Australian Red Cross
BLOOD SERVICE

I NEED TO KNOW ABOUT MASSIVE TRANSFUSIONS

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What is a massive transfusion?

A massive transfusion is commonly defined as a transfusion of the body's entire blood volume over 24 hours, or half of the blood volume in four hours. In Australia, massive transfusion mostly occurs in trauma, during surgery, for medical conditions like gastrointestinal bleeding, and haemorrhage during childbirth.

What happens to the body during major bleeding?

The body's response to major bleeding is complicated. The body compensates for blood loss by constricting blood vessels, and the heart pumps faster to circulate available blood. The reduced circulation of blood causes poor delivery of oxygen to the tissues and falling body temperature. This can make the blood more acidic, and together these changes, interferes with the blood's ability to clot and stop bleeding, and even cause more bleeding.

Why give a massive transfusion?

The first priority is to stop the bleeding and to maintain the circulating blood volume. Blood transfusion is used to replace the blood lost, helping to restore oxygen delivery to the body, and to control bleeding by treating the clotting problem.

What blood products are used?

The body has lost whole blood and requires an infusion of all the blood components to keep functioning. It requires a combination of red cells to exchange oxygen, plasma and platelets to make clots and stop bleeding. The ratio of red cells, plasma (FFP) and platelets is debated and a current hot topic in transfusion. Other products such as cryoprecipitate and fibrinogen concentrate may also be used to replace specific clotting factors.

What is a 'Massive Transfusion Protocol' (MTP)?

A rapid, coordinated response to major bleeding or severe trauma is vital and requires good teamwork. Hospitals should develop a 'Massive Transfusion Protocol' which describes the important clinical, surgical and laboratory elements for managing a major bleeding event including what blood components are needed and when. The hospital blood bank may prepare a box or 'trauma pack' containing the necessary blood components to be rapidly delivered to the treating team. In an emergency Group O red cells, Group O or A platelets, and Group AB plasma can be transfused safely until the patient's blood group can be determined.

Are there other treatments for major bleeding?

The physiological changes during major bleeding mean that any blood clots may not be good enough to stop bleeding. Tranexamic acid is a cheap and highly effective drug which helps the body produce stronger clots and reduce bleeding. Recombinant activated factor VII (rVIIa) is a specialised clotting factor sometimes used when other treatments fail to stop bleeding, although it is not licensed for this.

BLOOD FACT

Trauma is one of the world's leading causes of death and disability for people between the ages of one and 44. Around 40% of deaths are due to bleeding or its consequences, establishing haemorrhage as the most common cause of preventable death in this clinical group.