

## What is Multiple Sclerosis?

Multiple sclerosis (MS) is a nervous system disease that affects your brain and spinal cord. It damages the myelin sheath, the material that surrounds and protects your nerve cells. This damage slows down or blocks messages between your brain and your body, leading to the symptoms of MS. They can include

- Visual disturbances
- Muscle weakness
- Trouble with coordination and balance
- Sensations such as numbness, prickling, or "pins and needles"
- Thinking and memory problems

No one knows what causes MS. It may be an autoimmune disease, which happens when your immune system attacks healthy cells in your body by mistake. Multiple sclerosis affects women more than men. It often begins between the ages of 20 and 40. Usually, the disease is mild, but some people lose the ability to write, speak, or walk.

There is no single test for MS. Doctors use a medical history, physical exam, neurological exam, MRI, and other tests to diagnose it. There is no cure for MS, but medicines may slow it down and help control symptoms. Physical and occupational therapy may also help.

### Causes

Multiple sclerosis (MS) affects women more than men. The disorder is most commonly diagnosed between ages 20 and 40, but can be seen at any age.

MS is caused by damage to the myelin sheath, the protective covering that surrounds nerve cells. When this nerve covering is damaged, nerve signals slow down or stop.

The nerve damage is caused by inflammation. Inflammation occurs when the body's own immune cells attack the nervous system. This can occur along any area of the brain, optic nerve, and spinal cord.

It is unknown what exactly causes this to happen. The most common thought is that a virus or gene defect, or both, are to blame. Environmental factors may play a role.

You are slightly more likely to get this condition if you have a family history of MS or live in an part of the world where MS is more common.

### Symptoms

Symptoms vary, because the location and severity of each attack can be different. Attacks can last for days, weeks, or months. Attacks are followed by periods of reduced or no symptoms (remissions). Fever, hot baths, sun exposure, and stress can trigger or worsen attacks.

It is common for the disease to return (relapse). However, the disease may continue to get worse without periods of remission.

Nerves in any part of the brain or spinal cord may be damaged. Because of this, MS symptoms can appear in many parts of the body.

Muscle symptoms:

- Loss of balance
- Muscle spasms
- Numbness or abnormal sensation in any area
- Problems moving arms or legs
- Problems walking
- Problems with coordination and making small movements
- Tremor in one or more arms or legs
- Weakness in one or more arms or legs

Bowel and bladder symptoms:

- Constipation and stool leakage
- Difficulty beginning to urinate
- Frequent need to urinate
- Strong urge to urinate
- Urine leakage (incontinence)

Eye symptoms:

- Double vision
- Eye discomfort
- Uncontrollable rapid eye movements
- Vision loss (usually affects one eye at a time)

Numbness, tingling, or pain:

- Facial pain
- Painful muscle spasms
- Tingling, crawling, or burning feeling in the arms and legs

Other brain and nerve symptoms:

- Decreased attention span, poor judgment, and memory loss
- Difficulty reasoning and solving problems
- Depression or feelings of sadness
- Dizziness and balance problems
- Hearing loss

Sexual symptoms:

- Problems with erections
- Problems with vaginal lubrication

Speech and swallowing symptoms:

- Slurred or difficult-to-understand speech
- Trouble chewing and swallowing

Fatigue is a common and bothersome symptom as MS progresses. It is often worse in the late afternoon.

### Exams and Tests

Symptoms of MS may be mimic those of many other nervous system problems. MS is diagnosed by ruling out other conditions.

People who have a form of MS called relapsing-remitting may have a history of at least two attacks, separated by a period of reduced or no symptoms.

The doctor may suspect MS if there are decreases in the function of two different parts of the central nervous system (such as abnormal reflexes) at two different times.

An exam of the nervous system may show reduced nerve function in one area of the body. Or it may be spread over many parts of the body. This may include:

- Abnormal nerve reflexes
- Decreased ability to move a part of the body
- Decreased or abnormal sensation
- Other loss of nervous system functions

An eye examination may show:

- Abnormal pupil responses
- Changes in the visual fields or eye movements

- Decreased visual acuity
- Problems with the inside parts of the eye
- Rapid eye movements triggered when the eye moves

Tests to diagnose multiple sclerosis include:

- Blood tests to rule out other conditions similar to MS
- Lumbar puncture (spinal tap) for cerebrospinal fluid tests, including CSF oligoclonal banding
- MRI scan of the brain and MRI scan of the spine are important to help diagnose and follow MS
- Nerve function study (evoked potential test, such as brainstem auditory evoked response)

### Treatment

There is no known cure for multiple sclerosis at this time. But, there are treatments that may slow the disease. The goal of treatment is to control symptoms and help you maintain a normal quality of life.

Medicines are often taken long-term. These include:

- Medicines to slow the disease
- Steroids may be used to decrease the severity of attacks
- Medicines to control symptoms such as muscle spasms, urinary problems, fatigue or mood problems

The following may also be helpful for people with MS:

- Physical therapy, speech therapy, occupational therapy, and support groups
- Assistive devices, such as wheelchairs, bed lifts, shower chairs, walkers, and wall bars
- A planned exercise program early in the course of the disorder
- A healthy lifestyle, with good nutrition and enough rest and relaxation
- Avoiding fatigue, stress, temperature extremes, and illness
- Changes in what you eat or drink if there are swallowing problems
- Making changes around the home to prevent falls
- Social workers or other counseling services to help you cope with the disorder and get assistance
- Vitamin D or other supplements (talk to your doctor first)

## Support Groups

Living with MS may be a challenge. You can ease the stress of illness by joining an MS support group. Sharing with others who have common experiences and problems can help you not feel alone.

## Outlook (Prognosis)

Outcome varies, and is hard to predict. Although the disorder is chronic and incurable, life expectancy can be normal or almost normal. Most people with MS are active and function at work with little disability.

The following typically have the best outlook:

- Females
- People who were young (less than 30 years) when the disease started
- People with infrequent attacks
- People with a relapsing-remitting pattern
- People who have limited disease on imaging studies

The amount of disability and discomfort depends on:

- How often and severe the attacks are
- The part of the central nervous system that is affected by each attack

Most people return to normal or near-normal function between attacks. Slowly, there is greater loss of function with less improvement between attacks.

## Possible Complications

- Depression
- Difficulty swallowing
- Difficulty thinking
- Less and less ability to care for self
- Need for indwelling catheter
- Osteoporosis or thinning of the bones
- Pressure sores
- Side effects of medications used to treat the disorder
- Urinary tract infections

