



病人教育

癌症中心/放射腫瘤科



全身放射 治療 (TBI)

關於你的治療

全身放射治療 (TBI) 是癌症治療的一部分。請閱讀本手冊的內容。它可以幫助你瞭解在進行治療之前、治療過程中和治療之後會出現什麼情況。

什麼是全身放射治療 (TBI) ?

TBI 是有時為病人進行造血幹細胞移植 (HSCT) 或骨髓移植前的準備工作。TBI 所用的是一台稱為線性加速器的儀器。該儀器產生一種高能射線束，直接穿越你的整個身體。你不會看見或感覺到這些射線束，射線也不會留存在你的體內。你不會在治療後受到放射性傷害。

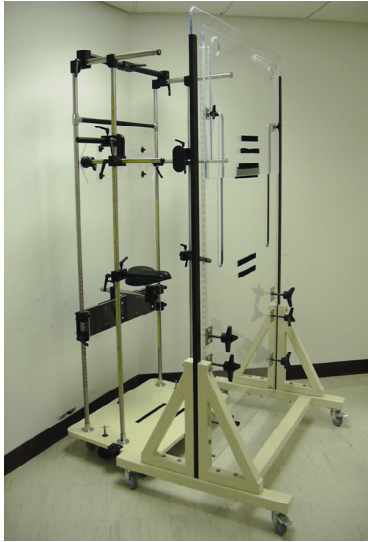
TBI 與化療一起進行，用以破壞你身體、血液和骨髓中的癌細胞。它還可以用於抑制或降低免疫系統，以便讓新的骨髓植入（成長）。

為治療做準備

在進行治療前，你要約見放射腫瘤專科醫生和與其一起工作的放射腫瘤科住院醫生或護理醫師。放射腫瘤專科醫生將會與你討論治療方案和可能出現的副作用，還會為你安排一次模擬治療。

在你的模擬治療過程中，你的醫生將與放射腫瘤專科醫生及治療師配合工作。治療師將你置於治療區，然後對你的肺部進行各種測量並拍攝 X 光照片。你的醫生會根據這些測量結果為你制定放射治療方案。此外，還將根據這些測量結果來製做肺遮罩 (*lung blocks*)，用以在治療過程中保護肺部的大部分組織。

你不會在這次模擬治療中接受放射治療。你也許可以參觀治療室，有護士為你介紹情況，並回答你的任何問題。



TBI 治療台

TBI 療法

TBI 可以是一次性治療，或連續治療 3 至 4 天，每天 2 次。每次治療大約需時 1 小時，包括安裝及進行放射。進行放射時間根據你身體大小而定，大約只需 20 至 30 分鐘。放射是由放射治療師根據醫囑執行。

在每次治療中，都會有一個治療師和一個護士陪伴你。在你進行 TBI 治療時，你的醫生也會前來看一看你。

大部分病人在治療時，都會站在一個帶有樹脂玻璃護罩的治療臺上（見左圖）。需要麻醉的兒童則需躺下進行治療。治療以分開的劑量進行，使其均勻地分送到你身體的前面和背面。

大部分病人將使用肺遮罩來進行某些治療。肺遮罩是根據模擬治療時的測量資料為每個病人專門訂做的。肺遮罩安裝在病人前面的樹脂玻璃護罩上，以幫助保護肺部，阻擋部分放射劑量。為了在每次治療中將肺遮罩對準相同的位置，治療師會用記號筆在你的皮膚上劃線。切勿將這些線條洗掉，直到治療師告訴你不再需要這些線條時，才能將它們洗掉。

進行治療時，你將獨自留在治療室內。工作人員可以透過顯示器看到你，並可以通過對講系統聽到你的聲音及和你說話。許多病人發現在進行治療時，他們可以用一些東西來分散注意力。治療室裝有立體聲音響並播放音樂，你亦可以攜帶你自己的音樂 CD 或錄音帶。

TBI 的副作用

與化療一樣，TBI 可能有短期的副作用。副作用可在治療時出現。請你的治療護士幫你處理任何出現的副作用。

放射治療也會在治療結束後產生副作用。在你同意接受治療時，你的醫生將會向你說明這些潛在的副作用。

TBI 最常見的副作用

嘔吐

- 在你開始 TBI 治療的前一天，西雅圖癌症醫療聯盟 (SCCA) 的臨床護士會在治療前 1 小時檢查你將需要服用的抗嘔吐藥。

- 嘔吐最經常在 TBI 治療後 30 分鐘到 2 小時內發生，但亦可能在治療過程中發生。你要開始服藥，以防嘔吐變太嚴重。
- 如有需要，醫生也會在治療後給你抗嘔吐藥。
- 每次前來進行 TBI 治療時應帶上你的抗嘔吐藥。

