

# MS Facts

## Facts About MS

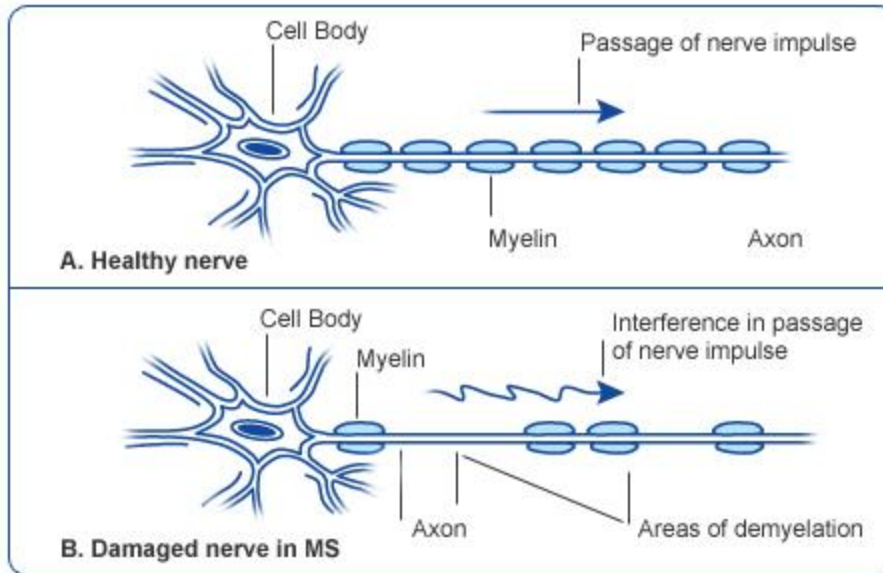
- More than 400,000 people in the United States have MS.
- An estimated 2,500,000 around the world have MS.
- In the UK, approx 70,000 people have the disease.
- Approx 50,000 people in Canada have Multiple Sclerosis.
- Scotland has the highest incidence of Multiple Sclerosis per head of population in the world.
- In Scotland, over 10,500 people have Multiple Sclerosis.
- About 45 percent of the people with MS are not severely affected by the disease.
- Diagnosis of MS is usually between 20 and 40 years of age.
- MS affects more women than men, with a ratio of 2:1.
- About 85 percent of those who are newly diagnosed have the relapsing-remitting form of MS.
- Without disease-modifying therapy, about 50 percent of those diagnosed with relapsing-remitting MS will become progressive at 10 years.
- Without disease-modifying therapy, about one-third of those diagnosed with relapsing-remitting MS will be using a wheelchair at 20 years.
- Average age of clinical onset is 30 – 33 years of age.
- The average age of diagnosis is 37 years of age.
- The average time between clinical onset of MS and diagnosis by physicians is 4 - 5 years.
- 10% of cases are diagnosed after the age of fifty.
- **In 1936, only 8% of patients were reported to survive beyond 20 years after onset of illness.**
- **In 1961, over 80% of Multiple Sclerosis patients were reported surviving to 20 years after onset of illness.**
- **2002 – A patient with Multiple Sclerosis can expect to live to average population life-expectancy minus seven years (mean life expectancy - 7 years) - Funding research and treatment has resulted in much progress to the quality and length of life for those with MS.**
- The course of the disease is unpredictable and no two people will experience the same set of symptoms.
- There are four types of MS: relapsing-remitting, secondary-progressive, primary progressive and progressive relapsing.
- Among young adults, MS is the most common disease of the central nervous system.
- Fatigue is one of the most common symptoms of MS.
- MS is not contagious.
- MS is a progressive disease for which there is not yet a cure.
- **Increased understanding of MS has led to the development of many new treatments that target both the disease process and its many symptoms.**
- In countries further from the equator, the incidence of MS increases.
- Sclerosis is a Greek word meaning hardening of tissue or scars.
- MS is not inherited or genetically transmitted, although there does seem to be some genetic susceptibility to the disease.
- Although multiple sclerosis is considered an "adult disease" there are approximately 8,000-10,000 children who have MS, and another 10,000-15,000 who have experienced what may be symptoms of MS.
- \$2 million per person: the average lifetime cost of having MS.
- Every hour in the United States, another person is diagnosed with MS.
- First Diagnosed in 1849

