TOTAL BODY IRRADIATION (TBI)  
(Pre-treatment patient education sheet)

Total body irradiation, also known as TBI, is given to patients who will be getting a bone marrow transplant (BMT). The purpose of TBI is to destroy the remaining cancer cells in the bone marrow and weaken your immune system. Making your immune system weaker is needed to stop your body from attacking the transplanted bone marrow tissue.

Before Treatment
First appointment: You will have a consultation with your radiation oncologist. During this appointment, the doctor will explain the risks and benefits of radiation treatments. You will also meet with your patient designated nurse (PDN) who will provide you with all the necessary contact information.

Treatment planning appointment: You will have a planning CT scan (computed tomography scan). The planning CT scan appointment will last about one hour. During this appointment, you will be scanned twice. You will be lying on your back for the first scan and lying on your stomach for the second scan. The CT scans are painless and only take a couple of minutes each to complete. Most of the appointment time is used to explain the procedure and making sure you are well positioned for the scan. After the scans, the therapists will draw large marks on your chest and back using coloured ink. These lines are necessary to make sure you are in the right position during your radiation therapy treatments.

While preparing you for your scan, the radiation therapist will need to touch you in order to adjust your body position. In addition, you will need to be partially undressed as the area to be treated will need to be visible to the therapist.

Depending on the dose your radiation oncologist has prescribed, you may have two simulator planning appointments. These appointments are used to ensure proper positioning of blocks that will help lower the dose to your lungs.

Treatment
Once your treatment plan is ready you will start your treatments. On your first day a radiation therapist or nurse will meet with you to review possible side effects and answer any questions you may have about the treatment. Plan to be at the Cancer Centre for up to 1.5 hours every day; sometimes delays occur.

Radiation treatments:
- TBI radiation treatments are given twice a day, five days a week (Monday to Friday)
- Although the goal is to treat the entire body, you will have custom shaped lead blocks placed either on your chest and back or on a platform just above your chest and back at the time of the treatment. These blocks help reduce the amount of radiation directed to the lungs. Depending on the dose, you may also have blocks placed over your kidneys for the same reason.
- You will be lying on a motorized bed. This bed will move through the radiation treatment beam while you lie still
- The bed will need to pass through the radiation beam twice in order to complete the treatment. For the first pass you will be lying on your stomach. You will be lying on your back for the second pass. Each pass lasts approximately ten minutes.
- Appointments usually last about 1 hour but most of the scheduled appointment time is used to make sure you are well positioned for the treatment.
You will be closely monitored by the hospital’s transplant team and the radiation oncologist will be available to see you if required.

**Side effects from radiation treatment**
The side effects that you may have are from the combination of chemotherapy and radiation treatments. There are two types of side effects: early side effects and late side effects. Some **early side effects** of TBI treatments can develop as early as a few hours after the first treatment but will only last a few days. This is usually in the form of nausea and vomiting. It is important to take anti-nausea medication before your first treatment and during treatments as prescribed by your radiation oncologist. Other early side effects develop sometime during the course of the radiation treatment. They typically start to improve two weeks after the completion of treatment. **Late side effects** usually develop no earlier than a few months after the completion of treatment; sometimes they develop years after the completion of treatment.

**Possible early side effects of TBI treatments:**
- nausea and vomiting
- fatigue
- dry, sore mouth and throat
- changes in taste
- loss of appetite
- diarrhea and or cramping
- bloating of the abdomen
- hair loss over the entire body
- serious infections

**Possible late side effects of TBI treatments:**
- darkening or sun-tanned appearance of the skin
- increased risk of developing a heart condition
- increased risk of developing eye conditions such as cataracts
- early onset of menopause in premenopausal women
- pneumonitis (cough, shortness of breath and fever treatable with steroids)
- sterility / infertility (discuss with your doctor if visiting a fertility clinic is appropriate for you)
- decreased thyroid activity
- development of a new cancer many years after treatment (rare)

Your Radiation Oncologist will explain these side effects and the risks for your particular situation.

**For more information please ask a member of your radiation treatment team.**