and bring to TBI sessions:

- Wear sweat pants or pajama bottoms and slippers. The treatment room can be cold.
- Wear a gown or shirt that buttons.
- Do not wear any metal—jewelry, eyeglasses, or metal on your clothing such as buttons or zippers.
- Each TBI session takes about an hour. You may want to bring music or a DVD to pass the time.

Simulation session. The radiation team will take x-rays of your back and chest to help them design thick metal shields for protecting your lungs during TBI. You will not need a lung shield if you have only one TBI session.

During the simulation session, the radiation team tapes small metal beads and rings to your skin as markers. The markers help your doctors position the shields. The simulation session takes 15-30 minutes.

TBI treatment sessions. Radiation is invisible, and it causes no pain during the treatment. The radiation for treatments comes from a machine in a special TBI room at HCI. When the machine is on, only the patient can be in the room. Your radiation doctors can see and hear you during the sessions with a video camera and intercom system. Usually you will be in the TBI room for about an hour. The first TBI treatment lasts longest.

For half the treatment, you will face the machine. For the other half, you will face away from the machine. Each side takes about 20 minutes. You can rest in a chair for a few minutes between sides.

Before each half of the treatment begins, a radiation therapist does these things:

- Puts you in position for the treatment. You will either be standing or straddling a padded device. The therapist will put straps across your chest and belly to keep you steady.
- Checks measurements and adjusts the lung shields, if they are used.
- Takes an x-ray to make sure the lung shields are in the right place if they are used.

If you have lung shields, it is important that you stay very still during the treatment. If you move, the shields will not protect your lungs.

When everything is ready, all other people will leave the TBI room. The radiation therapist will turn on the machine. You can stop the treatment any time if you feel sick, tired, or need to use the bathroom. Wave your hand and the radiation therapist will stop the machine at once and help you. When you are ready, the therapist will put you back in position and start the treatment again.

When both halves of the TBI treatment session are finished, you will go back to the BMT unit.

Possible Side Effects of TBI

During treatment sessions. You may feel sick to your stomach or very tired. Your cancer care team can give you medicines to help you feel better. You can also take short rests during the treatment sessions.

Temporary side effects. You will have some side effects that last for a while after all your TBI treatments are finished. Your cancer care team can give you medicines and tips to help manage them:

- Nausea and vomiting
- Diarrhea
- Mouth sores
- Fatigue
- Hair loss
- Skin changes

Nausea. These tips may help with feeling sick to your stomach:

- Eat small amounts of food several times a day instead of three large meals.
- Eat something light such as crackers or toast before your treatment.
- Avoid lying flat after eating.
- Ask your cancer care team about medicine to ease nausea before your treatment.

Eating well is important. Your cancer care team will check to make sure you eat and drink enough.

Diarrhea. You may have bowel movements that are more frequent or diarrhea, which is loose, watery stools. Tell your cancer care team if you have diarrhea. They can suggest diet and medicines to help.

These tips may help with diarrhea:

- Use alcohol-free baby wipes rather than toilet paper to wipe after bowel movements.
- Rinse the anal area with water using a squirt bottle after each movement.
- Treat the anal area if it becomes sore or if you develop hemorrhoids. Over-the-counter hemorrhoid products can help.

Mouth sores. You may get sores in your mouth that make it hard to eat. Soft foods, mouth rinses, or certain medicines can help. Talk with your cancer care team if you have any concerns. It is important that you do not lose too much weight. The dietitian on your cancer care team can suggest ways to make sure you eat enough to keep your weight up.

Fatigue. TBI will make you feel tired. Take good care of yourself while you are in treatment. Many patients find that mild exercise such as walking can improve energy levels. Your cancer care team will help make sure you get the right balance of rest and exercise.

Hair loss. After about two weeks, you will start to lose hair. It will usually begin to grow back within 3–6 months after radiation treatment ends. Use only an electric razor if you shave. Hair loss may be permanent, depending on the amount of radiation you get.

Skin changes. The effects of radiation on the skin depend on many things:

- Number of treatments
- Total radiation dose
- Sun exposure of the treated area before radiation
- Overall health

Take care of your skin from the first day of radiation, before side effects happen. These skin changes may happen:

- Gets dry or itchy
- Turns darker, pink, or red
- Becomes sore and tender
- Peels or gets blisters

Radiation skin changes happen slowly over time. They may last for a while after radiation treatments end.

They usually go away 2–4 weeks after radiation treatments end.

Here are some tips to help protect your skin:

- Wash gently with warm water. Do not scrub. Use your hands, not a washcloth. Pat dry with a soft towel.
- Use a mild soap without perfumes or deodorants.
- Avoid rubbing on treated skin. Wear loose-fitting clothing. Cotton fabrics are the least irritating.
- Avoid temperature extremes. Ask your radiation care team before using heating pads, hot water bottles, soaking in hot tubs, or ice packs on the skin.
- Keep your skin protected from the sun. Use sunscreen with at least SPF 30 when outdoors. Wear a wide-brimmed hat and clothing that covers your arms and legs. Do not use tanning beds.
- Use only an electric razor if you shave.

These suggestions can help manage skin changes:

- Use a moisturizing cream, lotion, gel, or oil. Choose products for sensitive skin. Avoid products with perfume or deodorant.
- If a product stings, stop using it.
- If your skin becomes tender or itchy, try using a 1% hydrocortisone cream from the drugstore. If necessary, your cancer care team may prescribe a steroid cream.

Long-term side effects. Some side effects of TBI may not show up until many years later. These include clouding of the lens in your eyes (cataracts) that can affect your vision. Another possible long-term effect is low thyroid function. Talk with your cancer care team if you are concerned.