



Multiple Sclerosis (MS)

1. Multiple sclerosis is the progressive destruction of the myelin sheaths of neurons in the central nervous system accompanied by disappearance of oligodendrocytes and the proliferation of astrocytes. The sheaths deteriorate to scleroses, which are hardened scars or plaques, in multiple regions. The destruction of myelin sheaths interferes with the transmission of nerve impulses from one neuron to another, literally short –circuiting conduction pathways. Usually, the first symptoms occur in early adult life. The average age of onset is 33. The frequency of flare-ups is greatest during the first three to four years of the disease, but a first attack, which may have been so mild as to escape medical attention, may not be followed by another attack for 10 to 20 years.
2. Among the first symptoms of MS are muscular weakness of one or more extremities, abnormal sensations such as burning or pins and needles, visual impairment that includes blurring double vision and problems with color and light perception, lack of coordination; vertigo, and sphincter impairment that results in urinary problems such as urinary urgency. Following a period of remission during which the symptoms temporarily disappear, a new series of plaques develop, and usually every year or two. Each time the plaques form, some neurons are damaged by the hardening of their sheaths, whereas others are uninjured by their plaques. The result is progressive loss of function interspersed with remission periods during which undamaged neurons regain their ability to conduct nerve impulses.
3. The symptoms of MS depend on the areas of the central nervous system (CNS) most heavily laden with plaques. Sclerosis of the white matter of the spinal cord is common. As the sheaths of the neurons in the corticospinal tracts deteriorate, the patient loses the ability to contract skeletal muscles. Damage to the ascending tracts produces numbness and short –circuit impulses related to the position of body parts and the flexion of joints. Damage to either set of tracts also destroys spinal cord reflexes.



4. The clinical course of MS is unpredictable. During typical episodes, symptoms worsen over a period of a few days to two to three weeks followed by a period of remission. Relapses occur at an average rate of 0.5 per a year during the Initial five years, although this rate is highly variable. Some patients experience complete remission following relapses, whereas others gradually accumulate neurologic problems. Many patients suffer multiple attacks but are never disabled. About 20% of MS patients have symptoms and signs that appear slowly and steadily, without a clear relapsing –remitting pattern. Such a course often occurs in late-onset steadily, without a clear relapsing-remitting pattern. Such a course often occurs in late- onset patient (over 40) and is frequently associated with severe disability.

5. About two-thirds of MS patients are ambulatory 25 years after the onset of their disease while one-half will be working 10 years from the onset, and one-third will have unrestricted functions. **MS** does not predictably shorten life expect in a minority of patients who are bedridden or succumb to urinary tract infection (UTI) or pneumonia.

6. Although the aetiology of MS is unclear, there is some evidence that it might result from a viral infection that precipitates an autoimmune response. Viruses may trigger the destruction of myelin-producing oligodendrocytes by the antibodies and cytotoxic cells of the body's immune system. Like other demyelinating diseases, **MS** is incurable. However, in view of the evidence that it might be an autoimmune disease, immunosuppressive therapy is widely used. Electrical stimulation of the spinal cord can also improve function in certain patients. Improvement has also been shown in patients who are administered pure hyperbaric oxygen while in a pressure chamber. This result supports the idea that the destruction of myelin occurs preferentially in parts of the brain that are relatively low in oxygen. Treatment is also directed at the management of complications such as spasticity, facial neuralgia and twitching, urinary bladders problems, and constipation.

