

# PLASMA EXCHANGE AND INTRAVENOUS IMMUNE GLOBULIN

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The human immune system protects the body from foreign invaders, such as bacteria and viruses. At times, the body's immune system goes awry and begins to attack its own tissues. This can result in autoimmune disorders and inflammatory diseases. Plasma exchange (PE) and intravenous immune globulin (IVIG) are treatments designed to either remove the abnormal antibodies produced by the body or modulate the immune system to reduce the autoimmune response or reduce the inflammation. PE and IVIG have been used to treat myasthenia gravis (MG), Guillain-Barré syndrome (GBS), chronic inflammatory polyneuropathy, polymyositis, central nervous system systemic lupus, and vasculitis. The use of PE and IVIG in multiple sclerosis is being investigated.

Plasma exchange, also known as plasmapheresis, may help the individual with an autoimmune or inflammatory neurologic disorder. Plasma exchange is a procedure in which blood is removed from the body through an intravenous (IV) needle in the arm. A machine separates the whole blood into its two parts, which include cells (solid) and plasma (liquid). Abnormal antibodies circulate in the plasma. During PE, the plasma is removed and replaced with a blood product called albumin or fresh-frozen plasma. The cells or solid portion of the blood is mixed with the plasma replacement and returned to the body. The person's own plasma with the abnormal antibodies is discarded.

PE is usually performed on an outpatient basis. Some people may need to be hospitalized, and others may already be in the hospital during treatment. PE involves the insertion of an IV needle into both arms, although one arm may be used. The blood is removed through one IV and returned through another. The time required to complete one PE procedure varies from 1 to 3 hours, depending on factors such as height, weight, and amount of plasma to be exchanged. Some people are prescribed PE three times a week. Others have treatments daily, weekly, or even monthly. Your physician, your present condition, and your response to treatment will determine

the number of PE treatments prescribed. After the treatment, the IV needles are removed. If long-term treatment with PE is needed, a special catheter designed for long-term use may be placed into a larger vein in the shoulder or groin. This catheter is left in between treatments. A person's vital signs, including blood pressure, pulse, and respirations, are monitored throughout the procedure.

In preparation for the procedure, you should eat and drink fluids as you normally would. You should check with your physician about taking your medications before the procedure. Some medications are bound to plasma and may be cleared out of your system during the procedure. These medications should be taken after the procedure. You should also wear comfortable clothes and bring a radio or cassette player with headphones to help you pass the time.

Immediately after the procedure, many people do not feel any different than before the procedure. Others may feel a transient tiredness. Adverse effects that may occur during the treatment include a drop in blood pressure (hypotension), feeling of faintness, dizziness, blurred vision, or chills. Another rare adverse reaction is an allergy to the solutions used. Signs and symptoms of an allergic reaction include itching, wheezing, and rash. These symptoms usually occur during the treatment. One rare adverse effect of the treatment is bleeding from the solutions used to prevent blood from clotting in the IV tubing. A loss of important electrolytes, including potassium and calcium, can also occur as a result of PE. Laboratory studies are performed before and after the procedure to monitor clotting factors and electrolytes.

Many people with MG and GBS are treated with PE, because it works quickly to improve their strength. Most people begin to improve within the first few days of treatment. For the person with MG, the improved muscle strength is only transient, and weakness may return within 1 to 2 months after the treatments are discontinued. People with severe GBS have a better long-term outcome when treated with PE.

There are several reasons why a person with MG may require PE. One is to treat severe muscle weak-

