Blood transfusion
Summary

- A blood transfusion generally means the transfer of blood from one person to another.
- The donated blood must match the recipient’s blood type, or complications may occur.
- The different types of blood transfusion include red blood cells and other blood components.

If someone has experienced substantial bleeding during surgery or because of an accident, their blood volume may be too low to effectively carry oxygen around the body. In these circumstances, a blood transfusion – giving the person blood donated by someone else – can be lifesaving.

All donated blood is screened for blood-borne diseases such as hepatitis and HIV.

The four different blood types are A, B, AB and O, and each type is either Rh-positive or Rh-negative. (A person’s blood type used to be called their ‘Rhesus type’ but now we simply say ‘Rh type’.) When a transfusion is given, it is important for a person to receive blood of a compatible (or matched) ABO and Rh group. However, in an emergency, if the required blood type is not known and there is not enough time to find out, a person may be given group O negative red blood cells. That is why O negative is known as the universal blood type and is in higher demand than any other blood type.

Blood carries oxygen and nutrients

All cells in the body need oxygen and nutrients, and to have their waste taken away. These are the main roles of the circulatory system. Using the network of arteries, veins and capillaries, blood ferries carbon dioxide to the lungs (for exhalation) and picks up oxygen. From the small intestine, the blood gathers food nutrients and delivers it to every cell.

Blood consists of:
- red blood cells – to carry oxygen
- white blood cells – that make up part of the immune system
- platelets – needed for clotting
- plasma – liquid in which blood cells, nutrients and wastes float.

When blood transfusion is needed

Some of the different conditions that require transfusion of blood or blood products include:
- blood loss – that is severe enough to affect blood volume and circulation
- severe anaemia – where the blood can’t carry sufficient oxygen to the cells of the body
- bleeding – too few platelets can lead to spontaneous bleeding.

Different types of blood collection

The main ways in which blood is collected include:
- whole blood (homologous) collection – whole blood is collected from the donor, separated into different components and given as a transfusion to people with compatible blood types
- apheresis collection – only some components, either plasma or platelets, are taken from the blood of the donor. A machine centrifuges the cells and gives the red cells, or red cells and plasma, back to the donor.

Very uncommon ways in which blood is collected include:
- autologous collection – prior to a scheduled operation or transfusion, a person donates blood specifically for their own use.
- directed or designated collection – prior to a scheduled transfusion, a person requests that only blood collected from family members or friends be used for transfusion.

Autologous and directed donations are now discouraged except where a medical specialist believes there is a case for ‘special need’. Contrary to what some people believe, these blood donations share the same small risks normally associated with homologous donations.

Transfusion complications
Occasional complications caused by receiving a blood transfusion can include:

- **fluid overload** – this can be lessened by introducing the donated blood slowly
- **allergic reaction** – the person’s immune system treats the donated blood products as a threat. Symptoms include itching, dizziness, headache and difficulties in breathing. Severe allergic reactions can sometimes be life threatening
- **haemolytic reaction** – this happens if the person is given the wrong type of blood. The transfused red blood cells are destroyed or broken down. Symptoms include a feeling of pressure in the chest, back pain and difficulties in breathing. Haemolytic reaction can sometimes be life threatening
- **transfusion related acute lung injury (TRALI)** – where the transfused blood causes a reaction that leads to blockages in the blood vessels in the lungs. Symptoms include difficulty in breathing and low blood oxygen levels. This can sometimes be life threatening.

**Donating blood**

A blood donor needs to:

- be aged between 16 and 70 years
- weigh at least 45 kg
- be in good health, including normal temperature and blood pressure
- meet guidelines designed to protect the donor and the people who will receive their blood.

**Where to get help**

- Your doctor
- Your surgeon
- Australian Red Cross Blood Service Tel. 13 14 95 – to make an appointment to donate blood or for more information

**References**

- Blood transfusion: have all your questions been answered?, Department of Health and Human Services, Victoria Government. More information here.

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Blood and blood vessels explained

Blood and blood vessels explained

Blood count

The full blood count (FBC) test looks for abnormalities in the blood, such as unusually high or low numbers of blood cells...

Blood groups

A person's blood group is determined by a pair of genes, one each inherited from their mother and father...

Bone marrow

Bone marrow is the spongy tissue in the hollow centres of a person's long bones and is the blood cell 'factory'...

Circulatory system

The heart, blood and blood vessels work together to service the cells of the body...

Heart explained

The heart is about the size of a clenched fist and lies in the middle of your chest, behind and slightly to the left of your breastbone...

Lipoedema

Lipoedema is a painful, chronic, symmetrical swelling in the legs, thighs, buttocks and sometimes arms due to the accumulation of fat in the subcutaneous tissues. The onset often occurs during puberty...

Lymphatic system

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab
The lymphatic manages fluid levels in the body, filters out bacteria and houses types of white blood cells.

Cholesterol
- **Cholesterol**
  Your body needs cholesterol, but it can make its own. You don't need cholesterol in your diet.
- **Cholesterol - healthy eating tips**
  Replacing foods that contain saturated fats with foods that contain polyunsaturated and monounsaturated fats will help to lower your cholesterol.
- **Genetic factors and cholesterol**
  Familial hypercholesterolaemia is an inherited condition characterised by higher than normal levels of blood cholesterol.
- **Triglycerides**
  If a person habitually eats more kilojoules than they burn, they will have raised triglyceride levels in the blood.

