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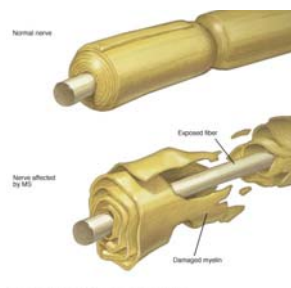
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Multiple sclerosis (MS) is a potentially disabling disease of the brain and spinal cord (central nervous system).

In MS, the immune system attacks the protective sheath (myelin) that covers nerve fibers and causes communication problems between your brain and the rest of your body. Eventually, the disease can cause permanent damage or deterioration of the nerves.

Signs and symptoms of MS vary widely and depend on the amount of nerve damage and which nerves are affected. Some people with severe MS may lose the ability to walk independently or at all, while others may experience long periods of remission without any new symptoms.



Multiple sclerosis

In multiple sclerosis, the protective coating on nerve fibers (myelin) is damaged and may eventually be destroyed. Depending on where the nerve damage occurs, MS can affect vision, sensation, coordination, movement, and bladder and bowel control.

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There's no cure for multiple sclerosis. However, treatments can help speed recovery from attacks, modify the course of the disease and manage symptoms.

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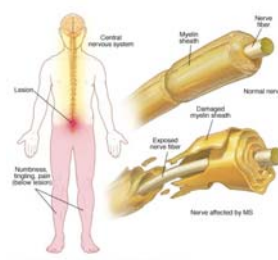
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Symptoms

Multiple sclerosis signs and symptoms may differ greatly from person to person and over the course of the disease depending on the location of affected nerve fibers. Symptoms often affect movement, such as:

- Numbness or weakness in one or more limbs that typically occurs on one side of your body at a time, or the legs and trunk
- Electric-shock sensations that occur with certain neck movements, especially bending the neck forward (Lhermitte sign)
- Tremor, lack of coordination or unsteady gait



Myelin damage and the nervous system

In multiple sclerosis, the protective coating on nerve fibers (myelin) in the central nervous system becomes detached and eventually destroyed. This creates a lesion that may cause numbness, pain or tingling in parts of the body.

Vision problems are also common, including:

- Partial or complete loss of vision, usually in one eye at a time, often with pain during eye movement
- Prolonged double vision
- Blurry vision

Multiple sclerosis symptoms may also include:

- Slurred speech
- Fatigue
- Dizziness
- Tingling or pain in parts of your body
- Problems with sexual, bowel and bladder function

When to see a doctor

See a doctor if you experience any of the above symptoms for unknown reasons.

Disease course

Most people with MS have a relapsing-remitting disease course. They experience periods of new symptoms or relapses that develop over days or weeks and usually improve partially or completely. These relapses are followed by quiet periods of disease remission that can last months or even years.

Small increases in body temperature can temporarily worsen signs and symptoms of MS, but these aren't considered disease relapses.

About 60 to 70 percent of people with relapsing-remitting MS eventually develop a steady progression of symptoms, with or without periods of remission, known as secondary-progressive MS.

The worsening of symptoms usually includes problems with mobility and gait. The rate of disease progression varies greatly among people with secondary-progressive MS.

Some people with MS experience a gradual onset and steady progression of signs and symptoms without any relapses. This is known as primary-progressive MS.

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Causes

The cause of multiple sclerosis is unknown. It's considered an autoimmune disease in which the body's immune system attacks its own tissues. In the case of MS, this immune system malfunction destroys the fatty substance that coats and protects nerve fibers in the brain and spinal cord (myelin).

Myelin can be compared to the insulation coating on electrical wires. When the protective myelin is damaged and nerve fiber is exposed, the messages that travel along that nerve may be slowed or blocked. The nerve may also become damaged itself.

It isn't clear why MS develops in some people and not others. A combination of genetics and environmental factors appears to be responsible.

Risk factors

These factors may increase your risk of developing multiple sclerosis:

- **Age.** MS can occur at any age, but usually affects people somewhere between the ages of 16 and 55.
- **Sex.** Women are more than two to three times as likely as men are to have relapsing-remitting MS.
- **Family history.** If one of your parents or siblings has had MS, you are at higher risk of developing the disease.
- **Certain infections.** A variety of viruses have been linked to MS, including Epstein-Barr, the virus that causes infectious mononucleosis.
- **Race.** White people, particularly those of Northern European descent, are at highest risk of developing MS. People of Asian, African or Native American descent have the lowest risk.
- **Climate.** MS is far more common in countries with temperate climates, including Canada, the northern United States, New Zealand, southeastern Australia and Europe.

- **Vitamin D.** Having low levels of vitamin D and low exposure to sunlight is associated with a greater risk of MS.
- **Certain autoimmune diseases.** You have a slightly higher risk of developing MS if you have thyroid disease, type 1 diabetes or inflammatory bowel disease.
- **Smoking.** Smokers who experience an initial event of symptoms that may signal MS are more likely than nonsmokers to develop a second event that confirms relapsing-remitting MS.

Complications

People with multiple sclerosis may also develop:

- Muscle stiffness or spasms
- Paralysis, typically in the legs
- Problems with bladder, bowel or sexual function
- Mental changes, such as forgetfulness or mood swings
- Depression
- Epilepsy

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