Guillain-Barré syndrome (GBS) is a type of autoimmune peripheral neuropathy. It is an autoimmune disease, meaning that the immune system that is used to defending the body against foreign (bacterial, fungal, parasitical) invaders gets confused and starts to attack the body (in the case the peripheral nervous system) as though it is a foreign invader.

Peripheral nerves are all the nerves that come out of the central nervous system (brain and spinal cord) and control muscles, sensation, and default basic bodily functions (such as bladder/bowel control, heart rate, blood vessel caliber, etc.). In GBS, the immune system attacks the myelin sheath of nerves (the insulation around the electrical wires). The disease entity is also known as acute inflammatory demyelinating polyradiculoneuropathy (AIDP).

**What are the symptoms?**
Clinical symptoms experienced in GBS are the result of the immune system attack on the peripheral system, and can involve weakness, numbness, tingling, pain, blood pressure instability. The disease can present in a variety of ways: from mild to severe, minutes to days, patchy to widespread. Classically, the disease is presented as an ascending weakness, with weakness starting in the legs and proceeding up the body. Patients can complain of pain in the legs and back, as well as numbness, tingling, weird sensations.

The disease becomes a medical emergency when respiratory function is compromised. This can affect one-third of patients, and machines to tide over a patient’s breathing and care in an intensive care unit may be necessary.

**What is the cause?**
The disease is rare and can affect 4-40 people per million per year. It can affect all ages, however there is a predominance in patients over age 55. The reason why the immune system becomes confused is not always clear on an individual basis. Up to two-thirds of patients have prior medical events such as viral infections, bacterial infections, surgery, or vaccinations. Prior infections can include the flu virus, meningococcal bacterial infection, *Campylobacter jejuni* bacterial infection, cytomegalovirus (CMV) infection, Epstein-Barr virus (EBV) infection, *Mycoplasma pneumoniae* bacterial infection.

Different types of vaccinations have been associated with GBS and the data is controversial. It is most likely that the H1N1 flu vaccine of 1976 caused an increase in the number of patients with GBS. However since then multiple studies have been conducted to study the connection between influenza vaccinations and GBS. The answer seems to be if there is a connection, it is a very small association. A study of Kaiser Permanente Northern California found 550 confirmed cases of GBS in their 3.2 million patient database over the years of 1995-2006. Only 18 cases (3.3%) occurred within 6 weeks of vaccination. The United States Center for Disease Control has found only a minimal increase in the cases of GBS in the seasonal influenza vaccines or H1N1 influenza vaccines of the 2009-2010 H1N1 season. It is clear that the influenza virus causes death and disabilities, and therefore, each individual must weigh their risk of being afflicted with flu versus their minimal increased chance of developing GBS (increasing the risk from ~1.2 to 1.9 per 100,000 people).

**What are the tests to diagnose GBS?**
The diagnosis of GBS is a clinical diagnosis aided by several tests. The main tests are to rule out diseases of the central nervous system affecting the brain and spinal cord. Nerve conduction
studies to study the conduction speeds of nerves can be helpful but may not show any abnormalities in the early part of the disease when the diagnosis is the most pressing. Repeat nerve conduction studies sometimes may be needed. Spinal fluid study may be helpful and can show a specific pattern after a few days of the disease (albumino-cytological dissociation). The spinal fluid studies are most helpful in ruling out central nervous system infection/inflammatory diseases that would make the diagnosis of GBS less likely.

**What are the treatments for GBS?**
The most important treatment for GBS is to support the patient through their period of respiratory compromise. As the disease is an autoimmune disease, medications to counter an overactive immune system are used. Plasma exchange (washing one’s blood of bad humors/humoral agents) or intravenous immunoglobulin (IVIg, a collection of human antibodies used to counteract the bad humors/humoral agents) is used in patients early in the disease or moderately-to-severely disabled. Corticosteroids are not indicated.

**What to expect?**
GBS can be very scary where someone healthy can in minutes-to-days be left weak, in pain, or on a respirator. The disease usually reaches its maximal effect at nine days but by definition should not progress beyond four weeks. Death can occur in 3-10% of patients, and is usually related to lung and heart failure. Most people get better. Patients can recover function over a few weeks to as long as a few years. Having a good support system, good attitude, and good physical therapy are all keys to improvement. Recurrence can occur in 2-5%. Fatigue is a common complaint.

**What are some resources?**

- [National Institute of Neurological Disorders and Stroke](https://www.ninds.nih.gov/)
- [GBS/CIDP Foundation International website](https://www.cidp.org/)
- [Mayo Clinic website](https://www.mayoclinic.org/)
