

# WHY IS WHOLE BLOOD SPLIT THREE WAYS?

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**By Sue Heatley**

## How come I donate whole blood, but that's not what gets transfused?

Whole blood is rarely used for transfusion. When a whole blood donation is collected it can be split into three components – red blood cells, plasma and platelets. This way a whole blood donation can be used to help at least three people. Each person gets the component that they need but not the components they don't. For example, platelets can go to a patient who needs those, another patient can receive red cells and a third can receive the plasma component all from the same donor.

## How is this done?

After the whole blood has been collected at the donor centre it goes to our processing laboratory. After a number of checks for suitability, the whole blood is spun in a centrifuge. The red cells go to the bottom and the plasma rises to the top as it is lighter. The white cells and platelets are the layer – also called the buffy coat – in the middle (see Figure 1). An automated machine is used to remove the layers (see Figure 2).

The plasma layer at the top is pushed by this machine into another bag while the red cells at the bottom are pushed into a different bag. This leaves the buffy coat in the middle. These three components are then ready for further processing into plasma products, red cells and platelets.

## So a whole blood donation can be turned into three products?

In fact, it becomes even more than three products. Sixteen products can be made from plasma. Plasma can be used for transfusion, or it will be sent to bioCSL to be made into other products such as immunoglobulin, clotting factors and albumin (see the fact sheet *I Need to Know About Plasma Fractionation*, Vol 1, No. 11). Even after the platelets have been removed, the plasma that remains can also be sent to bioCSL for further processing.

## Why do we need different products?

Each blood component has specific clinical benefits. Often, patients only require a particular component, not necessarily



Figure 1

Figure 2

all of them. For example, a person undergoing treatment for cancer might only require platelets as their own platelets are affected by chemotherapy.

People who have diseases that affect clotting factors only require products that are made from plasma. A patient needs a red cell transfusion because they need more red cells to carry oxygen through their body. By breaking down whole blood into its components, we get the maximum benefit from such a precious resource and the desired beneficial effect in the patient.

## BLOOD FACT

The replacement of glass bottles with plastic bags from 1950, made way for the preparation of different components from one blood donation.