Vocabulary

1. **Nerve impulses pathway:** The electrical activity propagated along a nerve fibre a conduction route for nerve impulses from one group of nerve cells to another group or to muscle or gland cells.
Flare-up: a sudden painful attack especially after a period of remission.
2. **Impairment:** the state of having a diminished mental or physical ability.
Vertigo: a sensation of spinning or whirling motion, imprecisely used as a general term to describe dizziness.
Urinary urgency: a strong desire to void the bladder.
3. **Central nervous system(CNS):** the brain and the spinal cord
Spinal cord: the portion of the central nervous system contained within the spinal or vertical canal.
4. **Relapse** (relapsing- remitting MS, SEP de forme rémittente): the return of the disease after partial recovery.
5. **Ambulatory:** used to describe a patient who is not confined to bed or hospital.
Bedridden: confined to bed as a result of disease or an accident.
Urinary tract infection (UTI): microbial infection, usually bacterial, of any part of the urinary tract.
6. **Aetiology:** the causes of disease.
Trigger: to cause to happen, bring on suddenly
Pressure chamber (= hyperbaric chamber (=caisson hyperbare): a chamber providing pressures greater than atmospheric commonly used to treat decompression sickness and to provide hyperbaric oxygenation
Neuralgia: pain of a serve character due to damage or irritation of a nerve

Twitching: Brief, rapid contraction of a muscle

The urinary bladder: the membranous sac within the abdomen that serves as a storage place for urine.

A. Word Formation

Creating New Words from Root Forms

Hard	Harden (§1)	Hardening
Worse	Worsen (§4)	Worsening
Short	Shorten (§5)	Shortening
wide	Widen	Widening
Broad	Broaden	Broadening
Soft	Soften	Softening
Thick	Thicken	Thickening
Stiff	Stiffen	Stiffening
Tough	Toughen	Toughening
Red	Redden	Reddening
White	Whiten	Whitening
Dark	Darken	Darkening
Bright	Brighten	Brightening
Sick	Sicken	Sickening
Strong Strength	Strengthen	Strengthening
Long Length	Lengthen	Lengthening

B. Adverb Formation

Transforming Adjectives into Adverbs

- How to Form Adverbs by Adding Suffixes

Vast	Vastly (§2)
Thorough (P2)	Thoroughly
Sure (P3)	Surely
Actual	Actually (§2)
Natural	Naturally (§2)
Normal	Normally (§3)
(un)usual (P2)	Unusually
Painful (P2)	Painfully
Necessary	Necessarily (§3)
Ready	Readily
Steady	Steadily (§4)

Various Adverbs

Formation and position

Notion and Position of Adverbs

Understanding the Role and Placement of Adverbs

- How Adverbs Modify Sentences and Where to Position Them

Adverbs: are words or expressions used to modify the meaning of a verb, an adjective, another adverb, or phrase. They express various notions such as frequency, time, sequencing, manner, degree, modality...

I. Formation:

As seen in the table 'word formation' above, a lot of adverbs end in – **ly**:

E.g. Literal ---**literally**: short – circuiting conduction pathways. (P1).

Heavy ----**heavily**: most heavily laden with plaques. (§3).

Predictable ---**predictably**: **MS does not predictably** shorten life. (§5)

Incredible--- **incredibly**: He is **incredibly** strong for his age.

Basic ---**basically**: **basically**, the experiment analysed the reaction to antibiotics.

Other adverbs called adverbial phrases have a form of their own, and can be made up of one or more words.

E.g. Electrical stimulation of the spinal cord also improves function in certain patients. (§6)

About 20% of MS patients have symptoms. (§4)

The operation will take place **the day after tomorrow**.

Pay attention to the following:

Some common words ending in –**ly** are adjectives.

E.g. **bodily** fluids, a **deadly** diseases, an **unlikely** diagnosis, a **friendly** nurse, a **timely** intervention, a **lovely** day, a **lonely** old man, a **daily** injection...

Some adjectives and adverbs (early, fast, hard, late...) have the same form:

E.g. He is a fast runner ---he runs fast

He is a hard worker ---he works hard. (= Il travaille dur).

The adverb does not have the same meaning as hard.

E.g. He **hardly** ever works. (= il ne travaille guère.)

I **hardly** know him. (= je le connais à peine.)

II. Notion and position

The position of adverbs is closely related to the notion they express. They can be found at the beginning of the sentence (front position); in the middle (mid position) or at the end (end position). Some adverbs can be replaced in the front position to insist on the adverbial notion. Note the use of the comma after the adverb.

