Automated red cell exchange for patients with sickle cell disease
Joint Red Cell Unit
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1 Introduction

The medical and nursing teams treating you have recommended you to have an Automated Red Cell Exchange (known as Auto-REX). This may be for one of the following reasons: They want a quick way of reducing the amount of HbS (sickle cell blood) in your blood e.g. before an operation or if you are severely unwell; your current transfusion regimen is making you iron overloaded, or is not working as well as we would have hoped e.g. you need the blood too often or we cannot keep your sickle cell levels low enough. Some people just need a “one-off” exchange for example before an operation, or if you are normally very well and suddenly get sick. Some people may need the exchanges regularly for a short period of time e.g. if they are pregnant. Others may need to be on a long-term exchange transfusion programme because of on-going problems with their sickle cell disease or prevention of problems e.g. stroke.

2 What are the benefits?

Some of the benefits of automated exchange are the same as for manual exchange, for example:

- Feeling more healthy
- Getting less problems with your sickle cell disease
- Preventing problems e.g. if you are at risk of stroke
However, the advantages of the automated over the manual exchange are that it is faster and more effective so that you can reduce the amount of HbS to a lower level. This means that the time between exchanges is greater as your levels remain lower for longer. Also the exchange swaps your red cells for the donor red cells very effectively so that overall you do not get extra red cells given to you, preventing iron overload.

3 What are the disadvantages?

The automated exchange will need excellent blood flow so the machine can function. People without good veins in their arms may need central venous access with a Vascath, which is like a longer, wider cannula, usually put into a vein in the groin (see below).

4 How long does it take?

The red cell exchange will take 1-2 hours but you will need fluids given to you afterwards, line removal, further blood tests and other observations afterwards so you should expect to stay for 3-6 hours.
5 How often will I need to have an automated red cell exchange?

This is variable. If you are just having a “one-off” exchange, you may never have one again. If it is recommended that you go on the programme then you can expect to have exchanges 4-8 weekly, with most people having exchanges 6 weekly. There are weekly meetings with Auto-REX nursing and medical leads to review the results of the people on the programme in the context of how they are doing and any problems they are having. Thus the programme is tailored to the individual. It sometimes takes a while for the frequency of Auto-REX to be achieved. You will have the opportunity to talk with the apheresis nursing team. Your consultant and the Auto-REX nurse will discuss your treatment when you are seen in clinic.

6 What happens during an automated red cell exchange?

You will need to attend 48-72 hours prior to the exchange for blood tests, the Auto-REX coordinator will tell you when this should be. On the day of the exchange, blood is taken out of a large vein in your arm or Vascath into a machine called a cell separator. Inside the machine, the blood is spun very quickly so that the blood separates into layers. The separated plasma and other blood cells are returned to you with donated red cells. Your own red cells will travel up into a collection bag. Only about 180mls of blood will be outside of your body at any one time.
Please note: if we have had problems using your veins in the past, you may require a Vascath line to be inserted into the large vein in your groin.

This will be removed 1 hour after the procedure. If we have had problems with using Vascaths in the past, we will discuss with you the possibility of having a Vortex Port. Please speak to the Auto-REX coordinator should you want any further information regarding these issues.

Please wear loose clothing or bring something loose to change into e.g. tracksuit bottoms. You will be able to eat and drink as normal. The procedure will take place in the Apheresis Unit which is an 8 bedded bay. Children or those with infections or particular needs may be treated in one of the two side rooms. You will be allowed to have a friend or relative with you but as this is a busy area, with several patients treated at once, we have a limit of one visitor per bed and ask that you are respectful of your fellow patients.

7 Are there any side effects?

Yes there are side effects, but they do not affect everybody.

Lowered calcium levels: Your blood would normally clot when leaving the body. To prevent this happening we use a blood thinner or “anticoagulant” call ACD-A. Calcium is essential for your blood to clot. The ACD-A binds with your calcium to prevent clotting. We will give you a drip to replace your calcium.
Transfusion reaction: Another possible rare side effect is a reaction to the donor red cells. Even though we use the very safest possible products at UCLH there is always the possibility that your body will react to a donated product. Early signs of a reaction may include itching, hives and wheeziness.

Later signs (when you go home) may include becoming yellow (jaundiced), pale (anaemic) and passing very dark urine. Please inform us immediately if these symptoms develop. If you have already left the hospital please use the contact details in this leaflet.

Low platelet count: Your platelet count will be lowered by the exchange, though as most people with sickle have high platelet counts to begin with this usually means that the platelet counts remains within the normal range. This will naturally increase back to your normal levels in the days after the exchange.

Feeling faint: Sometimes if you get up too quickly after an exchange you can feel a bit faint. Please do not get up until the nurses have taken your blood pressure.

8 what happens after the procedure?

After the exchange you will have intravenous fluid over 1 hour and then blood tests. We will then remove your Vascath or cannula. If you have had a Vascath you will have to stay for 30 minutes to ensure that the any bleeding has stopped. If you are on the red cell exchange programme you will be given a letter with the time and date of your next exchange before you leave.
9 How can I be part of the red cell exchange programme?

Your consultant will refer you to be seen by the designated consultant in the adult or paediatric clinic. They will see you with the Auto-REX coordinator and assess your suitability for the programme and what kind of access you would need. They will explain the process to you, show you around the department and you will also need to feel confident that this is what you want to do. If you are confident about going ahead then you will be asked to sign a consent form, this is because we want to involve you in your care and know that you have understood what we will be doing and why and that you have had an opportunity to ask questions. You will need to commit to coming on time for your blood test, line insertions and the procedure. Remember to bring your own supply of pain relief as we do not give injectable pain killers before or during routine exchange procedures. If you find that you have become unwell on your procedure day, you must let the Apheresis team know and they will arrange for you to be admitted and re-schedule your procedure. Your place on the programme will be dependent on you adherence to UCLH Trust Guidelines on behaviour and will be reviewed on a yearly basis. Please ask if you would like any further information regarding this.
10 How to contact the team

Consultants:
Professor John Porter
Dr Sara Trompeter
Professor Gordon Stewart
Dr Ratna Chaterjee
Dr Bernard Davis
Dr Farrukh Shah
Dr Andrew Robins

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11 Where can I get more information?

Antenatal and Newborn Screening
http://sct.screening.nhs.uk/default.htm

Sickle Cell Society
http://www.sicklecellsociety.org

Sickle and Thalassamia Association of Counsellors (STaC)
http://www.stacuk.org

Sickle Cell Information Centre
http://www.scinfo.org

UK Forum on Haemoglobin Disorders
http://www.haemoglobin.org.uk

UCL Hospitals cannot accept responsibility for information provided by external organisations.
Space for notes and questions