- The earliest known description of a person with possible Multiple Sclerosis dates from 14th century Holland.
- Multiple Sclerosis is the most common progressive and disabling neurological condition in young adults.
- No virus has ever been isolated as the cause of Multiple Sclerosis.
- Multiple Sclerosis is five times more prevalent in temperate climates than in tropical climates.
- Multiple Sclerosis affects women much more frequently than men. Approx. 1.7 – 2:1 in the US and approx 3:2 in the UK.
- The ratio of white to non-white is approx 2:1.
- Gypsies and Inuit's do get Multiple Sclerosis although the incidence rate is much lower than other populations at approx 19 per 100,000.
- Native Indians of North and South America, the Japanese and other Asian peoples have a very low incidence rate of Multiple Sclerosis.
- In identical twins where one twin develops the disease, the likelihood of the second twin developing Multiple Sclerosis is approximately 30%.
- The incidence rate for non-identical twins, where one contracts Multiple Sclerosis, is approx 4%.
- The risk of contracting Multiple Sclerosis if a first-degree relative (father, mother, sibling) has the disease, is approx 1% - 3% overall.
- The risk of contracting Multiple Sclerosis if your father has the disease is approx 1 in 100.
- The risk of contracting Multiple Sclerosis if your mother has the disease is approx 1 in 50.
- The risk among the general population of contracting Multiple Sclerosis is approx 1 in 800.

## What is MS?

Multiple sclerosis is a chronic, unpredictable disease of the central nervous system (the brain, optic nerves, and spinal cord). It is thought to be an autoimmune disorder. This means the immune system incorrectly attacks the person's healthy tissue. MS can cause blurred vision, loss of balance, poor coordination, slurred speech, tremors, numbness, extreme fatigue, problems with memory and concentration, paralysis, and blindness and more. These problems may be permanent or may come and go. Most people are diagnosed between the ages of 20 and 50, although individuals as young as 2 and as old as 75 have developed it. MS is not considered a fatal disease as the vast majority of people with it live a normal life-span. But they may struggle to live as productively as they desire, often facing increasing limitations.

Multiple sclerosis (MS) is an autoimmune disease that affects the brain and spinal cord. In MS, the body's white blood cells attack tissue called myelin sheath. Myelin sheaths are the protective covering for nerve fibers in the brain. Much like an electric wire is insulated with rubber or plastic, the myelin sheaths cover nerve fibers as they transmit nerve impulses within the brain.



When a myelin sheath is worn down or destroyed, the process is called demyelination. Demyelination causes the nerve fiber to be exposed. The exposed nerve fiber is less able to transmit nerve impulses. As a result, messages between different parts of the body are not transmitted as effectively.

After the myelin is destroyed, scar tissue called sclerosis is left behind in the damaged areas, which are referred to as lesions or plaques.

### **MS and Memory**

Mental function impairment is very common in people with MS. Between 43% to 70% of people with MS are affected by problems with memory, attention and concentration, and information processing at both earlier and later stages of the disease.

#### Common Memory Symptoms

Recent memories, like a person's name or phone number, are most affected by MS. Another example of short-term memory is when you forget to mail a letter, or walk into a room and forget what you were looking for. You may also have difficulty making decisions, scheduling events, and adjusting to surprises.

#### Managing Memory

One way that everyone can manage memory is to write things down. You may even want to get a digital voice recorder. Another way to improve your memory skills may be to "exercise" your memory. Learning simple, new tasks may help your brain develop new pathways. Some simple memory games:

- Video games
- Puzzles
- Card games
- Board games

Simple games like these may help you build attention, concentration, memory, and organization. You can also consider using your areas of strength to compensate for weaknesses. For example, if you are strong in organization, you can arrange your things so they are always in the same place—which can aid your memory.

#### Early MS Treatment

It's important to treat MS early. Studies have shown that treatment early in the course of MS can prevent mental function impairment like memory problems. Some MS therapies have been shown to improve mental function.

#### Getting Help

If you feel that your memory is failing you more often, it may be time to find help. The first step is a mental function evaluation. This test is performed by a neurologist or neuropsychologist, and may take several hours to complete. Having this kind of testing can be helpful in managing your MS. You may feel a sense of relief in knowing that there is a sound reason behind any memory problems you may be having.

