

Newly Diagnosed with Multiple Sclerosis – The Facts

Multiple sclerosis (MS) is an unpredictable, often disabling disease of the central nervous system (CNS) which is composed of the brain and spinal cord. The disease attacks the myelin which is a protective covering wrapped around the nerves of the central nervous system. MS is not contagious, and is not inherited, although research indicates that genetic factors might make certain individuals more susceptible to the disease. MS is not a fatal disease for the vast majority of people with MS. People living with MS can expect to have a normal or near-normal life expectancy.

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What causes MS?

While the exact cause of MS is not known, current research increasingly points to a complex interplay of environmental and possibly genetic risk factors. Together these two factors may influence a risk for developing MS given a prescribed set of conditions which are yet to be discovered.

Who gets MS?

Multiple sclerosis can occur at any age. It is usually diagnosed between the ages of 15 to 40, during the career and family building years. It can make its first appearance in young children and in older adults. MS is three times as likely to occur in women than in men and is seen most commonly in people of northern European background.

An estimated 100,000 Canadians have multiple sclerosis. Prevalence rates range from one MS case per 500 people to one in 1,000 across the country. Canada is a high risk area for the disease, which occurs more often in countries, like Canada that are further away from the equator. Based on current prevalence rates, the MS Society estimates that approximately 1,000 new cases of MS are diagnosed in Canada each year, which means three more Canadians are diagnosed with MS every day.

Different types of MS

The earliest form of MS is **clinically isolated syndrome (CIS)**. CIS refers to a single episode of neurological symptoms suggestive of multiple sclerosis. Often, on investigation using MRI the doctor finds evidence of another abnormality in the brain or spinal cord. Having multiple attacks of symptoms defines **relapsing-remitting MS**, the most common disease course at the time of diagnosis.

Relapsing-remitting MS (RRMS) is characterized by unpredictable but clearly defined relapses (also known as attacks, exacerbations or flare-ups) during which new symptoms appear or existing ones get worse. In the period between relapses, recovery is complete or nearly complete to pre-relapse function (remission).

Secondary-progressive MS (SPMS) follows a diagnosis of RRMS. Over time, distinct relapses and remissions become less apparent and the disease begins to progress steadily, sometimes with plateaus. About half of people with relapsing-remitting MS start to worsen within 10-20 years of diagnosis, often with increasing levels of disability.

Primary-progressive MS (PPMS) is characterized by a slow accumulation of disability, without defined relapses. Approximately 10 per cent of people diagnosed with MS have PPMS.

Progressive-relapsing MS (PRMS) is the rarest course of MS, occurring in only about 5 per cent of people diagnosed. People with this form of MS experience relapses with steadily worsening disease from the beginning.

What causes symptoms?

In MS, there is a dysfunction of the immune system resulting in the body's defense mechanisms (designed to protect against foreign intruders such as virus and bacteria) turning their attack on the body's own tissue, namely the myelin. Early in the disease, this attack on the myelin is characterized by inflammation of the myelin along the nerve fibres.

When this happens, the usual flow of nerve impulses along nerve fibres (axons) is interrupted or distorted. The result may be the wide variety of MS symptoms, depending upon what part or parts of the central nervous system are affected. The damaged parts of myelin are often called "lesions" or "plaques". The severity of MS, progression and specific symptoms cannot be predicted at the time of diagnosis.

Treatments for MS

While there have been major advancements in treatments that delay or prevent progression in relapsing forms of MS, there are currently no approved treatments for progressive forms of MS. Treatments that delay or prevent progression in relapsing forms of MS target inflammation, and these drugs are generally less effective in progressive MS where inflammation plays a lesser role in the disease process.

MS medications can be divided into three categories; all three medication categories listed below are indicated for relapsing forms of MS while generally only the third category is used in the management of progressive MS.

▶ **Disease-modifying therapies** are drugs that impact the underlying disease. These therapies target some aspect of the inflammatory process of MS and appear to reduce the frequency and severity of relapses; reduce the number of lesions in the brain and spinal cord as seen on MRI; and slow down the accumulation of disability. These medications are used for treatment in individuals with relapsing-remitting MS and secondary-progressive MS, with relapses.

▶ **Relapse management medications (steroids)** help to decrease the severity and duration of MS relapses by reducing the inflammation that occurs in the central nervous system.

▶ **Symptom management medications** help ease many MS-related symptoms such as fatigue, spasticity and pain. These medications are available to people with all types of MS.

In addition, there are important non-medicinal strategies to improve quality of life for people living with MS, including appropriate exercise, physiotherapy, rehabilitation, massage, stress-reduction techniques, among other wellness approaches. These non-medicinal strategies play a key role in managing all types of MS.

How is MS diagnosed?

The medical history and neurological exam are the mainstay of diagnosis in MS. MRI, evoked potentials and occasionally lumbar puncture, are tests that may be useful in confirmation when a diagnosis of MS is suspected. A diagnosis of MS must include evidence of

disease activity separated in time (lesions that formed at different points in time) and space (lesions in at least two separate areas of the CNS). Sometimes this means that it can take a little while for a diagnosis to be confirmed. It is important to remember that there is no one test that can be used to diagnose MS. The diagnosis of MS is one made only once other potential causes for symptoms have been ruled out.

Magnetic Resonance Imaging (MRI) is a medical imaging technique commonly used in radiology to visualize the internal function and structure of the body. In MS, the MRI can provide pictures of the areas of damage (*lesions*) in the central nervous system, caused by MS, and can also reveal whether there is a loss of brain volume.

Evoked Potentials (EP's - visual, auditory and somatosensory) is a test that measures the speed of nerve impulse conduction in the pathways of the central nervous system. In MS, nerve impulse conduction is slowed related to the myelin damage, and EP's can record this slowing.

Lumbar puncture (LP), sometimes known as a *spinal tap*. LP can be helpful when other investigations are negative. A small needle is inserted at the base of the spine and a small amount of the cerebrospinal fluid (CSF) is collected to test for the presence of proteins which are known to be present with inflammation in the CNS.

How to reach us

Call toll-free in Canada: **1.800.268.7582**
MS Society of Canada Web: **mssociety.ca**
Email: **info@mssociety.ca**

How we can help

The MS Society offers a variety of programs and services to help people affected by multiple sclerosis effectively manage and cope with the disease. Please note that programs and services vary from province-to-province.

- Information and referral
- Support and self-help groups
- Recreation, social and wellness programs
- Conferences, workshops and education programs
- Equipment and Special Assistance
- Government relations and advocacy

Contact us to learn about programs and services offered in your community.

MS Research

The MS Society funds promising avenues of research – both investigator driven and targeted – that focus on progression and therapies, cause and risk factors of MS, nerve damage and repair, and symptom management and quality of life. Approaches include laboratory research, clinical trials and research on aspects of healthy living. Many avenues are currently being pursued:

- Progressive MS
- Genetics
- Myelin repair
- MRI studies
- Paediatric MS studies
- Stem cell studies
- Immunology
- Vitamin D
- CCSVI