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What is Blood?

Blood is essential to life. Blood circulates through our body and delivers vital substances such as oxygen and nutrients to the body's cells. Additionally, blood transports metabolic waste products away from those same cells. There is no substitute for blood, and it cannot be made or manufactured artificially. Therefore, patients in need of a blood transfusion can only rely on generous blood donors.

What are the Components of Blood?

Blood is a bodily fluid that transports substances throughout the body. It is made up of plasma and blood cells.

Plasma constitutes 55% of blood. It is 92% water, and the other 8% is made up of proteins, glucose, mineral ions, hormones, carbon dioxide, and blood cells. Plasma is also the primary medium for the transport of waste products.

Blood Cells

There are 3 main type of blood cells:

- Red blood cells (Erythrocytes)
- White blood cells (Leukocytes)
- Platelets (Thrombocytes)

Red Blood Cells

These cells give blood its red colour as they are the most abundant type. Red blood cells contain a substance called haemoglobin which binds to oxygen and transports it around the body.

White Blood Cells

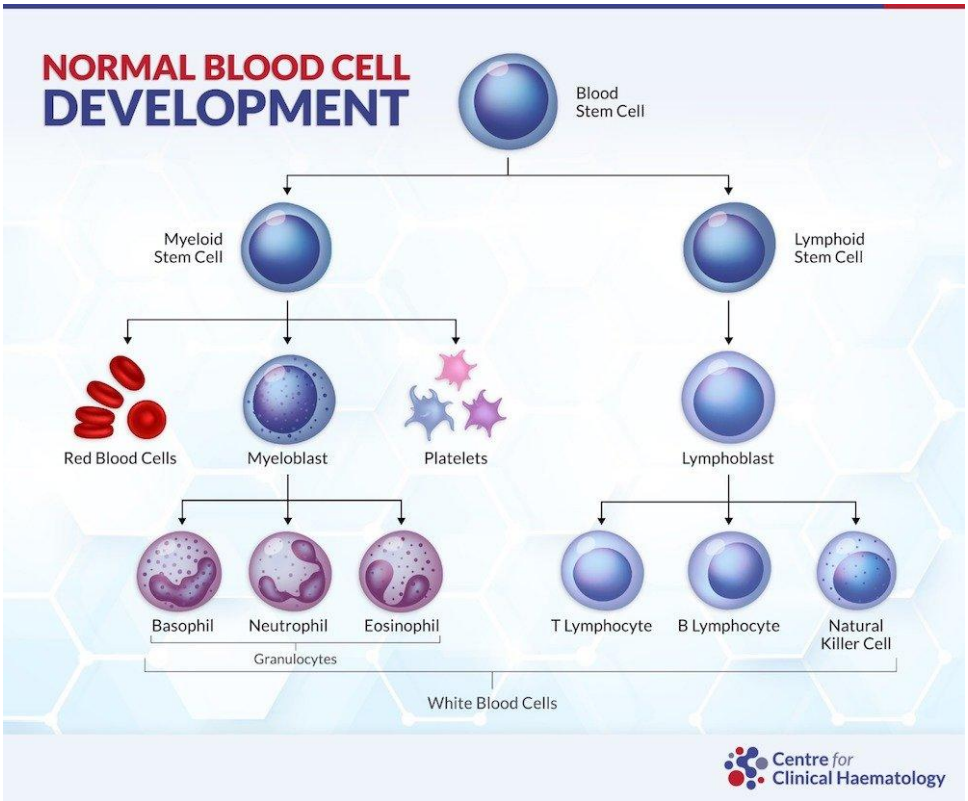
White blood cells account for only about 1% of blood. They are part of our immune system, and each type of white blood cell has a different role to play in terms of protecting the body against pathogens.

There are 5 main types of white cells: neutrophils, lymphocytes, eosinophils, monocytes and basophils. Neutrophils main function is to attack and destroy and bacteria that enters the blood stream. Lymphocytes attack viruses and other pathogens; they also create antibodies to destroy them.

Platelets

Your blood also contains platelets. Platelets help the blood to clot at a site of injury, and prevent excessive blood loss.

Where do Blood Cells come from?



Blood cells develop from hematopoietic stem cells which are formed in the bone marrow. There are two main types of stem cells within the bone marrow – myeloid and lymphoid – which transform to form the different blood cells in our blood. Once the blood cells are mature, they are released from the bone marrow into the bloodstream. Donor stem cells sources may be used to

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treat a variety of diseases, including leukaemia, lymphoma, bone marrow failure, and some immune disorders.