## **Who Gets MS?**

MS affects over 400,000 people in the United States and up to 2.5 million people worldwide. Since most people are diagnosed before they turn 30, MS has been called the most common disability-causing illness for people under 45-years-old.

Gender and race also play a role in who gets MS:

- Women are 70% more likely to have MS than men.
- People of European descent are twice as likely to have MS as African Americans and Asian Americans.

MS also occurs more often in relatives of people with MS. Children, siblings, and non-identical twins of someone with MS have a one in 100 to one in 40 chance of having MS themselves. The identical twin of someone with MS has a one in four chance of having MS. The place where you grew up also may play a role in determining how likely you are to get multiple sclerosis. Multiple sclerosis is more common in cooler areas of the globe. In the United States, Northern states have higher rates of MS than Southern states, and Canada has a rate of MS double that of the US.

## **Diagnosing MS**

MS is often difficult to diagnose because symptoms are different for everyone. People who are diagnosed with MS usually have had a history of symptoms that come and go. Some tests that doctors may use to help them diagnose MS are:

- Magnetic resonance imaging (MRI)
- Spinal fluid testing
- Evoked potentials (measuring how long it takes nerves to react to stimulation)

At this time, there are no symptoms, physical findings or laboratory tests that can, by themselves, determine if a person has MS. The doctor uses several strategies to determine if a person meets the long-established criteria for a diagnosis of MS and to rule out other possible causes of whatever symptoms the person is experiencing. These strategies include a careful medical history, a neurologic exam and various tests, including magnetic resonance imaging (MRI), evoked potentials (EP) and spinal fluid analysis.

### The Criteria for a Diagnosis of MS

In order to make a diagnosis of MS, the physician must:

- Find evidence of damage in at least two separate areas of the central nervous system (CNS), which includes the brain, spinal cord and optic nerves AND
- Find evidence that the damage occurred at least one month apart AND
- Rule out all other possible diagnoses

In 2001, the International Panel on the Diagnosis of Multiple Sclerosis updated the criteria to include specific guidelines for using magnetic resonance imaging (MRI), visual evoked potentials (VEP) and cerebrospinal fluid analysis to speed the diagnostic process. These tests can be used to look for a second area of damage in a person

who has experienced only one attack (also called a relapse or an exacerbation) of MS-like symptoms — referred to as a clinically-isolated syndrome (CIS). A person with CIS may or may not go on to develop MS. The criteria were further revised in 2005 (now referred to as The Revised McDonald Criteria) to make the process even easier and more efficient.

### The Tools for Making a Diagnosis

**Medical History and Neurologic Exam** - The physician takes a careful history to identify any past or present symptoms that might be caused by MS and to gather information about birthplace, family history and places traveled that might provide further clues. The physician also performs a variety of tests to evaluate mental, emotional and language functions, movement and coordination, balance, vision, and the other four senses. In many instances, the person's medical history and neurologic exam provide enough evidence to meet the diagnostic criteria. Other tests are used to confirm the diagnosis or provide additional evidence if it's necessary.

**MRI** - MRI is the best imaging technology for detecting the presence of MS plaques or scarring (also called lesions) in different parts of the CNS. It can also differentiate old lesions from those that are new or active. The diagnosis of MS cannot be made solely on the basis of MRI because there are other diseases that cause lesions in the CNS that look like those caused by MS. And even people without any disease — particularly the elderly — can have spots on the brain that are similar to those seen in MS. Although MRI is a very useful diagnostic tool, a normal MRI of the brain does not rule out the possibility of MS. About 5% of people who are confirmed to have MS do not initially have brain lesions on MRI. However, the longer a person goes without brain or spinal cord lesions on MRI, the more important it becomes to look for other possible diagnoses.

**Visual Evoked Potential (VEP)** - Evoked potential (EP) tests are recordings of the nervous system's electrical response to the stimulation of specific sensory pathways (e.g., visual, auditory, general sensory). Because damage to myelin (demyelination) results in a slowing of response time, EPs can sometimes provide evidence of scarring along nerve pathways that does not show up during the neurologic exam. Visual evoked potentials are considered the most useful for confirming the MS diagnosis.

