
Bone marrow

Summary

- Blood cells are made inside bone marrow.
 - Diseases of bone marrow affect the production of blood cells.
 - Some illnesses and treatments require bone marrow transplants.
 - A bone marrow transplant involves matching the tissue types of the donor and the recipient.
 - If you join the Australian Bone Marrow Donor Registry, you could save someone's life.
 - It is very hard to find exact tissue matches outside families.
 - The register is totally confidential.
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Bone marrow is the spongy tissue in the hollow centres of a person's long bones. It is the blood cell 'factory'. Healthy bone marrow releases blood cells into the bloodstream when they are mature and when required.

Without bone marrow, our bodies could not produce the white cells we need to fight infection, the red blood cells we need to carry oxygen, and the platelets we need to stop bleeding.

Some illnesses and treatments can destroy the bone marrow. This leaves the person unable to make the new blood cells they need to fight infection and recover. In some cases, the best treatment is a transplant of bone marrow donated by another person.

Diseases of bone marrow

There are a number of diseases that affect the bone marrow including:

- Leukaemia – a cancer of the blood that starts in the bone marrow. We do not know its exact cause. Symptoms include anaemia, bruising and nose bleeds. Treatment includes chemotherapy (drugs) and radiotherapy, and sometimes a bone marrow transplant from a healthy compatible person
- Reticulum cell sarcoma of bone – a cancerous tumour of the bone marrow, occurring more often in males than in females. Symptoms include pain and swelling. Treatment includes radiotherapy
- Aplastic anaemia – a person stops making blood. This happens mostly in people aged between 15 and 30. The person may have the condition at birth, or certain drugs, chemicals or radiation may be the cause. Often the cause is unknown. Symptoms include weakness, fever and skin haemorrhages (bleeding). Blood transfusions may help for a time, but a severely affected person may die unless they receive a transplant of normal bone marrow
- Defective immune system – some children are born with a defective immune system and are unable to fight disease. Blood transfusions can help, but in the most serious cases, the person will only respond to a bone marrow transplant.

Bone marrow transplant procedure

In a transplant operation, the person receiving the marrow (recipient) is treated with a high dose of chemotherapy or radiotherapy to destroy their diseased cells. The donor's bone marrow cells are then injected into a vein, just like a blood transfusion. The donor marrow finds the bones and settles into the cavities.

Donating bone marrow can save another person's life. Bone marrow donors are matched with people who need a transplant to survive. The donor must have the same tissue type as the recipient. Doctors can check a person's tissue type with a simple blood test.

How to become a bone marrow donor

If you are interested in donating bone marrow, you will go to an interview, and then you will give a blood sample for

tissue typing. The result is then put on a confidential computer record. When a person needs a transplant, several possible donors will attend for additional blood tests, to find the donor with the best match. In practice, the chance of being selected as a donor is relatively small.

As with blood donors, bone marrow donors must answer specific questions relating to the risk of passing infections to the person who receives the donation.

Matching bone marrow donors and recipients

Anybody aged between 18 and 45, who is in good health and with no history of cancer, can donate bone marrow. Just as there are many red cell groups (known as blood groups), there are different white cell groups (known as tissue types). The best tissue type match is usually with a family member (brother or sister). Unfortunately, only one in four people has a suitable donor.

Because there are a great number of tissue types, it takes a very large register of donors (many thousands) to find a matched donor for a person who is not a family member.

Removing bone marrow from a donor

The donor receives a general anaesthetic. A doctor uses a syringe to withdraw some marrow from the donor's hipbones. This is easily done without causing any damage, but the donor may feel some discomfort for a day or two.

Confidentiality for bone marrow donors

The Australian Bone Marrow Donor Registry is confidential and only the Tissue Typing Laboratory will be able to identify you and your tissue type.

Where to get help

- Your doctor
- **Fight Cancer Foundation** Tel (03) 9342 7888
- The **Australian Centre for Blood Diseases**
- The Standing Committee on Ethics in Research on Humans Tel. (03) 9905 2052

This page has been produced in consultation with and approved by:

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