食欲不振

- 食欲不振最經常在治療過程中發生。它與嘔吐有內在聯繫。
- 如果你的食欲改變了，告訴你的護士。護士會給你其他藥物來治療嘔吐。

脫水

- TBI 會引起脫水，就像你在太陽下長時間曝曬會出現的情況一樣。
- 在第一次進行 TBI 治療時，你將見到一位 SCCA 的營養師，他/她會告訴你每天需要喝多少液體。如果你因為嘔吐而不能喝入足夠的液體，就會加重脫水。如果你無法喝完每天所需的液體，必須告訴 SCCA 小組的護士。
- 為了減輕脫水，你可以在 TBI 治療期間每天進行靜脈輸液。這些液體是由可隨身攜帶的便攜式輸液泵輸送。

皮膚過敏

- TBI 是一個熱源，即使你不會立刻感受到。應在治療過程中採取措施，避免出現皮膚反應。
- 放射治療後，你要留意自己的皮膚有否變紅或變黑。你的皮膚會變得更加敏感，尤其是對陽光。
- 護士會在每天治療後檢查你的皮膚狀況。
- 要減輕皮膚反應：
 - 穿上松身衣服前來接受 TBI 治療。
 - 到達門診後，會給你一套醫院睡衣褲穿上。此時，你必須脫掉所有內衣、襪子、拖鞋和首飾。

有任何問題嗎？

請致電 206-598-4141

你的問題非常重要。
如果你有任何問題或憂慮，請致電你的醫生或醫療提供機構。UWMC 診所的工作人員亦可隨時提供幫助。

UWMC 放射腫瘤科：
206-598-4100

- 夾住中央靜脈導管的夾子會被拿掉，以免金屬接觸你的皮膚。
- 如果你有佩戴眼鏡或隱形眼鏡，你必須在治療期間脫下。
- **切勿**在 TBI 治療期間在皮膚上使用乳液、除臭劑、護膚霜或粉末，除非是由你的放射科護士給你的。

脫髮

- 你的頭髮會在治療後脫落。這種情況會持續約 2 個星期。你的頭髮會重新長出。

腮腺炎

- 腮腺炎就是腮腺腫大，腮腺位於耳朵附近和前面。腮腺炎不常見，但在 TBI 病人中有發生。
- 症狀出現在第一次治療後的 4 到 24 小時內。使用冰袋和 Tylenol 可幫助減輕因腫脹而產生的不適感。服用任何 Tylenol 前，必須到 SCCA 門診做檢查。
- 此症狀會在 TBI 結束後的 24 到 72 小時內消除。

腹瀉

- 腹瀉通常在 TBI 治療後的一個星期內發生，可以用藥物治療。如果出現腹瀉，必須告訴你的護士。

黏膜炎

- TBI 和化療會影響分泌黏液的腺體以及口腔和喉嚨中迅速生長的細胞。你的口腔和喉嚨可能會感到乾渴、腫脹和疼痛。
- 大部分病人會在 TBI 治療後的頭 2 個星期出現黏膜炎。
- 黏膜炎可用鹽水漱口、局部用藥和止痛藥來治療。

UNIVERSITY OF WASHINGTON
MEDICAL CENTER
UW Medicine



**Cancer Center/
Radiation Oncology**

Box 356043

1959 N.E. Pacific St. Seattle, WA 98105
206-598-4100



Total Body Irradiation (TBI)

About your treatment

Total body irradiation (TBI) is part of your cancer treatment. Review the information in this handout. It can help you to know what to expect before, during, and after your treatment.

What is total body irradiation (TBI)?

TBI is sometimes given to patients to prepare them for a Hematopoietic Stem Cell Transplant (HSCT), or bone marrow transplant. TBI is delivered by a machine called a *linear accelerator*. This machine produces a high-energy radiation beam that is directed at your entire body. You cannot see or feel this beam, and the radiation does not stay in your body. You will not be radioactive after treatment.

TBI, along with chemotherapy, is used to destroy diseased cells in your body, blood, and bone marrow. It may also be used to suppress or lower your immune system to allow the new bone marrow to *engraft* (grow).

Getting Ready for Treatment

Before you start treatment, you will meet with a doctor who is a *radiation oncologist* and the radiation oncology resident or nurse practitioner who works with the doctor. The radiation oncologist will discuss the treatment and possible side effects. This doctor will also coordinate a visit that simulates your treatment.

At your simulation visit, your doctor will work with a *radiation dosimetrist* and therapist. The therapist will place you in the position in which you will be treated, and take measurements and X-rays of your lungs. Your doctor will use these measurements to prescribe your radiation. The measurements taken at this simulation will also be used to make *lung blocks*, which will protect a large portion of your lungs during treatment.

You will not receive radiation treatment at this simulation visit. You may be able to see the treatment room, and a nurse will talk to you and answer any questions you may have.



Treatment stand for TBI.