**Cerebrospinal Fluid Analysis** - Analysis of the cerebrospinal fluid, which is sampled by a spinal tap, detects the levels of certain immune system proteins and the presence of oligoclonal bands. These bands, which indicate an immune response within the CNS, are found in the spinal fluid of about 90-95% of people with MS. But because they are present in other diseases as well, oligoclonal bands cannot be relied on as positive proof of MS. While there is no definitive blood test for MS, blood tests can rule out other conditions that cause symptoms similar to those of MS, including Lyme disease, a group of diseases known as collagen-vascular diseases, certain rare hereditary disorders, and AIDS.

### Other Conditions Cause Demyelination (Damage to Myelin)

**Demyelination in the Central Nervous System** - Although MS is the most common, other conditions can damage myelin in the CNS, including viral infections, side effects from high exposure to certain toxic materials, severe vitamin B12 deficiency, autoimmune conditions that lead to inflammation of blood vessels (the "collagen-vascular diseases"), and some rare hereditary disorders.

**Demyelination in the Peripheral Nervous System** - Demyelination of the peripheral nervous system (the nerves outside the brain and spinal cord) occurs in Guillain-Barré Syndrome. After some injuries, the myelin sheath in the peripheral nervous system regenerates, bringing recovery of function. Some demyelinating conditions are self-limiting, while others may be progressive. Careful (and sometimes repetitive) examinations may be needed to establish an exact diagnosis among the possible causes of neurologic symptoms.

## **MS Causes**

Multiple sclerosis has been recognized as a disease since the mid 1800s, but in some ways it's still a mystery. Scientists are working with several theories about the cause of multiple sclerosis. MS is an autoimmune disease. In an autoimmune disease, the body mistakes some part of itself as a foreign invader. With MS, the part of the body that is mistaken as an invader is the protective covering of nerve fibers, the myelin sheath. It's possible that the initial cause of MS could be an overreaction to a real foreign invader, such as a virus or bacteria. This overreaction could cause the immune system to attack myelin—in addition to the invading virus or bacteria—even after the foreign invader is gone. While the cause (etiology) of MS is still not known, scientists believe that a combination of several factors may be involved. Studies are ongoing in the areas of immunology (the science of the body's immune system), epidemiology (that looks at patterns of disease in the population), and genetics in an effort to answer this important question. Understanding what causes MS will be an important step toward finding more effective ways to treat it and—ultimately—cure it, or even prevent it from occurring in the first place.

The major scientific theories about the causes of MS include the following:

### Immunologic

It is now generally accepted that MS involves an autoimmune process—an abnormal response of the body's immune system that is directed against the myelin (the fatty sheath that surrounds and insulates the nerve fibers) in the central nervous system (CNS—the brain, spinal cord and optic nerves). The exact antigen, or target that the immune cells are sensitized to attack, remains unknown. In recent years, however, researchers have been able to identify which immune cells are mounting the attack, some of the factors that cause them to attack, and some of the sites, or receptors, on the attacking cells that appear to be attracted to the myelin to begin the destructive process. Ongoing efforts to learn more about the autoimmune process in MS—what sets it in motion, how it works, and how to slow or stop it—are bringing us closer to understanding the cause of MS.

### Environmental

MS is known to occur more frequently in areas that are farther from the equator. Epidemiologists—scientists who study disease patterns—are looking at many factors, including variations in geography, demographics (age, gender, and ethnic background), genetics, infectious causes, and migration patterns, in an effort to understand why. Studies of migration patterns have shown that people born in an area of the world with a high risk of MS who then move to an area with a lower risk before the age of 15, acquire the risk of their new area. Such data suggest that exposure to some environmental agent that occurs before puberty may predispose a person to develop MS later on. Some scientists think the reason may have something to do with vitamin D (.pdf), which the human body produces naturally when the skin is exposed to sunlight. People who live closer to the equator are exposed to greater amounts of sunlight year-round. As a result, they tend to have higher levels of naturally-produced vitamin D, which is thought to have a beneficial impact on immune function and may help protect against autoimmune diseases like MS. The possible relationship between MS and sunlight exposure is currently being looked at in a Society-funded epidemiological study in Australia. Other scientists study MS clusters—which are defined as higher-than-expected numbers of cases of MS that have occurred over a specific time period and/or in a certain area. These clusters are of interest because they may provide clues to environmental (such as environmental and industrial toxins, diet, or trace metal exposures) factors that might cause or trigger the disease. So far, cluster studies have not produced clear evidence for the existence of any triggering factor or factors in MS.

