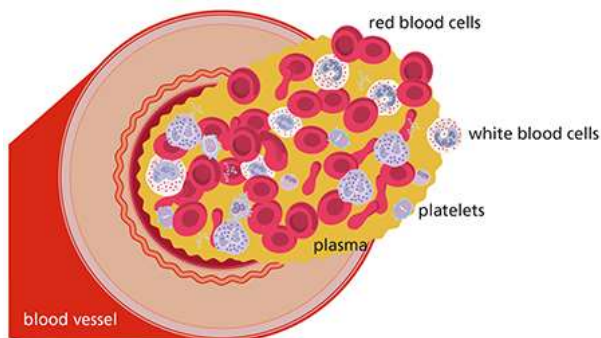




Plasma exchange in immune-mediated neurological conditions: information for families

Plasma exchange, or plasmapheresis, is a procedure that removes plasma from the blood and replaces it with new plasma fluid. This information sheet from Great Ormond Street Hospital (GOSH) explains about plasma exchange and how it is used in immune-mediated neurological conditions. It also describes what to expect when your child comes to GOSH for treatment.

Plasma is part of blood. It is the liquid that supports the circulation of red blood cells, white blood cells and platelets. Plasma is mainly water and contains dissolved minerals, proteins and antibodies. If blood is allowed to separate, the plasma will look yellow and the rest of the blood will look red.



In plasma exchange, blood is removed from the patient (a small amount at a time) and separated so that the plasma can be discarded. The red and white blood cells and the platelets are returned to the patient, along with the replacement fluid.

An anti-coagulant is added to the blood to stop it clotting. Throughout the procedure, the blood is pumped around your child's system as usual by their heart. Only a small amount is out of the body at any one time.

Plasma exchange is always done in hospital and a nurse or technician who is trained in the procedure will stay with your child throughout. Before the procedure begins, your child's doctor will ask you to sign a form giving permission for your child to have a plasma exchange.

The person bringing your child to the procedure should have 'Parental Responsibility' for them. Parental Responsibility refers to the individual who has legal rights, responsibilities, duties, power and authority to make decisions for a child. If the person bringing your child does not have Parental Responsibility, we may have to cancel the procedure.

How does plasma exchange help in immune-mediated conditions?

Some conditions can cause harmful substances to circulate in the blood. Plasma exchange allows these harmful substances to be removed by separating them off and then replacing the plasma which contains them.

For example, some conditions confuse the body's immune system and cause it to produce substances called autoantibodies, which attack

healthy cells. Plasma exchange, in conjunction with drug therapy, may solve the problem by removing the autoantibodies and stopping the body from producing any more.

In Neurology, plasma exchange is often used in children with Acute Transverse Myelitis (ATM), Autoimmune Encephalitis or Chronic Inflammatory Demyelinating Polyneuropathy (CIDP).

Your child's doctor will discuss with you the reason why your child needs a plasma exchange and how it might help.

What does plasma exchange involve?

Two alternative methods are used to separate plasma from the rest of the blood. One uses a piece of equipment called a plasma filter, the other a device called a blood cell separator. Both methods are used at GOSH. Your child's medical team will make a decision based on various factors including the size of your child and the nature of their illness. Both methods require an intravenous catheter to access the blood.

Does plasma exchange hurt?

The procedure does not hurt but it may make your child feel tired. Your child may feel some discomfort when the intravenous access catheter is inserted but this will wear off.

How long will it take?

A plasma exchange takes about two to three hours, depending on the amount of plasma that needs to be removed. Your child will need to be connected to the plasma exchange machine, either sitting in bed or in a chair, but can play or do schoolwork as normal if they feel up to it. Your child can eat and drink during the procedure.

How many plasma exchanges will my child need?

This depends on your child's medical condition. The doctor will usually recommend one exchange a day for a minimum of five days. More will be prescribed if the medical team feel this would be beneficial. The intravenous catheter will remain in place for as long as it is needed.

Where will it happen?

The procedure can be done anywhere in the hospital. If your child is well the plasma exchange will usually be carried out on Koala Ward. However, it may also be done in the Paediatric Intensive Care Unit (PICU) if your child needs extra support. All plasma exchange at GOSH is carried out by NHS Blood and Transplant (NHSBT).

Are there any risks and side effects associated with plasma exchange?

There is a small risk that your child may have an allergic reaction to the replacement plasma. Medication may be given before each exchange to minimise this risk.

Donated blood products will be used in the procedure. This will be mostly albumin (a vital protein in the blood stream) but will include some blood or plasma. There is a small risk that diseases can be passed on in this way, but every product used is screened according to recommendations from the transfusion service.

The exchange of large volumes of plasma may cause shifts of fluid that can lead to changes in blood pressure, cold hands and feet or breathlessness. Possible side effects during the treatment include dizziness, nausea or a feeling of cold. Your child may feel tired after the plasma exchange.

There is also a small risk of bleeding (as clotting can be affected) or having some changes to the sugar, salt and calcium levels in your child's body. The nurse will monitor your child's vital signs (for example, blood pressure) during the plasma

exchange, in order to detect any problems as quickly as possible.

Plasma exchange will lower or suppress the body's immunity (its ability to fight disease). Over a few days this should not cause problems. However, if your child has already been treated with immunosuppressive drugs there is a greater risk of infection.

If the symptoms persist, your child's medical team may recommend that the plasma exchange should be stopped.

How soon can I take my child home after the plasma exchange?

In most cases your child will receive plasma exchange as an inpatient as a treatment for their condition requires a hospital stay. Once they have improved from their underlying conditions, they will be able to go home.

If you have any questions, please telephone the Clinical Nurse Specialist for Neuroimmunology on 020 7405 9200 ext 5051 or 0460. You can also call Koala Ward on 020 7829 8826.