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## Blood donation

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### Summary

- The Australian Red Cross Blood Service collects around 1.3 million blood donations every year.
  - Most of this is used to help people with medical conditions that require blood or blood products regularly.
  - Healthy adults between the ages of 18 and 70 years that meet donation eligibility criteria are able to donate to the Blood Service.
  - Donations are also needed for important medical research.
  - Donor requirements for medical research may be slightly different from those for Blood Service donors.
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The Australian Red Cross Blood Service (Blood Service) collects around 1.3 million blood donations each year. Most of this is used to help people with medical conditions that require blood or blood products regularly. For example, 34 per cent of donated red blood cells are used to help treat people with cancer and blood diseases such as haemophilia.

Medical researchers also need donated blood in order to develop and test new treatments for many medical conditions, such as blood clots, heart attack, stroke and cancer.

### Blood types and donation

The four different blood groups are A, B, AB and O, and each type is either Rh-positive or Rh-negative. O negative blood can be given to anybody if necessary, but it is always preferable to match the exact blood group to prevent dangerous reactions.

Healthy adults that meet donation eligibility criteria are able to donate blood and the procedure is safe and relatively painless.

During a regular donation, you will give around 470 ml of whole blood. This is about eight per cent of the average adult's blood volume. The body replaces this volume within 24 to 48 hours, and replenishes red blood cells in 10 to 12 weeks.

### Blood donor requirements

Donors to the Blood Service must:

- be healthy and not suffering from a cold, flu or other illness at the time of donation
- be aged between 18 and 70 years (other rules may apply if you are a current donor)
- weigh at least 50 kg
- have normal temperature and blood pressure
- meet guidelines designed to protect both the donor and the people who will receive the blood.

Some medications may affect your ability to donate blood. To find out if your medication rules you in or out, call the Blood Service directly.

### Blood donation and mad cow disease (vCJD)

People who spent six months or more in England, Wales, Northern Ireland, Scotland, the Channel Islands or the Isle of Man between 1980 and 1996 are currently unable to donate. This is due to the possibility that they may have vCJD (variant Creutzfeldt-Jakob disease), a human form of BSE or 'mad cow disease'. This condition cannot yet be tested for and may remain dormant for a very long time. Similar precautionary measures apply to donors in New Zealand, Canada and the USA.

### The blood donation process

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You can donate blood to the Australian Red Cross Blood Service at a variety of places, including blood donor centres or mobile units. Donating blood only takes around 10 minutes, but you should allow at least an hour for the whole process, which includes a personal interview and recovery time in the refreshment area. You can donate whole blood every 12 weeks, but you can donate plasma every two weeks.

### **Mandatory tests of donated blood**

All donated blood is screened for bloodborne diseases such as hepatitis, syphilis and HIV.

### **Different types of blood donation**

The main types of blood donation include:

- whole blood donation – a standard donation, consisting of plasma, red and white blood cells, platelets, antibodies and other components
- plasma donation – also known as apheresis. Plasma is separated from the other components by a special machine, and the red blood cells are returned to the donor in cycles throughout the donation
- platelet donation – known as plateletpheresis. This is done in a similar way to plasma donation, but both the red cells and plasma are returned to the donor.

Less common donations include:

- autologous donation – prior to a scheduled operation or transfusion, a person donates blood for their own use
- directed or designated donation – a donor can give blood that will be used for a specific person.

Autologous and directed donations are now rare, occurring only in special medical cases. These blood donations have the same small risks as regular blood donations.

### **Products made from whole blood**

Donated blood is used to make a variety of different products, including:

- red cells – carry oxygen. Most recipients of donated blood are given red cells to boost the oxygen-carrying abilities of their own blood
- platelets – are needed for blood clotting. People who need extra platelets include people with certain diseases, such as leukaemia, or those recovering from a severe haemorrhage (bleeding)
- plasma – makes up 55 per cent of your blood. Plasma can be used in 18 life-giving ways – from treating people with burns and cancer, to protecting people with brain and nerve diseases.