### Infectious

Since initial exposure to numerous viruses, bacteria and other microbes occurs during childhood, and since viruses are well recognized as causes of demyelination and inflammation, it is possible that a virus or other infectious agent is the triggering factor in MS. More than a dozen viruses and bacteria, including measles, canine distemper, human herpes virus-6, Epstein-Barr, and Chlamydia pneumonia have been or are being

investigated to determine if they are involved in the development of MS, but none have been definitively proven to trigger MS. Read more on viruses as the cause of MS

## Genetic

While MS is not hereditary in a strict sense, having a first-degree relative such as a parent or sibling with MS increases an individual's risk of developing the disease several-fold above the risk for the general population. Studies have shown that there is a higher prevalence of certain genes in populations with higher rates of MS. Common genetic factors have also been found in some families where there is more than one person with MS. Some researchers theorize that MS develops because a person is born with a genetic predisposition to react to some environmental agent that, upon exposure, triggers an autoimmune response. Sophisticated new techniques for identifying genes may help answer questions about the role of genes in the development of MS.

## **Types of MS**

The types of MS include relapsing-remitting MS (RRMS), secondary-progressive MS (SPMS), primary-progressive MS (PPMS), and progressive-relapsing MS (PRMS). Each type has its own unique pattern of progression.

### Relapsing-remitting MS (RRMS)

RRMS accounts for about 85% of all initial MS diagnoses. People with RRMS have isolated relapses. When not having a relapse, someone with RRMS is partially or completely without symptoms.



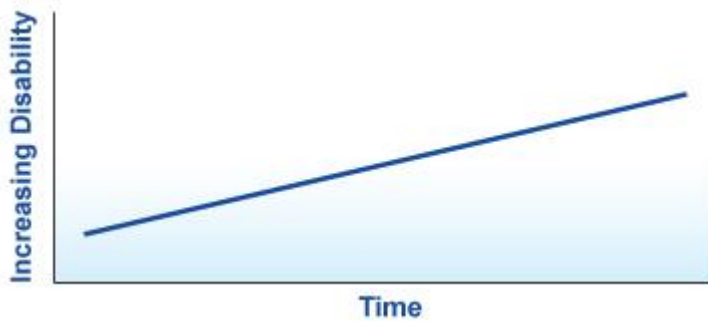
### Secondary-progressive MS (SPMS)

About 50% of people with RRMS develop SPMS. This happens gradually, usually within 10 years of the initial MS diagnosis. People with SPMS have fewer and fewer relapses, but begin to have constant, steadily worsening symptoms.



### Primary-progressive MS (PPMS)

PPMS accounts for about 10% of MS diagnoses. This type of MS is characterized by a slow and steady worsening of symptoms. There are relapses in PPMS, but the worsening of symptoms may occasionally speed up, slow down, or even get better for a time.



### Progressive-relapsing MS (PRMS)

PRMS affects about 5% of people with MS. It is characterized by steady worsening of symptoms and occasional relapses.



## **MS Symptoms**

Although there are many common MS symptoms, no two people experience them the same way. This may be because the location of damage in the central nervous system affects how different people experience symptoms. Even when there are no symptoms, damage may be taking place. That's why it's important to stay on a prescription therapy if you have MS.

### Vision

Optic neuritis causes visual problems in 70% of all people with MS. It may cause blurred vision or pain over a few days. After initial symptoms, there is gradual improvement, sometimes after several weeks. People with MS may experience double-vision and other visual symptoms as well.

### Movement

Often, multiple sclerosis is active on the nerve fibers that control muscle movement. Many people with MS lose muscular strength in the arms and legs as the disease progresses. Damage from MS can also result in poor balance or coordination.

### Sensory

People with MS may sometimes feel numbness or tingling, burning or cold in parts of the body. There can also be pain in different parts of the body, including the face. MS may cause extra strain in the back and leg muscles, or extra tension, known as "spasticity."

### Bladder/Bowel

Many people with multiple sclerosis will develop trouble controlling the urge to urinate or will be unable to completely empty the bladder. They may also experience problems with bowel control or constipation.

### Sexual Activity

Having multiple sclerosis can lead to problems related to sexual activity. Men with multiple sclerosis can find it difficult to achieve or maintain an erection. For women, MS often causes a loss of sexual sensitivity, pain during intercourse, an inability to achieve an orgasm, or a reduction in naturally produced lubrication.

