Total Body Irradiation (TBI) for Bone Marrow Transplant

Standing Position

TBI (total body irradiation) helps prepare you for a bone marrow transplant. The radiation will suppress your immune system. This helps your body accept the new bone marrow.

You will receive either one treatment or several. Your doctor (radiation oncologist) will decide the type and amount of treatment based on your transplant plan. They choose the dose of radiation to get the best result with the fewest side effects.

What should I expect?

Planning

Before starting treatment, you will come in for a consult and planning session. This takes about an hour and a half.

During this visit, we will do an exam and learn about your medical history. We will talk to you about radiation treatment and any side effects you can expect. Be sure to ask questions and take notes.

Then, we will place you in the exact position needed for treatment. We will take measurements and a photo for our records. We will use these details to build your treatment plan.

We may also make blocks to protect your lungs and thymus gland from the radiation. We may mark your chest to show where the blocks will go during treatment.

Treatment

A single treatment takes about 30 minutes.

We will bring you to the Department of Radiation Oncology. You will wear a mask to protect you from germs. Once in the treatment room, you may remove your mask—our treatment rooms have special air filters to keep the germs out.

You will stand on a platform as shown here. You will have supports under both arms and hands and between the legs. We may place blocks across your chest to protect your lungs and thymus gland. We will then check your position before starting treatment.

The radiation lasts about 8 minutes. It will come from one side. We will treat one side, then we will turn you and treat the other side. You will not feel the radiation.

It is important to hold very still during TBI. If you need help, or if we think you may have moved, we will turn off the radiation and recheck your position. Then, we will restart the treatment.

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You will be alone in the room during radiation treatment. We will watch you on a TV screen, and you will be able to talk with us through a speaker system.

At the end of each treatment, we will take you back to your room.

**How should I prepare for my treatment?**

**Do not** wear any metal: No clothes with snaps or zippers. No jewelry or other removable metal.

We will ask you to remove your shoes or slippers. You may wear a pair of warm socks.

If you wish, you may request medicine to help you relax or to control nausea (feeling sick to your stomach). Please discuss this in advance with your BMT doctor and nurses.

Children may need medicine to sedate (relax) them, so they can hold still during treatment. If so, they will not be able to eat or drink before treatment.

**What are the risks of TBI?**

TBI may cause side effects right after treatment or at a later date. Each person responds differently, and there is no way to predict how you will respond. Some people have only a few side effects; others have more. We will help you manage any side effects you may have.

**Early side effects**

These may occur on the day of treatment and could last several weeks. Some people do not have any of these side effects.

- Nausea and vomiting (throwing up)
- Loss of appetite
- Diarrhea (loose, watery stools)
- Loss of taste (returns slowly)
- Hair loss (returns slowly)
- Mouth sores
- Increased or thick saliva
- Low fever
- Mild jaw pain
- Red skin (like a mild sunburn, but without the pain)
- Feeling very tired

**Late side effects**

TBI may also cause side effects months or years after treatment. These are more likely to occur if you have had a pre-existing disease, chemotherapy, certain medicines or past radiation treatments. Your doctor will watch for these side effects and offer treatments as needed.

- Inflamed lungs (interstitial pneumonia)
- Swelling of the liver (veno-occlusive disease)
- Decreased growth of long bones in the arms and legs (in children less than 6 years old)
- Cataracts
- New cancers
- Sterility (you are no longer able to have children)
- A decrease in hormones
- Delay in reaching puberty (in young children)
- Learning problems (in young children)
- Dental problems (in young children)

Please let us know if you have any questions or concerns about your treatment plan or possible side effects. We want to make your experience as comfortable as possible.