The TBI Treatment

TBI can be given as a one-time treatment, or twice a day for 3 or 4 days. Each treatment takes about 1 hour, which includes set-up as well as delivery of the radiation. The radiation delivery time is only about 20 to 30 minutes, depending on your body size. It is administered by the radiation therapists as ordered by your doctor.

A therapist and a nurse will be with you for each treatment. Your doctor will also meet briefly with you once during your TBI treatment.

Most patients are treated in a standing position on a treatment stand with a plexiglass shield (see photograph at left). Children who require anesthesia will be treated lying down. Treatment is given in divided doses, evenly distributed between the front and the back of your body.

Most patients will have some treatments with lung blocks. Lung blocks are specially made for each patient, based on measurements taken at the simulation visit. Lung blocks attach to the plexiglass frame in front of the patient and help to protect the lungs from some of the radiation dose. To line up the lung blocks in the same position for each treatment, the therapist will draw lines on your skin with a marker. Do not wash these marks off until the therapist tells you they are no longer needed.

While you are receiving your treatment, you will be alone in the room. The staff will be able to see you through a television camera, and can hear you and speak to you through an intercom. Most people find it helpful to have something they can use as a distraction during the treatment. A stereo and music are available, and you can bring in your own music or recording on CD or cassette.

Side Effects of TBI

As with chemotherapy, TBI may have short-term side effects. The side effects can occur during treatment. Ask your treatment nurse to help you manage any side effects that occur.

Radiation treatment can also cause side effects that may arise after your treatment is done. Your doctor will talk with you about these possible side effects when you give consent for treatment.

Most Common Side Effects of TBI

Nausea

- The day before you begin your TBI treatment, your Seattle Cancer Care Alliance (SCCA) clinic nurse will review the anti-nausea medicines you will need to take 1 hour before each treatment.

- Nausea most often occurs 30 minutes to 2 hours after TBI, although it may also occur during treatment. You will be started on medicine to keep nausea from being too much of a problem.
- You will also be given anti-nausea medicines to be taken as needed after treatment.
- Bring your anti-nausea medicines with you to each of your TBI appointments.

Loss of Appetite

- Loss of appetite most often happens as treatment progresses. It is linked to underlying nausea.
- Tell your nurse if your appetite changes. You may be given additional medicines to treat the nausea.

Dehydration

- TBI can cause dehydration, much like what would occur if you were exposed to the sun for too long.
- Before your first TBI appointment, you will meet with an SCCA dietitian who will tell you how much fluid you need to drink each day. If you are unable to drink enough fluid because of nausea, this can increase dehydration. Tell your SCCA team nurse if you are not able to drink all of your daily fluid.
- To reduce dehydration, you may be started on IV fluids, to be taken each day during TBI. These fluids are given by a portable pump, which is easily carried with you.

Skin Sensitivity

- TBI acts as a heat source, even though you will not feel this right away. Precautions are taken to avoid skin reactions during treatment.
- After radiation therapy, you may notice that your skin appears flushed or darker. Your skin will be more sensitive, especially to sunlight.
- The nurse will check your skin condition each day of treatment.
- To reduce skin reactions:
 - Wear loose-fitting clothes to your TBI appointment.
 - When you arrive at the clinic, you will be given hospital pajamas to put on. At this time, you must remove all undergarments, socks, shoes or slippers, and jewelry.

Questions?

Call 206-598-4141

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help at any time.

UWMC Radiation
Oncology:
206-598-4100

- The clamp holding your central venous catheter will be taken off to avoid metal touching your skin.
- If you wear eyeglasses or contact lenses, you will need to remove them during treatment.
- **DO NOT** use lotion, deodorant, cream, or powder on your skin for the duration of your TBI, unless it is given to you by your radiation nurse.

Alopecia

- Your hair will fall out after treatment. This happens over a span of about 2 weeks. Your hair will regrow.

Parotitis

- Parotitis is swelling of the parotid glands, which are located near and in front of the ears. Parotitis is not common, but has been seen in TBI patients.
- Symptoms occur 4 to 24 hours after the first treatment. Ice packs and Tylenol help to relieve the discomfort from the swelling. Check with the SCCA clinic before taking any Tylenol.
- Symptoms resolve 24 to 72 hours after the completion of TBI.

Diarrhea

- Diarrhea usually develops within the first week after TBI and can be treated with medicines. Tell your nurse if it occurs.

Mucositis

- TBI and chemotherapy affect the glands that secrete mucous and the fast-growing cells that line the mouth and throat. Your mouth and throat may feel dry, swollen, and painful.
- Most patients get mucositis within the first 2 weeks after TBI.
- Mucositis is treated with saltwater rinses, topical medicines, and pain medicines.

UNIVERSITY OF WASHINGTON
MEDICAL CENTER
UW Medicine



**Cancer Center/
Radiation Oncology**

Box 356043

1959 N.E. Pacific St. Seattle, WA 98195
206-598-4100