E.g. usually, the first symptoms occur in early adult life. (§1)

Strangely enough, the symptoms occurred much earlier than usual.

In English, the mid position means the adverb is placed:

Between the subject and the verb:

E.g. the symptoms temporarily disappear. (§2)

After the verb be:

E.g. many parents suffer multiple attacks but **are never** disabled.
(§4)

Between the auxiliary and the verb or the first two auxiliaries:

E.g. MS **does** not predictably shorten life. (§5)

Electoral stimulation of the spinal cord **can also improve** function. (§6)

He **may not always have** worked hard enough, and yet he passed the competitive exam.

It is very rare to find it between the verb and its direct object. With intransitive verbs, the adverb can be placed before or after the verb:

E.g. This disease spread quickly in tropical climates.

The disease quickly spread among the population.

Most adverbs of time and manner, and adverbial phrases are found in the end position:

E.g. The patient was discharged from hospital **yesterday morning**.

The doctor examined the patient **thoroughly**.

III. Adverbs of frequency

They usually answer the question (**How often**)?

The following adverbs are in the **mid position**:

Always, frequently, regularly, commonly, generally, often, quite often, usually, occasionally, sometimes, rarely, and seldom (= rarement), hardly ever (= guère, Presque jamais), ever (in question), never (in negative statements) ...

E.g. Such a course often occurs in late-onset patients (over 40) and is frequently associated with severe disability. (§4)

Have you ever been operated on? (= Avez-vous jamais/ déjà été opéré?).

The following are used in the **end position**:

Again, now and again , (every) now and then , from time to time, every day, twice a week, on and again, now and again , (every) now and then, from time to time, every day, twice a week, on and off...

E.g. Old Mr. Jones has fallen over **again**.

One attack follows another over the years, usually **every year or two**. (§2)

1. Adverbs of time

They answer the questions **when? How long? How long ago?**

They are usually found in the **end position**, but they can also be found in the front position.

Here are the main ones:

Last year(month, week) , one year ago the day before yesterday, today, now, right away, immediately, at once, tomorrow, the day after tomorrow, next week (month, year), soon, over the years...

E.g. one attack follows another over **the years**. (§2)

I saw him five years ago. (= il y a cinq ans)

Today, tuberculosis research programmes attract only about a tenth of the funding given to HIV/ AIDS research.

2. Adverbs to express sequence

The following adverbs are usually placed in the front position to insist on sequencing, in presentations for example:

First, firstly, first of all, second, secondly, third, thirdly, then last, lastly, finally, eventually (=finalement)...

E.g. **First of all**, I'd like to thank the organizers for giving me the opportunity to present our search.

However, some of them can be used in the **mid position**.

E.g. Despite the difficulties, we eventually managed to raise the funds for new microscopes.

3. Adverbs of modality

They express a modal viewpoint

They are usually placed before the adjective, the verb; or the participle they modify, here are some:

Absolutely, actually, (= en fait), certainly definitively, even, highly, merely, necessarily, obviously, only, particularly, perhaps, practically, rather, simply ,relatively, somehow, somewhere...

E.g. Parts of the brain those are relatively low in oxygen. (§6)

4. Adverbs of degree

The following adverbs are usually **placed before the adjective, the verb, or the past participle** they modify:

Almost, barely, equally, far, hardly, highly, nearly, quite, rather, so, too, very ...

E.g. This rate is highly variable. (§4)

Pay attention to the adverb enough. It always comes after the adjective

E.g. the patient isn't strong enough (= pas assez fort) to be transferred.

5. Adverbs of manner

They are often used after the verb

Here are some: Badly, closely, carefully, dangerously, fast, hard, horizontally, obliquely, perfectly, quickly, severely, typically, widely...

E.g. About 20% of MS patients have symptoms and signs that appear slowly and steadily. (§4)