### Fatigue

Many people with MS experience fatigue or tiredness. Since fatigue is a natural part of life, it can be difficult to connect with MS at first. However, fatigue from MS can often last for a few months, during which energy is used up every day with just a little exertion.

### Cognition and Mood

MS can have mental function symptoms such as memory lapses and slowed thinking. People with MS may also have difficulty concentrating.

Many people with multiple sclerosis experience periods of depression. Sometimes it is linked directly to physical changes in the brain caused by multiple sclerosis. Understandably, it may also be an emotional reaction to having the illness and learning to cope with the symptoms and the challenges they represent. If you are experiencing feelings or symptoms of depression or hopelessness, discuss them with your healthcare provider because treatment for depression is available.

## **MS Progression**

Since no two people experience MS in the same way, the progression of MS symptoms may look very different from one person to another. However, even when there are no symptoms, there is progression of damage to the central nervous system over time. In addition, the brain can compensate for some level of damage, so symptoms may be hidden for quite some time. That's why it's important to begin MS treatment as soon as possible after receiving a diagnosis.

Some important points about MS symptoms:

- Some symptoms may occur often, others more rarely.
- Some symptoms may appear early in the course of MS, others later.

People with MS can still feel perfectly healthy, even though their MS is causing damage. Like an iceberg, the true progression of MS can lie concealed beneath the surface.



## General MS Progression

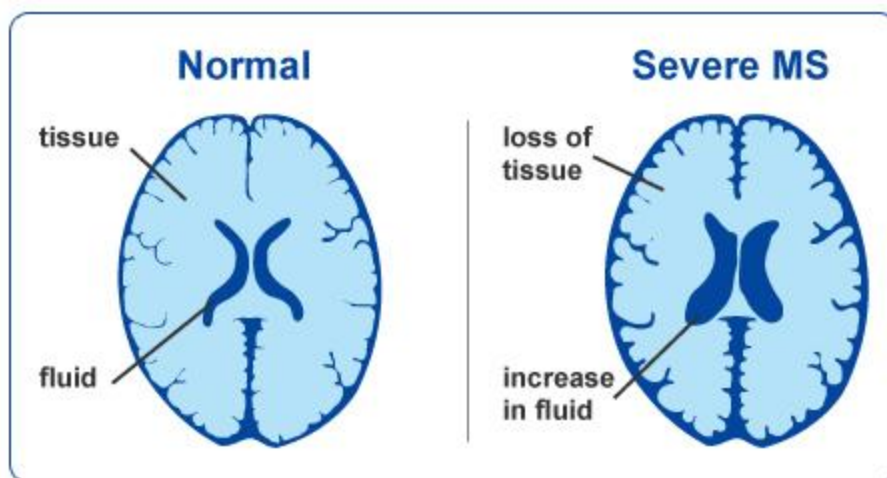
The long-term accumulation of progression-related MS symptoms can profoundly affect the physical and mental aspects of daily living. After diagnosis, people with MS may experience sensory symptoms such as numbness, tingling, or visual loss. Early in MS progression, they may find that they recover completely from relapses, and have few relapses in their first years after diagnosis. It is also common early on in the disease to experience long intervals between relapses. Later, as MS progresses, people may have difficulty with tremors, coordination, and walking. They may find that their relapses become more frequent, and that they are less able to recover from them.

## Changes in Mobility

Since MS causes fatigue, balance problems, and weakness, many people find it difficult at some point to walk on their own. However, most people with MS remain able to walk, even if it's with a cane or crutches. Although some people with MS may frequently use a scooter or wheelchair, others may use them at times to help conserve their energy.

