

# Multiple Sclerosis

Multiple sclerosis (MS) is a disorder of the brain and spinal cord. It can cause a variety of symptoms. In most cases, episodes of symptoms 'come and go' at first for several years. In time, some symptoms usually become permanent, and cause disability. There is no treatment that cures MS, but various medicines and therapies can help to ease symptoms and disability.

## What is multiple sclerosis (MS)?

Multiple sclerosis (MS) is a disorder where patches of inflammation recur from time to time in parts of the brain and/or spinal cord.

## Understanding the brain, spinal cord, and nerves

Thousands of nerve fibres transmit tiny electrical impulses ('messages') between different parts of the brain and spinal cord. Each nerve fibre in the brain and spinal cord is surrounded by a protective sheath made from a substance called myelin. The myelin sheath acts like the insulation around an electrical wire, and is needed for the electrical impulses to travel correctly along the nerve fibre.

Nerves are made up from many nerve fibres. Nerves come out of the brain and spinal cord and take messages to and from muscles, the skin, body organs, and tissues.

## What causes multiple sclerosis?

The exact cause of MS is not known. It is thought to be an auto-immune disease. This means that chemicals and cells of the immune system, which normally attack bacteria, viruses, etc, attack part of the body. In people with MS, cells of the immune system called T-cells appear to 'attack' the myelin sheath which surrounds the nerve fibres in the brain and spinal cord. This leads to small patches of inflammation.

Something may 'trigger' the immune system to act in this way. One theory is that a virus, or another factor in the environment, triggers the immune system in some people with a certain genetic make-up.

The inflammation around the myelin sheath stops the affected nerve fibres from working properly, and symptoms develop. When the inflammation clears, the nerve fibres start to work again. However, the inflammation, or repeated bouts of inflammation, can leave a small scar ('sclerosis') which can permanently damage nerve fibres. In a typical person with MS, many (multiple) small areas of scarring (sclerosis) develop in the brain and spinal cord.

## Who gets multiple sclerosis?

About 1 in 1000 people in the UK have MS. It can affect anyone at any age, although it is rare under the age of 10. It most commonly first develops between the ages of 20 and 40. MS is the most common disabling illness of young adults in the UK. It is twice as common in women as in men.

MS is not strictly an hereditary disease, but there is an increased chance of MS developing in close relatives of affected people. For example, a mother, father, brother, or sister of a person with MS has about a 1 in 100 chance of developing MS (compared to about a 1 in 1000 chance in the general population).

## How does multiple sclerosis progress?

### Relapsing-remitting form of MS

About 9 in 10 people with MS have the common relapsing-remitting form of the disease. A relapse is when an episode ('attack') of symptoms occurs. During a relapse, symptoms develop (described below) and may last days, but usually last 2-6 weeks, and sometimes last several months. Symptoms then ease or go away (remit). You are said to be 'in remission' when symptoms have eased or gone away. Further relapses then occur from time to time.

One or two relapses every two years is fairly typical. But, it varies from case to case, and relapses can occur more or less often than this. When a relapse occurs, previous symptoms may return, or new ones may appear.

This 'relapsing-remitting' pattern tends to last for several years. At first, full recovery from symptoms, or nearly full recovery, is typical following each relapse. Eventually, often after 5-15 years, some symptoms usually become permanent. The permanent symptoms tend to accumulate, and the condition slowly becomes worse over time. This is called 'secondary progressive MS'.

After 10 years from the first episode of symptoms, about half of people with MS have developed some form of permanent disability. After 15 years, about half are unable to walk without assistance. After 25 years, about half are confined to a wheelchair.

### Primary progressive MS

In about 1 in 10 cases, there is no initial relapsing-remitting course. The symptoms become gradually worse from the outset, and do not recover. This is called 'primary progressive MS'.

### Benign MS

In a few cases, there are only a few relapses in a lifetime, and no symptoms remain permanent. This is the least serious form of the disease, and is called 'benign MS'.

## What are the symptoms of multiple sclerosis?

Many different symptoms are possible with MS. The symptoms that occur during a relapse depend on which part, or parts, of the brain or spinal cord are affected. You may have just one symptom in one part of the body, or several symptoms in different parts of your body. The symptoms occur because the affected nerve fibres stop working properly. The more common symptoms include:

- Numbness or tingling in parts of the skin. This is the most common symptom of a first relapse.
- Weakness or paralysis of some muscles. Mobility may be affected.
- Partial loss, or blurring of vision. Double vision.
- Problems with balance and co-ordination.
- Tremors or spasms of some muscles.
- Dizziness.
- Problems with passing urine.
- Difficulty with speaking.
- Constipation.