What Does Blood Do?

Blood has many different functions, including:

- **Transportation**
  Blood carries oxygen with red blood cells from the lungs to the rest of the body. Then it takes any waste products and transports it to where it can be passed out of the body appropriately.

- **Regulation**
  It balances the acidity and alkalinity of your body. It also helps to regulate your body temperature.

- **Protection**
  White blood cells are responsible for a significant role in helping the body's immune system by attacking and destroying pathogens. Platelets are responsible for blood clotting, which prevents the excessive loss of blood after an injury.

Blood Groups

Red blood cells have specific proteins on their surface; they are called antigens. Your plasma also contains antibodies which will attack specific antigens if they are found. While there are various types of red blood cell antigens – the ABO and rhesus types are the most important. Your blood group depends on which antigens which occur on the surface of your red blood cells.

If you have Type A antigens on the surface of your red blood cells, you also have anti-B antibodies in your plasma. **You have blood group A.**

If you have Type B antigens on the surface of your red blood cells, you also have anti-A antibodies in your plasma. **You are blood group B.**

If you have both Type A and Type B antigens on the surface of your red blood cells, you do not have antibodies A or B antibodies in your plasma. **You are blood group AB.**

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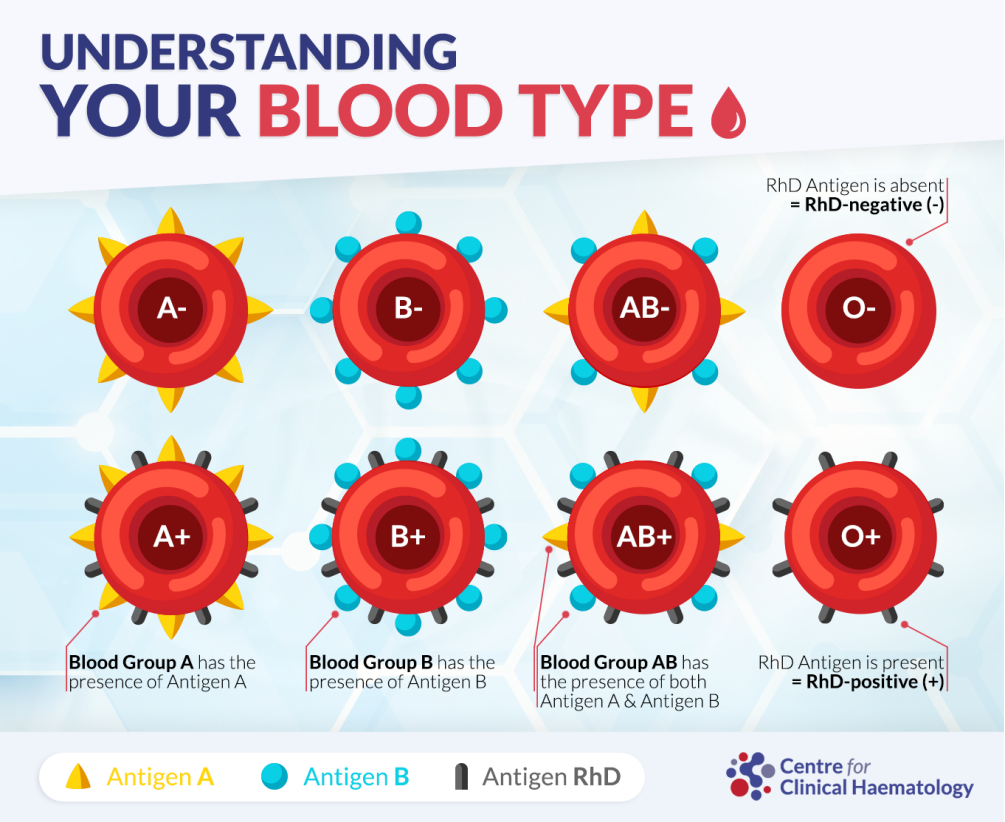
If you have neither Type A nor Type B antigens on the surface of your red blood cells, you have both A and B antibodies in your plasma. **You are blood group O.**

The blood group is considered positive or negative based on the presence or absence of the Rhesus antigen respectively.



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