## MS Progression and Disability

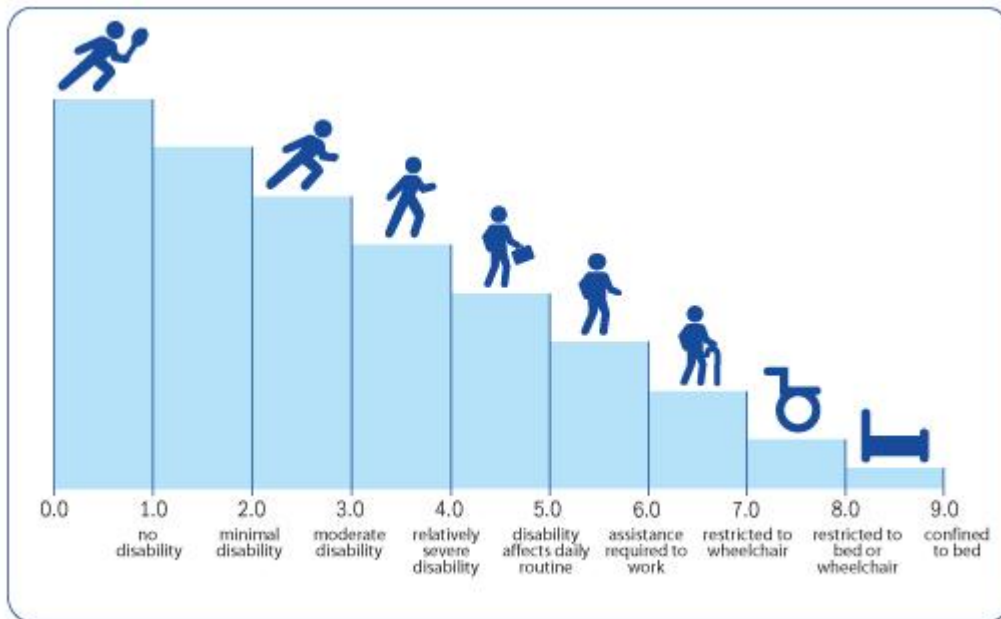
The natural course of MS can result in a condition known as brain shrinkage (brain atrophy). It is a condition in which you actually lose brain tissue. Treatment may protect you against brain shrinkage.



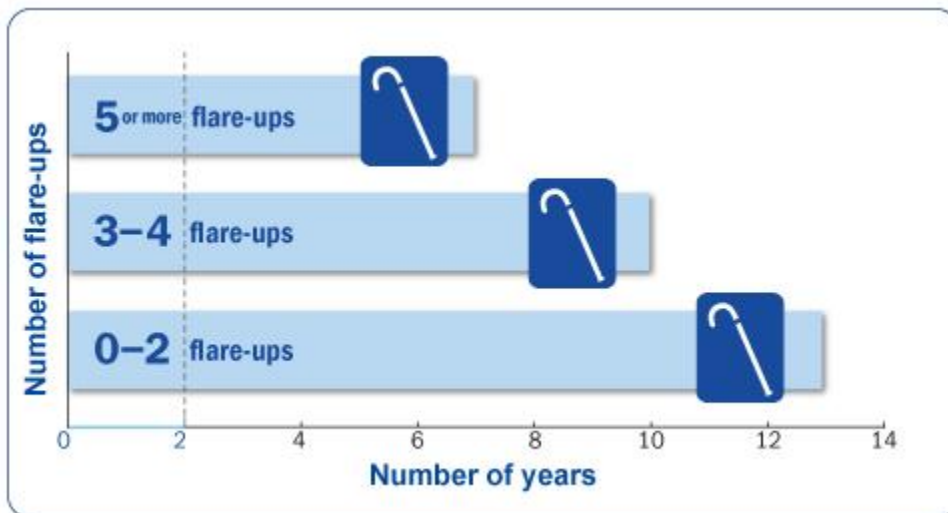
To figure out if disease is progressing, doctors use a scale called the Expanded Disability Status Scale (EDSS). The EDSS is a way of measuring physical disability. Two-thirds of people with MS do not progress past level 6.

## MS and Your Future

This chart shows the data from a study that followed people with MS for 12 years. The number of flare-ups a person had in the first two years of their disease affected the number of years before a person would need a cane to walk. Those with fewer flare-ups enjoyed more years of greater independence.



In fact, even one additional relapse in the first two years of MS may put a patient at risk for faster progression to an EDSS score of 6.0. That's one of the reasons it's so important to take the most effective MS therapy for you as soon as possible.



## MS Treatment Goals

Starting treatment early and staying on treatment may make a difference in MS. Many MS treatments have been shown to reduce the risk of relapses and slow the progression of disability. The goals of MS therapy include:

- Reducing the number of relapses
- Slowing down physical disability
- Reducing the number of brain lesions
- Reducing the rate of brain shrinkage

- Improving mental and physical function
- Improving quality of life by helping make everyday activities more manageable
- Helping people live independently

### Maintain High Expectations for Your MS Treatment

It's important to remember that MS therapies do not cure MS, and you may still experience symptoms while on treatment. However, with multiple sclerosis, slowing the disease, or having no disease progression, is also considered successful treatment. Even though symptoms may be present, staying on treatment is key to slowing the progression of your MS. Remember to assess your symptoms regularly to be sure that your MS treatment is meeting your goals. If you are not achieving your goals, it may be time to speak to your healthcare professional about switching MS treatments.

