

Plasmapheresis Fact Sheet

(plaz-ma-fur-EE-sus)

Plasmapheresis is the withdrawal of whole blood, the removal of plasma (liquid portion of the blood), and the return of remaining blood components.

What Conditions Are Treated by Plasmapheresis:

The procedure is used to treat a variety of immune disorders, including Goodpasture's syndrome, myasthenia gravis, Guillain-Barre syndrome, lupus, and thrombotic thrombocytopenic purpura (TTP).

It is also used to treat Waldenström's macroglobulinemia with hyperviscosity (increased thickness of the blood). In WM, the goal of plasmapheresis is to reduce the amount of IgM, most of which is in the plasma.

Plasmapheresis may also be used to collect plasma for donation.

What Process is Used for Plasmapheresis:

During plasmapheresis, blood is initially taken out of the body through the use of large-bore needles in the limb veins (usually the arms) or an implanted catheter in the large veins of the neck (internal jugular vein), chest (subclavian vein or axillary vein), or groin (femoral vein). If a catheter is used, it must be inserted under local anesthesia or light sedation beforehand. A Hickman catheter is the type most commonly selected for this purpose.

Medication to prevent the blood from clotting (an anticoagulant) outside the body is used during the plasmapheresis procedure. Plasma is separated from other blood components by one of three methods:

- Continuous flow centrifugation: Two venous lines are used. This method requires slightly less blood volume out of the body at any one time than does discontinuous flow centrifugation, as it is able to continuously spin out plasma. This is the method most commonly used today.
- Discontinuous flow centrifugation: One venous line is required. Typically, a 300 mL batch of blood is removed at a time and centrifuged to separate plasma from blood cells.
- Plasma filtration: Two venous lines are used. The plasma is filtered using standard hemodialysis equipment.

Once the plasma has been removed, the remaining blood is returned to the patient along with a plasma replacement, such as albumin or an albumin and saline mixture. During the course of one session, three-four liters of plasma may be removed. A single plasmapheresis session may be effective, although it is more common to have several sessions over the course of a week or two.

Plasmapheresis Side Effects:

Side effects may include bleeding or a hematoma (blood under the skin) from needle placement. If a catheter is used, bleeding may occur around the catheter site.

Bacterial infections are more prone to occur with catheter use, and the bacteria can enter the bloodstream and cause sepsis. Great care must be taken to keep the catheter site clean and dry.

The anti-coagulant usually used in plasmapheresis is citrate, which has a tendency to bind with calcium in the blood, potentially causing dangerously low calcium levels. To prevent this, calcium may be given intravenously (IV) or by mouth during the procedure.

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Another potential complication during the procedure is low blood pressure. Patients may experience dizziness, lightheadedness, or fainting.

Since plasma contains blood clotting factors, its removal may lead to a temporarily decreased ability of the blood to clot.

When to Contact Your Doctor or Health Care Provider:

Tell your doctor if you have a history of transfusion reactions or if you are taking ACE inhibitors.

Notify your plasmapheresis technician immediately if you should experience any of the following signs or symptoms: tingling of the lips, dizziness, lightheadedness, sweating, coldness, cramps, bleeding from a vein or from the catheter site, itching, wheezing, or a rash.

If you have a catheter, notify your doctor if you experience redness, heat, or swelling at the catheter site or if you have fever or chills.

Self-Care Tips While Undergoing Plasmapheresis:

The procedure usually takes two-three hours. Dress comfortably in short sleeved shirts and loose fitting clothes.

Hydrate well before and after the procedure. A light meal beforehand is also helpful.

Go to the bathroom just prior to the procedure.

Your mobility will be limited during the procedure. Reading, listening to music, or similar tasks will help to pass the time.

Monitoring and Testing While Undergoing Plasmapheresis:

Your blood pressure, temperature, and pulse will be checked regularly while you are undergoing plasmapheresis. Your doctor will probably order a complete blood count and a check of your IgM level at the conclusion of your procedure.

How Plasmapheresis Works:

In the case of WM, plasmapheresis is usually performed when your serum viscosity (blood thickness) reaches the level where you are at risk for complications from hyperviscosity syndrome. When some of your plasma (containing IgM) is removed and discarded, your serum viscosity will decrease to acceptable levels. Plasmapheresis may be performed just prior to chemotherapy or monoclonal antibody treatment to bring down the IgM level and reduce the chance of an IgM "flare," but this is usually unnecessary unless the patient has symptomatic hyperviscosity.

Plasmapheresis in WM is a temporary measure to reduce IgM because the procedure itself has no effect on the growth of cancer cells or on IgM production. Some patients who are refractory to chemotherapy can be treated with plasmapheresis on a long-term basis.

NOTE: The information in this fact sheet is intended to be helpful and educational, but it does not constitute an endorsement by the IWWMF and is not meant to be a substitute for professional medical advice.