

Multiple Sclerosis (MS) Factsheet

What is Multiple Sclerosis (MS)?

Multiple Sclerosis (MS) is one of the most common diseases of the central nervous system (CNS) – the brain and spinal cord¹. It is an autoimmune disease, in which the body turns against itself by mistaking normal cells for intruders. Specifically, in MS, the body's immune system attacks the myelin in the CNS. Myelin is a fatty material that protects and insulates nerves, acting much like the plastic covering of an electric wire, and allows the nerves to transmit their impulses more rapidly and efficiently. If myelin is damaged or destroyed, the nerve impulses get slower or do not transmit at all, leading to disrupted communication between the brain and other parts of the body¹.

The name 'multiple sclerosis' refers to the 'many scars' that result from the damage to myelin¹. It is this damage to the myelin that causes MS¹. It is now also thought that in MS, the axons (the nerve fibres through which the actual impulses are transmitted) are also damaged².

Symptoms vary widely but include blurred vision, weak limbs, tingling sensations, unsteadiness and fatigue¹. For some people, MS is characterised by periods of relapse and remission while for others it has a progressive pattern². For everyone, it can make life unpredictable. Over time, with repeated attacks, damage accumulates leading to permanent nerve damage and loss of neurological function².

MS is a chronic, lifelong condition. In rare cases MS is so malignantly progressive it is terminal, but most people with MS have a normal or near-normal life expectancy².

How common is MS?

Up to 2.5 million people worldwide are affected by MS². Approximately 70% of cases arise between the ages of 20 and 40 years, with 10% of cases arising earlier in life and 20% of cases arising later in life². The mean age of onset of MS is about 30 years with peak age of onset 23-24 years².

Since the 1980s, an increasing number of cases of MS in children (under 18 years of age) have been recorded worldwide. Initial symptoms have been seen as early as 13 months old, with diagnosis as young as two years of age².

Within a given population, the overall prevalence of MS is approximately twice as high in women as in men². However, it is uncertain as to why more women than men contract the disease. The sex ratio varies according to the stage of the disease. In children younger than 10 years (who rarely develop MS) the sex ratio can reach three females to each male whereas in people over 50 years, MS affects males and females equally^{2,3}.

The incidence of MS varies geographically, with a higher incidence in temperate zones and lower incidence in equatorial zones³. In Europe, the incidence of MS steadily increases from south to north¹. MS has been found to be more common among Caucasians (particularly those of northern European ancestry) than other ethnic groups, but people of African, Asian, and Hispanic ancestry can also develop the disease³.

What are the types of MS?

- **Relapsing-Remitting MS (RRMS)** - the most common form of MS at the onset of disease, which is characterised by attacks or relapses with worsening neurological function. This is followed by periods of remission where patients partially or fully recover during which the disease remains stable. Approximately 85% of people with MS have RRMS when first diagnosed³
- **Secondary-Progressive MS (SPMS)** - characterised by gradual worsening of the disease between relapses. Before disease modifying therapies (DMTs) were available, 50% of people with RRMS developed SPMS within 10 years of their initial diagnosis. Long-term data is not yet available to determine if treatment significantly delays the transition between RRMS and SPMS³
- **Primary-Progressive MS (PPMS)** - the least common form of MS, affecting about 10% of people with MS. It follows a steady course of worsening neurologic function. Patients with this form of MS do not experience relapses or remissions³

What is the impact of MS?

Quality of life is frequently poor in people with MS^{4,5} and lower on average than for people with other chronic diseases, such as diabetes and epilepsy⁶. Up to 75% of people with MS are affected by fatigue regardless

of their disability or clinical course, which interferes with their quality of life and productivity⁷. About 50% of people with MS need a wheelchair within 20 years of developing MS⁸.

People with MS are typically keen to remain in employment for as long as possible, but due to the progressive, degenerative, or fluctuating nature of their disease they often need to reduce or adapt their hours and/or adapt their working environment to accommodate their changing needs¹.

It is vital for MS patients, particularly if they are faced with increasing disability, to be able to access co-ordinated care from all the skilled and expert professionals within a multi-disciplinary team¹. However, there are very significant countrywide and region wide discrepancies in the provision and quality of services and support for people affected by MS across the European Union¹.

How is MS diagnosed?

There is no single test that confirms a clinical diagnosis of MS. In general, doctors diagnose MS by evaluating patients in whom typical symptoms of MS occur together with results of imaging data of the brain and other measurements, such as cerebrospinal fluid (CSF - the liquid surrounding the brain and spinal cord) evaluation². The aim is to see whether the episodes could be due to MS or to another disorder affecting the CNS. So, the diagnosis of MS is based on:

- The presence of neurological symptoms and signs that are consistent with an MS attack (relapse), which generally last for at least 24 hours and resolve, partially or completely, in a couple of days or in several weeks⁹
- Magnetic resonance imaging (MRI) data of the brain and spinal cord showing inflammation and scarring in the CNS caused by MS⁹
- CSF evaluation for markers typical of MS⁹
- Evoked potential (EP) tests (which measure the speed of nerve transmission in the CNS and may be helpful in determining the presence of damaged myelin, even in the absence of neurological symptoms). Since the advent of MRI, however, EPs are less frequently used for diagnostic purposes⁹

How is MS treated?

Whilst the exact cause of MS is unknown, it is likely that both environmental and genetic factors are involved². There is no cure for MS but several therapies have proven helpful². Treatments aim to return function after an attack, prevent new attacks, and prevent disability².

MS can be treated in different ways according to the individual's status. For example, corticosteroids are used to treat acute attacks. Taken orally or by injection, they reduce inflammation by suppressing the immune system and may reduce the severity and duration of an attack¹⁰. However, corticosteroids are not recommended for an extended period of time¹⁰.

In contrast, therapies that affect the course of the disease, Disease-Modifying Therapies (DMTs), are used in an attempt to alter the natural course of MS by modifying the immune response, and so reducing inflammatory activity in the brain. DMTs help prevent attacks and may slow the progressive worsening of MS¹⁰.

In addition, there are therapies available to treat individual MS symptoms, including tremor, bladder and bowel dysfunction, pain, cognitive dysfunction, vertigo, nausea, vomiting and fatigue².

References

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