### Achieving Treatment Goals

There are three considerations for reaching your MS treatment goals:

- Treating MS early, at the first sign of MS symptoms, can help minimize nerve damage and slow MS progression. Studies have also shown that treatment works best when it is used early.
- Staying on treatment is important for achieving your goals. Even if you can't see a difference and feel that you don't need treatment, your MS therapy may be working to slow the progress of your MS.
- Evaluating your treatment helps you consider the effectiveness of your current MS therapy and whether it may be time for a change.

Everyone with MS is unique, and there is no test that can predict how well a treatment will work for you. However, the results of MRIs and other tests can give an idea about how well a treatment is working. Generally, if your MRI results and examinations are positive, and you are feeling well, your MS is probably being managed well.

### **MS Treatment Options**

There are different types of prescription treatments used in MS therapy. Starting your MS therapy now may mean a better life with MS later. Whether you are deciding on a first treatment, or considering a switch to a new treatment, remember that treating early and staying on therapy is the best way to slow the progression of MS. Prescription Therapies for MS:

- AVONEX® (interferon beta-1a)
- TYSABRI® (natalizumab)
- REBIF® (interferon beta-1a)
- BETASERON® (interferon beta-1b)
- COPAXONE® (glatiramer acetate injection)
- NOVANTRONE® (mitoxantrone for injection concentrate)

These treatments are administered either by injection or infusion, and have different dosing schedules. Speak with your doctor about which MS therapy would be most appropriate for you.

### **Frequently Asked Questions about Multiple Sclerosis**

#### Is MS fatal?

In rare cases MS is so malignantly progressive it is terminal, but most people with MS have a normal or near-normal life expectancy. Severe MS can shorten life.

### Does MS always cause paralysis?

No. Moreover, the majority of people with MS do not become severely disabled. Two-thirds of people who have MS remain able to walk, though many will need an aid, such as a cane or crutches, and some will use a scooter or wheelchair because of fatigue, weakness, balance problems, or to assist with conserving energy.

### Can MS be cured?

Not yet. There are now FDA-approved medications that have been shown to "modify" or slow down the underlying course of MS. In addition, many therapeutic and technological advances are helping people manage symptoms. Advances in treating and understanding MS are made every year, and progress in research to find a cure is very encouraging.

### What medications and treatments are available?

The National Multiple Sclerosis Society recommends that a person consider treatment with one of the FDA-approved "disease-modifying" drugs as soon as possible following a definite diagnosis of MS with active or relapsing disease. These drugs help to lessen the frequency and severity of MS attacks, reduce the accumulation of lesions (areas of damage) in the brain, and may slow the progression of disability. In addition to drugs that address the basic disease, there are many therapies for MS symptoms such as spasticity, pain, bladder problems, fatigue, sexual dysfunction, weakness, and cognitive problems. People should consult a knowledgeable physician to develop a comprehensive approach to managing their MS.

### Why is MS so difficult to diagnose?

In early MS, symptoms that might indicate any number of possible disorders come and go. Some people have symptoms that are very difficult for physicians to interpret, and these people must "wait and see." While no single laboratory test is yet available to prove or rule out MS, magnetic resonance imaging (MRI) is a great help in reaching a definitive diagnosis.

### **Information Sources**

[http://www.msactivesource.com/msasProject/msas.portal/\\_baseurl/threeColLayout/MSASRepository/en\\_US/msas/home/index.xml](http://www.msactivesource.com/msasProject/msas.portal/_baseurl/threeColLayout/MSASRepository/en_US/msas/home/index.xml)

<http://www.msfacts.org/Facts-About-MS.aspx>

[http://www.faceofms.org/facts\\_about.php](http://www.faceofms.org/facts_about.php)

<http://www.themcfox.com/multiple-sclerosis/ms-facts/multiple-sclerosis-facts.htm>

<http://www.nationalmssociety.org/about-multiple-sclerosis/index.aspx>

