

EDUCATION GUIDE

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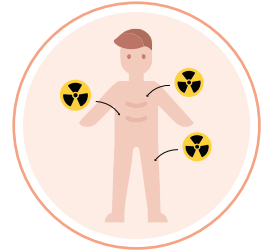
TOTAL BODY IRRADIATION (TBI)

— FOR ADULTS —

Total Body Irradiation (TBI)

What is Total Body Irradiation (TBI)?

Total body irradiation (TBI) is a **radiation treatment delivered to the whole body** before a bone marrow transplant (BMT). Radiotherapy uses high-energy X-rays. The treatment itself is painless.



Why do I need Total Body Irradiation (TBI)?



TBI is used for patients with **leukaemia, lymphoma, myeloma, and some rare blood disorders**. Radiation therapy is given before BMT to:

- 1 Destroy any cancer cells that may remain after chemotherapy;
- 2 Weaken your immune system (immunosuppression) to help prevent rejection of donor stem cells; and
- 3 Allow new, healthy bone marrow cells to grow.



How many radiation treatments will I receive?

Typically, you will receive **6 fractions of TBI** over **3 days**. This means 2 treatments per day, with at least 6 hours between treatments.

You will be admitted to the hospital for your TBI treatment.

What can I expect during TBI planning?

1

Initial consultation

About 1-2 weeks before TBI, you will meet a clinical oncologist. The clinical oncologist will explain the treatment and discuss the benefits and potential side effects of TBI.

CT simulation

2

You will be scheduled for a CT simulation session. Simulation is a planning visit to help prepare you for the actual treatment.

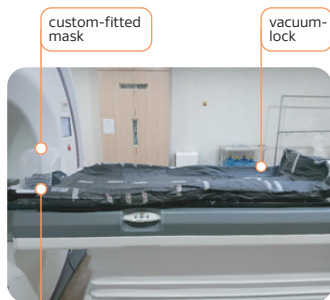
During this visit, radiation therapists will make a custom-fitted mask with a headrest and use a vacuum-lock (Vac-Lok) cushion to help you stay in the correct position.



A CT scan will then be performed to create treatment-planning images. This visit may take up to three hours. After your CT simulation appointment, please try to maintain your current body weight to help ensure accurate and effective treatment delivery.

What can I expect during my TBI treatments?

You will lie on the treatment couch with the immobilisation device created during your CT simulation visit (see Figure 1 below).



headrest

Figure 1

- ✓ You may be uncovered in sections during setup and treatment. Staff will provide a warm blanket and cover you whenever possible.
- ✓ The radiotherapy machine will rotate around you while delivering radiation.
- ✓ Imaging scans will be performed before treatment to ensure accurate positioning.
- ✓ The treatment is painless.
- ✓ You must remain as still as possible during the session.

Side Effects of TBI

You may experience side effects from TBI. These effects can vary from patient to patient, and your consultant will have discussed the potential risks with you during the consent process.

The main side effects that may occur during treatment are:

Skin changes



Your skin may become red, warm, dry, or sensitive towards the end of treatment. This is a common reaction. You may continue to shower or bathe normally. Avoid perfumed soaps, lotions, direct sun exposure, and antiseptic soap during the treatment period, as these may irritate the skin.

Radiation pneumonitis is **inflammation of the lungs**. Symptoms may include a persistent dry cough, shortness of breath, chest discomfort, or fever. If you develop any of these symptoms, inform medical staff promptly, as treatment may be required.

Radiation pneumonitis



You may feel very tired, have low energy, and need more rest than usual. This is common during treatment. Some patients may also experience temporary tiredness for a few hours after each treatment session. Adequate rest can help manage fatigue.

Fatigue



Dry or sore mouth



Your mouth may feel dry or sore. Regular mouth care and adequate fluid intake can help relieve discomfort. Aim to drink 1-2 litres of fluid daily unless advised otherwise. Use a soft toothbrush and avoid alcohol-based mouthwash.

Nausea and vomiting



Chemotherapy and radiotherapy may cause nausea or vomiting. Medications will be given to help control these symptoms. Try to eat foods you can tolerate and drink enough fluids to stay hydrated.

You may notice a reduced appetite or changes in taste during treatment. Try eating small, frequent meals and choose foods that are easy to tolerate.

Loss of appetite



You may experience diarrhoea or constipation. Drink adequate fluids and inform medical staff if symptoms become severe or persistent.

Altered bowel habits



Xerostomia



Radiation may reduce saliva production, causing **dry mouth**. Frequent sips of water and good oral hygiene can help manage symptoms.

Long-Term Side Effects

Below are some side effects of TBI that may occur months or years after your treatment:



Fertility problems

Due to TBI and high doses of chemotherapy, you may become unable to get pregnant or father a child. Female patients may consider freezing eggs or embryos before treatment, and male patients may consider sperm banking before starting chemotherapy.



Lung changes

TBI may cause inflammation, thickening, or scarring of lung tissue, known as pulmonary fibrosis. This most commonly develops 12 months or more after TBI and may cause symptoms such as cough, wheezing, or shortness of breath. Consultation with a lung specialist is recommended.



Underactive thyroid

Your thyroid gland produces hormones that help regulate your metabolism. If your thyroid is underactive, hormone levels may be low, which can cause weight gain, dry skin, tiredness, and constipation. Your doctor will monitor your thyroid and hormone levels with blood tests and may prescribe thyroid hormone tablets if needed.



Cataracts

Cataracts may develop years after treatment. If you experience blurred vision, please visit an eye specialist for assessment.



Risk of second malignancy

TBI can slightly increase the risk of developing a second cancer in the future. However, this risk is very small and is generally outweighed by the benefits of treating the underlying disease, such as leukaemia, lymphoma, or myeloma.

For more information, kindly contact us at:



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The Cancer & Radiosurgery Centre is located at:
Basement, Tower C

Operation Hours

Mondays-Fridays 8.30am - 5.30pm

Saturdays 8.30am - 1.00pm

Closed on Sundays and Public Holidays