Therapeutic Apheresis Services

Patient Information Leaflet – Automated Red Cell Exchange Procedure

Introduction

This leaflet has been written to give patients information about red cell exchange. If you would like any more information or have any questions, please ask the doctors and nurses involved in your treatment at the NHS Blood and Transplant Therapeutic Apheresis unit.

When you have considered the information given in this leaflet, and after we have discussed the procedure and its possible side effects with you, we will ask you to sign a consent form to indicate that you are happy for the procedure to go ahead. Before any further procedures we will again check that you are happy to proceed.

What is a Red Cell Exchange/Red cell Depletion Exchange?

Blood is made up of red cells, white cells, and platelets, which are carried around in fluid, called plasma. Red cells carry oxygen to different parts of the body and remove waste including carbon dioxide. The red cells can be separated from the rest of your blood, removed and replaced with red cells from blood donated by blood donors. We call this process a red cell exchange.

Your clinician might request that you have a red cell depletion exchange to lower the amount of iron in your blood or to prevent your body reacting to new blood cells (Developing antibodies).

A red cell depletion exchange is very similar. At the start of the treatment, water mixed with a small precise amount of salt (Saline) is used instead of donor blood for a short time. This helps remove some of your red blood cells first. After this, the treatment continues as usual with donor blood.

Why do I need a Red Cell Exchange?

Red cell exchange is usually carried out when there is a problem with your own red cells called sickle cell disease. The red blood cells in people with sickle cell disease can change their shape from round to crescent (sickle) shape and as a result these abnormal red cells can block small blood vessels. This can lead to painful episodes, thrombosis (clots) and anaemia (a shortage of normal red blood cells). Red cell exchange can also be used for treating other conditions that can affect the red blood cells such as malaria and polycythaemia (too many red cells).

Although red cell exchange may help with symptoms, it will not cure the condition as it does not switch off the production of your own red cells. It is likely that this procedure will form only one part of your treatment.

How do we Perform Red Cell Exchange?

Red cell exchange is performed using a machine called a Blood Cell Separator which can separate blood into its various parts. The machine separates and removes the red cell portion of your blood and gives you back replacement red cells. The remaining part of your blood, including white cells and plasma, will be returned to you unaltered during the treatment.

For us to carry out a red cell exchange, a needle will be put into a large vein in each of your arms. If you wish you may receive a small injection of local anaesthetic to numb the skin before we insert the needles. The machine will then draw blood in from one arm and return it through the needle in your other arm. Your red cells are removed and the replacement red cells added as the blood passes through the machine. Only a small amount of your blood passes through the machine at one time (about the same amount as is in a mug of coffee). **It is essential that there is a steady flow of blood through the machine using large veins, and to ensure this we need to assess your veins. If the veins in your arms are not suitable, we may need to use ultra sound guided cannulation or alternative devices to access your veins such as** a special central line inserted into a larger vein after a local or general anaesthetic. If this is necessary you will be given more information about the type of line to be used, why it is needed and how it would be inserted.

Red cell exchanges can be done as an outpatient if you are well enough. Occasionally you may need to be admitted to hospital, or you may already be an inpatient, in which case you may still attend the unit but be transported to the unit from the hospital ward. However, if you are not well enough we will come and treat you on the ward at your bedside.

How long does it take?

The red cell exchange takes between two and three hours depending on how much blood we need to replace. We calculate how many red cells you have in your body according to your height, weight and blood counts and this determines how long your treatment takes.

If you are having a Depletion exchange it does not increase the duration of your procedure it takes about 15–20 minutes at the start of your red cell exchange.

What is it like being on the machine?

Your safety and comfort are of the utmost importance to us and a specialist apheresis nurse will look after you throughout the procedure.

The red cells will be removed while you rest on a reclining chair or bed. We will try to make you as comfortable as possible. You should not hesitate to ask for anything that you need during the exchange. For your comfort it is best to wear loose-fitting clothing.

As your blood enters the cell separator, an anticoagulant (blood thinner) solution is added to it to stop it clotting in the machine. This can cause any of the following symptoms:

- *tingling in your lips, nose or fingers*
- *a metallic taste in your mouth*
- *nausea and/or a 'shaky' vibrating sensation that may or may not be unpleasant.*

These side effects are caused by the solution temporarily lowering the body's calcium levels. Some people experience a 'heavy' feeling in the arm as their blood is removed. You may also feel some vibration around the site of the needle. These symptoms will stop once the procedure is finished. If you experience any symptoms that cause you concern or distress let the nurse know immediately so that we can deal with them, as they are normally simple to treat.

During a red cell exchange you will receive several blood transfusions in a relatively short time. Even though blood components are matched to your blood group they may still cause side effects. Most side effects are mild and easily treated. Severe reactions are extremely rare, and staff are trained to recognise them. More information is available in the NHSBT leaflet 'Will I Need a Blood Transfusion' which we will give you. You can also visit www.blood.co.uk and the national patient safety agency website www.npsa.nhs.uk for further information.

It is essential that you tell us of any symptoms you experience as soon as they occur, especially at the start of each bag of blood. If you have had a reaction to a blood transfusion in the past, then you should inform the staff before your treatment starts.

Occasionally we cannot return the blood that is in the machine back to you which means you lose some red cells as a result. The machine only holds a relatively small amount of blood, and this loss should not cause you any problems. We will however routinely check your blood levels to ensure they remain at a safe level.

Preparation before treatment

Some drugs are affected by the red cell exchange. We will ask you about any medicines you are taking and will let you know if you need to miss or delay taking a dose until after the procedure.

It is important to have something to eat and drink before the procedure and you can eat and drink normally during and after a red cell exchange. Please bring some food with you as the day can be very long. Food such as sandwiches and rolls are easiest to eat when attached to the machine.

We can offer a limited range of hot and cold drinks and savoury and sweet snacks such as crisps or biscuits. We have no facilities for preparing hot food, however there are catering outlets in the hospitals near most of our units which you may like to visit before or after the procedure.

Once you are connected to the machine you will be unable to visit the toilet so please go immediately before your treatment starts. Assistance will be provided if you do need to use the toilet once you are attached to the machine. Commodes, urinals and bed pans are available for use.

You are welcome to bring a friend or relative to sit with you during the red cell exchange. Try to avoid bringing children as you will be attached to a machine and therefore will be unable to attend fully to their needs. If you do have to bring children with you it is preferable that another adult accompanies you to take care of them.

After a Red Cell Exchange

Some people feel tired after the procedure is finished. It is advisable that a friend or relative takes you home

afterwards. If this is a problem, it may be possible for transport to be arranged. Please inform your nurse or doctor in advance so that he or she can help with arrangements if needed. **You should not drive yourself home**. You should not do any hard physical exercise for the rest of the day.

If you are having regular red cell exchanges as an outpatient and you become unwell - for example if you have flu or a chest infection - your red cell exchange may need to be delayed. If you are feeling unwell or having any concerns, do not hesitate to contact the Therapeutic Apheresis unit.

How many Red Cell Exchanges are required?

The number of red cell exchanges you have will depend on the nature and severity of your condition and on how well you respond to treatment. You may need one or two red cell exchanges. For some patients they may form part of a long-term treatment programme, for example every eight weeks and some patients only need one exchange.

You are welcome to visit the unit before your procedure if this is an option for you. You will be able to meet the staff and become familiar with the unit where your procedure will take place.

Please Note: It is important to arrive on time for your appointment as another patient may be booked for treatment after you.

Please do not hesitate to ring if you have any questions or queries. We are here to help you.