### **Products made from blood plasma**

Your blood is made up of 55 per cent plasma – the straw-coloured liquid that carries your red cells, white cells and platelets. Plasma also contains antibodies and other important proteins. Plasma is processed to make a number of different products including:

- human immunoglobulin (Intragam) – used to boost the immune system
- normal immunoglobulin – used to prevent hepatitis A, including for overseas travellers or for family contacts of people with this illness
- hyper immunoglobulins – used in vaccinations for chickenpox, tetanus, cytomegalovirus and hepatitis B
- anti-D – prevents haemolytic disease of newborn babies by inoculating a mother who is Rh-negative against the incompatible Rh-positive blood cells of her baby
- human albumin (Albumex 20) – used to treat protein deficiency
- Biostate (Factor VIII Concentrate) – used to treat haemophilia A and other bleeding disorders
- human coagulation factor IX (Monofix) – used to treat haemophilia B
- human prothrombin complex (Prothrombinex HT) – used to treat bleeding disorders
- human antithrombin III (Thrombotrol VF) – used to treat a condition characterised by premature blood clotting.

### **Blood donation for medical research**

About eight out of every 10 Australians will experience a blood-related disease at some point in their lives. Blood

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clots can cause heart attack or stroke, and blood cancers (such as lymphomas or leukaemia) make up about 15 per cent of cancers in Australia. New treatments for these life-threatening conditions depend on medical research.

Research scientists need donated blood to investigate the causes of blood-related diseases and to test newly-developed treatments including:

- anti-clotting enzymes – particular enzymes help to break down and remove blood clots from the bloodstream. Understanding this process may help to develop new treatments for life-threatening blood clots
- platelets – investigating how and why platelets stick to blood vessel walls can help determine why life-threatening conditions like heart attack and stroke occur
- blood stem cells – these create blood components such as red blood cells, white blood cells and platelets. Malfunctioning stem cells are thought to cause blood-related illnesses such as leukaemia. Investigating stem cell functions can lead to better treatments
- myeloma – this is cancer of the plasma cells in bone marrow. Donated blood is used to test the effectiveness of new treatments.

### **Blood donor requirements for research projects**

The donor requirements for medical research may be slightly different from those for Blood Service donors, depending on the research project. For example, blood from people with bleeding disorders or people who are taking anti-clotting or anti-inflammatory medications (such as aspirin, warfarin or ibuprofen) is generally not considered suitable for medical research.

People who usually don't qualify as Blood Service donors (such as people who have lived in the United Kingdom) can qualify as donors for medical research. All donors must be aged 18 to 60.

If you are interested in donating blood for medical research, contact the **Australian Centre for Blood Diseases** (ACBD) (Tel. **(03) 9903 0122**) to make an appointment. Appointments are available Monday to Friday between 8:30 and 10 am.

At your first appointment you will receive an information form that outlines the purpose of the research, and a consent form to sign. The blood collection procedure takes about 15 minutes, is safe, and is performed by a fully trained scientist, nurse or doctor. The amount of blood taken depends on the needs of the research project, but will range from 40 to 400 ml. Your body will need only a couple of days to replace 400 ml of blood.

You will be paid a small amount (\$10.00) at each visit to help cover transportation or other costs associated with your visit.

Most people can donate regularly. If you indicate that you would be willing to give future blood donations, your name and contact details will be kept on a database for blood donation requests once every three months (four times per year). If you wish, you can receive information on the results of the research project.

If you have a complaint about any aspect of the research, you can contact the **Standing Committee on Ethics in Research on Humans via the Ethics and Compliance Team**.

### **Consent form for blood donation for medical research**

If you agree to participate in a blood research project, you must sign a consent form. The exact content of the form will vary, but may include a statement that:

- you understand the aims of the research project (this should be explained to you)
- you are willing to donate the required amount of blood
- you know that the blood donation procedure may be uncomfortable, and may result in a small amount of bruising around the needle site
- the blood will be used purely for research, not for transfusion or any other medical purpose
- all information you provide is confidential
- your participation is voluntary and you can change your mind at any stage.

### **Where to get help**

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- Your **GP (doctor)**
- **Australian Red Cross Blood Service** Tel. **13 14 95**
- **Australian Centre for Blood Diseases** – Monash University Tel. **(03) 9903 0122**
- **Monash Ethics and Compliance Team**

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

Australian Red Cross Blood Service

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