Iron anaemia and blood disorders
- **Anaemia**
  When a person is anaemic, the red blood cells have to work harder to get oxygen around the body.
- **Haemochromatosis**
  Haemochromatosis (iron overload disorder) tends to be under-diagnosed, partly because its symptoms are similar to those caused by a range of other illnesses.
- **Hughes syndrome**
  Hughes syndrome is thickening of the blood caused by abnormal immune system cells.
- **Iron**
  Iron is important for transporting oxygen in the blood.
- **Iron deficiency - adults**
  Don't take iron supplements unless advised by your doctor.
- **Iron deficiency - children**
  Keep iron supplements away from children - as little as one to three grams can kill a child under six years.
- **Porphyria**
  Porphyria can affect the skin, nervous system, gastrointestinal system or all of these, depending on the specific type.
- **Thalassaemia**
  Thalassaemia is an inherited blood disorder that can cause anaemia or death if not treated.

Bleeding clotting and infections
- **Bleeding**
  Bleeding may be minor or it may be a life-threatening medical emergency.
- **Deep vein thrombosis**
  Long international flights are suspected of contributing to deep vein thrombosis in susceptible people.
- **Haemophilia**
  All children with severe haemophilia are given preventative treatment with infusions of blood products before they have a bleed.
- **Needlestick injury**
  A needlestick injury means the skin is accidentally punctured by a used needle. Diseases that could be transmitted by a needle or needlestick injury include human immunodeficiency virus (HIV).
- **Nosebleeds**
  Bleeding from the nose is common in children and is usually not severe or serious.
- **Septicaemia**
  Bacteria in the bowels, urinary tract, mouth and skin can cause disease if they get into the bloodstream.
• **Subarachnoid haemorrhage**
  
  A subarachnoid haemorrhage is any bleed located underneath one of the protective layers of the brain known as the arachnoid layer...

• **Subdural haematomas**
  
  Subdural haematomas are blood clots formed underneath one of the protective layers of the brain...

• **Subarachnoid haemorrhage**
  
  A subarachnoid haemorrhage is any bleed located underneath one of the protective layers of the brain known as the arachnoid layer...

• **Travel tips for seniors**
  
  All travellers should plan carefully, but older people have a few extra concerns when travelling...

• **Von Willebrand disease**
  
  A person with von Willebrand disease may have frequent nosebleeds, heavy menstruation or excessive bleeding from the mouth...

**Blood pressure**

• **Blood pressure**
  
  Healthy eating and lifestyle changes can help to manage high blood pressure...

• **Blood pressure (high) - hypertension**
  
  Hypertension, or high blood pressure, can increase your risk of heart attack, kidney failure and stroke...

• **Blood pressure - keep your blood pressure down (video)**
  
  Heart Foundation of Australia warns of the risk of high blood pressure and tells you what you can do to keep your blood pressure down...

• **Dizziness - orthostatic hypotension**
  
  Postural hypotension is the lightheaded feeling you may get if you leap out of bed very quickly...

• **Fainting**
  
  Common causes of fainting include heat, pain, distress, the sight of blood, anxiety and hyperventilating...

• **Pulmonary hypertension**
  
  Pulmonary hypertension is high blood pressure on the lungs...

• **Shock**
  
  Shock is when there is not enough blood circulating in the body. It is a life-threatening medical emergency...

• **Stroke explained**
  
  A stroke interrupts blood flow to an area of the brain and is a medical emergency...

**Blood vessel and bone marrow conditions**

• **Amyloidosis**
  
  A person with amyloidosis produces aggregates of insoluble protein that cannot be eliminated from the body...

• **Aneurysm**
  
  An aneurysm may have no symptoms until it is either very large or it ruptures...

• **Granulomatosis with polyangiitis**
  
  Granulomatosis with polyangiitis (GPA), formerly known as Wegener granulomatosis is a rare condition that targets the arteries, veins and capillaries of the kidneys and the respiratory system...

• **Henoch-Schonlein purpura**
  
  Henoch-Schonlein purpura causes a purple spotted skin rash which lasts around one to four weeks, and is often marked by relapses...

• **Leukaemia**
  
  Most children and many adults with acute leukaemia can expect to be cured, while chronic leukaemia can be successfully managed...

• **Peripheral vascular disease**
  
  Peripheral vascular disease is the reduced circulation of blood to a body part (other than the brain or heart)...

• **Polycythaemia vera**
  
  Polycythaemia vera is characterised by the production of too many red blood cells, caused by abnormal function of the bone marrow...

• **Raynaud's phenomenon**
Raynaud's phenomenon can be a sign of a more serious underlying condition, so see your doctor if you experience it.

- **Thalassaemia**
  Thalassaemia is an inherited blood disorder that can cause anaemia or death if not treated.

- **Varicose veins and spider veins**
  Smaller varicose veins are usually treated by sclerotherapy - the injection of irritant chemicals into the affected vein.

### Blood-donation-and-transfusion

- **Blood donation**
  Donated blood is used to help people who are sick or injured, or for medical research.

- **Blood transfusion**
  Donated blood is screened for blood-borne diseases such as hepatitis, syphilis and HIV.

- **Organ and tissue donation**
  Discover the facts about organ and tissue donation, decide about becoming a donor and discuss your decision with the people close to you.

### Related Information

- **Blood and blood vessels**
  Bleeding, blood pressure, conditions, risks and blood products.

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- **Kidneys - dialysis and transplant**
  People with kidney failure need dialysis or a transplant to stay alive.

### Related information on other websites

- Blood and Blood Products, Department of Health Victoria.
- National Blood Authority, Australia.
- Victorian Government Health Information - Blood Matters.

### Content Partner

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Multilingual resources on blood transfusion

- A general guide to blood transfusion: information for patients and families
- Blood transfusion: have all your questions been answered?
- Frequently asked questions about blood transfusion

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