Australian Red Cross
BLOOD SERVICE

WHY DO WE MAKE THREE DIFFERENT PLASMA COMPONENTS?

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How do we collect plasma?

The Blood Service collects plasma two different ways – from whole blood and apheresis donations. After whole blood is donated it is separated into plasma, red cells and (sometimes) platelets. The apheresis machine collects only plasma and gives the red cells back to the donor so they can donate more often. Once it has been collected, both types of donated plasma are treated the same way. The demand for plasma products is increasing which is why the Blood Service is seeking more apheresis plasma donors.

Where does plasma go next?

The Blood Service sends most of its plasma to CSL for fractionation into 14 different products. The Blood Service also makes blood components for use in the clinical setting. The three clinical plasma components the Blood Service produces are Fresh Frozen Plasma (FFP), Cryoprecipitate (Cryo) and Cryo-depleted plasma. These are frozen and can be kept for 12 months.

How much plasma do we supply to hospitals?

In 2012, the Blood Service supplied the equivalent of 148,050 adult doses of FFP, 84,681 of Cryo and 17,355 doses of Cryo-depleted plasma to the hospital system.

Why have three plasma components?

FFP, Cryo and Cryo-depleted plasma contain different amounts of different plasma proteins. Generally speaking, these plasma components are used to treat bleeding and clotting problems. Some disease treatments require replacement of all plasma proteins while other diseases only need specific protein replacement. Clinicians order the blood component that best matches the patient's need.

How are these frozen products thawed?

FFP, Cryo and Cryo-depleted plasma are brought up to room temperature in specially designed water baths. These are normally situated in the hospital's blood bank. This process can take close to half an hour. Larger trauma hospitals may thaw FFP in advance. In the case of major trauma, a hospital laboratory will be thawing FFP in several water baths at a time.

Some examples of what's in FFP, Cryo and Cryo-depleted plasma

Clotting protein	FFP	Cryo	Cryo-depleted plasma
Fibrinogen	★	★	
Factor VIII	★	★	
von Willebrand Factor	★	★	
Factor IX	★		★
Factor X	★		★
Factor XIII	★	★	
ADAMTS13	★		★

When do these plasma components get used?

Clotting protein	FFP	Cryo	Cryo-depleted plasma
Major bleeding (eg car accident)	★★★	★★	
Liver disease	★★★	★	
TTP*	★		★★★
Fibrinogen deficiency		★★★	
Urgent warfarin reversal	★★★		

* Thrombotic Thrombocytopenic Purpura

BLOOD FACT

Cryoprecipitate is used to make fibrin glue – a natural sealant or 'wound glue'. The high levels of Fibrinogen and Factor XIII make it stronger than conventional stitches.