Total Body Irradiation (TBI) for Adults: What You Need to Know

What is Total Body Irradiation?
A special machine, called a linear accelerator, uses radiation to help destroy cancer cells. Radiation can be given to a small area of your body or to your whole body. When radiation is given to your whole body, it is called total body irradiation (TBI). You will not see, smell or feel the radiation, but you may hear the fan on the linear accelerator during treatment.

When would TBI be used?
TBI may be used as part of your allogeneic blood and marrow stem cell transplant treatment. It is used along with chemotherapy. The goal of TBI is to destroy cancer cells and lower your body’s immune system. When your immune system is low, your body is less likely to reject the donated stem cells. TBI can also help manage graft vs. host disease.

How is TBI given?
You will be alone in the treatment room. The controls for the machine are outside of the treatment room. A TV monitor and intercom lets your radiation oncology treatment team see and hear you during your treatment.

How many radiation treatments are given?
The number of treatments you need is based on your type of cancer and the type of transplant you will receive. Your doctor will talk with you about how many TBI treatments you will need.

This handout is for informational purposes only. Talk with your doctor or health care team if you have any questions about your care.

What happens before treatment?

Before you start treatment, you will meet with the radiation oncology treatment team to review your medical history and do a physical exam. They will talk with you about the TBI treatment, including possible side effects that may happen. If you agree with the treatment plan, you will be asked to sign a consent form.

Who is on the radiation oncology treatment team?

The radiation oncology treatment team includes the Radiation Oncologist, Medical Radiation Physicist and Dosimetrist, Radiation Therapist and Nurses. The Radiation Oncologist will develop and order your radiation treatment. The Medical Radiation Physicist and Dosimetrist work with your doctor to plan how the treatment will be done. Radiation Therapists and Nurses provide care for you during your treatments.

What happens at the planning session?

You will have a planning session before your treatment begins. At this session your radiation oncology treatment team will work together to take measurements (head, neck, chest, arm, thigh, knees, ankles and abdomen) and x-rays and lung blocks, if needed. This planning session will take 1 to 2 hours, depending on what treatment you need.

What happens during TBI treatments?

Your first TBI treatment will take the longest. You will be in the TBI procedure room for about 1 to 2 hours. Your treatment team will help put you in the correct position and check measurements. If your treatment requires lung blocks, an x-ray will be done to make sure the lung blocks are in the right place. A small device will be taped to your skin to check the amount of radiation you are receiving.

You must hold still during your treatment. Radiation will be given to each side of your body. It takes about 20 minutes to give TBI to each side. You should not have any pain during treatment.

You may listen to music during your treatment. After the treatment is done, you will return to your hospital room.
What are the side effects of TBI treatment?
Side effects may begin shortly after your first treatment and can include nausea, vomiting, diarrhea, fatigue or a skin reaction. Later you may have mouth sores, a sore throat or a skin rash. It is important to talk with your doctor if you have any of these side effects.

What are the long-term side effects from TBI treatment?
Long-term side effects may not be seen until months or years after treatment.

The most common long-term side effects are:
- Cataracts (clouding of the lens in your eye which can affect vision)
- Hypothyroidism (low thyroid levels which can affect your metabolism)
- Infertility (not able to have children)

For more information on fertility and cancer, we encourage you to visit our video library at http://cancer.osu.edu/patientedvideos.

An uncommon side effect of this treatment can be damage to your heart, lungs, liver and kidneys. The risk for getting a cancer from TBI is rare, but can happen.

Your doctor will talk with you about these side effects and your risks based on your current health, the amount and type of treatment you need and any previous treatments you have received.

How do I prepare for TBI treatment?
- Keep your skin clean and dry. Shower or bathe with a mild soap the morning of each treatment.
- Use a mild shampoo. Do not use blow dryers, hairpins, rollers, and hairspray.
- Wear comfortable clothes that are easy to take off. You will be covered with a sheet during your treatment.
- Do not wear jewelry, glasses, or any items that have metal.
- Take good care of your teeth, gums and mouth.
- Ask your BMT doctor or nurse if you should take any medicine or if you can eat or drink before your TBI.
• **Do not** use any skin care products the day before and the day of your treatment including:
  ▶ Powder, lotions, ointments, salves or cream
  ▶ Toiletries such as perfume, cologne or after shave
  ▶ Deodorant
  ▶ Makeup or cosmetics
• **Do not** put any medicine on your skin unless you are told it is okay by your doctor.

**After Care**
• Use lotion to keep your skin soft and moisturized.
• Always protect your skin from sunlight. Wear a hat and clothing to cover your skin. Use broad-spectrum sunscreen with an SPF of 30 or higher to cover all areas of your skin when you go outside. Reapply sunscreen every 2 hours while you are outside.
• Wear comfortable, loose fitting clothes that do not rub your skin.
• If needed, use electric razors for at least 2 weeks.
• To help prevent eye infection, **do not** wear contact lenses.
• Talk with your doctor about when it is okay to stop following these precautions.