Tiredness, and psychological symptoms such as mood swings and depression, are also common in people with MS.

## How is multiple sclerosis diagnosed?

Almost all of the symptoms that can occur with MS can also occur with other diseases. It is often difficult to be sure if a first episode of symptoms (a first relapse) is due to MS. For example, you may have an episode of numbness in a leg, or blurring of vision for a few weeks, which then goes.

It may have been the first relapse of MS, or just a 'one-off' illness that was not MS.

Therefore, most doctors do not make a firm diagnosis of MS until two or more relapses have occurred. So, you may have months, or years, of uncertainty if you have an episode of symptoms, and the diagnosis is not clear.

### **Do any tests help?**

In most cases, no test can definitely prove that you have MS after a first episode of symptoms. But, some tests are helpful and may indicate that MS is a possible, or probable, cause of the symptoms.

- An MRI scan (Magnetic Resonance Imaging) of the brain is the most useful test. This type of scan can detect small areas of inflammation and scarring in the brain which occur in MS. Since MRI scans became available, other tests are now done less often. However, they are sometimes done and include:
  - Lumbar puncture. In this test a needle is inserted, under local anaesthetic, into the CSF (the fluid surrounding the spinal cord) in the lower part of the back. Certain protein levels are measured. Some proteins are altered in MS, although they can be altered in other conditions too.
  - Evoked potential test. In this test, electrodes measure if there is slowing or abnormal patterns in the electrical impulses in certain nerves.

## **What are the treatments for multiple sclerosis?**

There is no cure for MS, but treatments do help. Treatments generally fall into four categories.

- Medicines that aim to modify the disease process.
- Steroid medication to treat relapses.
- Other medicines to help ease symptoms.
- Other therapies and general support.

### **Medicines that aim to modify the disease process**

#### *Beta-Interferon and glatiramer*

These medicines are known as 'immunomodulatory agents'. Four are currently available: two forms of beta-interferon 1a (Avonex and Rebif), one form of beta-interferon 1b (Beta-feron), and glatiramer (Copaxone). These medicines do not cure MS. However, some studies have shown that they may reduce the number relapses. They may also have a small effect on slowing the progression of the disease. The exact way in which these medicines work is not clear, but they interfere with the immune system in some way.

There is debate as to the role of these medicines and how effective they are. A specialist will be able to advise on whether one should be tried in each individual case. These medicines, and newer similar medicines not yet available, continue to be studied to clarify how much they can help people with MS.

#### *Immunosuppressants*

Medicines that suppress the immune system such as azothioprine, immunoglobulins, and mitoxantrone may reduce the number of relapses. However, these medicines often have serious side-effects, and are not commonly used in the UK.

### **Steroids (sometimes called corticosteroids)**

A steroid is often prescribed if you have a relapse which causes disability. A high dose is usually given (often by injection into a vein each day for several days). Steroids work by reducing inflammation. A course of steroids will usually shorten the duration of a relapse. So, symptoms improve more quickly than they would otherwise have done. However, steroids do not affect the ongoing progression of the disease.

### Other medicines to treat symptoms

Depending on the kind of symptoms that develop, one or more of the following may be appropriate.

- Anti-spasm medicines to ease muscle spasms.
- Painkillers are sometimes needed.
- Medicines can help with some urinary problems that may develop.
- Antidepressant medicines are sometimes advised if you develop depression.
- Medicines can often help with erectile problems which may develop.
- There is debate as to the benefits of cannabis for people with MS.

### Other treatments, therapies and support

A range of therapies may be advised, depending on what problems or disabilities develop. They include:

- Physiotherapy
- Occupational therapy
- Speech therapy
- Specialist nurse advice and support
- Psychological therapies
- Counselling

### Further help and advice

This leaflet is only a brief introduction to MS. Further help, information, and advice is available from:

#### *Multiple Sclerosis Society*

MS National Centre, 372 Edgware Road, Staples Corner, London, NW2 6ND  
Helpline: 0808 800 8000 Web: [www.mssociety.org.uk](http://www.mssociety.org.uk)

#### *Multiple Sclerosis Society Scotland*

Ratho Park, 88 Glasgow Road, Newbridge, EH28 8PP  
Tel 0131 335 4050 Web: [www.mssocietyscotland.org.uk](http://www.mssocietyscotland.org.uk)

#### *Multiple Sclerosis Society Northern Ireland*

34 Annadale Avenue, Belfast, BT7 3JJ  
Helpline: 0808 800 8000 Web: [www.mssocietyni.co.uk](http://www.mssocietyni.co.uk)

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Comprehensive patient resources are available at [www.patient.co.uk](http://www.patient.co.uk)