

UNDERSTANDING MULTIPLE SCLEROSIS

Inside, you'll find information and support.



ABOVE MS™
Brought to you by Biogen

A woman with curly hair is shown in profile, looking out towards the ocean. She is wearing a light-colored jacket over a patterned top. The background is a bright, sunny outdoor setting with green foliage and a clear blue sky.

Sign up at [AboveMS.com](https://www.aboveMS.com) to receive information specifically tailored to people living with MS.

Take the next step while living with MS

At Biogen, we know that living with multiple sclerosis (MS) can sometimes feel overwhelming. We hope this brochure helps you and your healthcare team as you make choices about treating MS.

Inside, you'll find information including:

- **What MS is** and how it may affect the body
- Why **early diagnosis and timely treatment** may be important
- The **potential impact of wellness** on your journey with MS
- How to **have more productive appointments** with your healthcare team
- Additional MS **resources** available to you



UNDERSTANDING MS

Multiple sclerosis (MS) is an immune-mediated disease that is thought by some to be an autoimmune disease. That means that in addition to defending the body against harmful invaders (like viruses or bacteria), the immune system actually attacks the body.

Although nobody knows the exact cause of MS, at Biogen we're committed to fighting the disease through research and development.

Who gets MS?

Multiple sclerosis (MS) affects an estimated 2.3 million people across the globe. **85%** of MS cases are relapsing MS. This is a type of MS where symptoms can flare up at times and then lessen or go away.

It's thought that factors such as genetics and location affect who gets MS. For example, it's more common in colder climates farther from the equator.

Did you know?

MS is about 2 to 3 times more common in women than in men.



85% of people with MS have relapsing MS



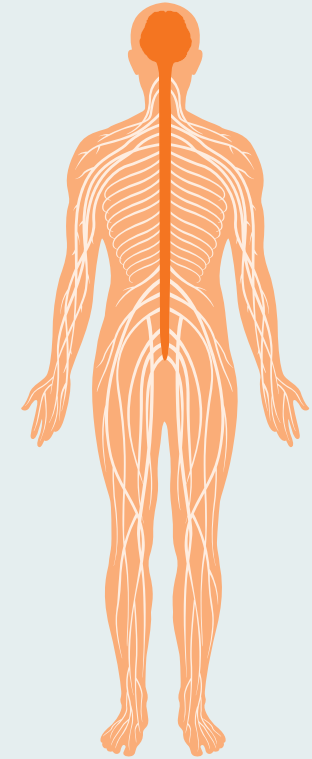
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How MS may affect the body

MS affects cells in a part of the body called the central nervous system (CNS). The CNS helps control a lot of functions, such as movement and thoughts.

The CNS does this by sending electrical signals to other parts of your body. MS disrupts these electrical signals.

The central nervous system:
the brain and spinal cord



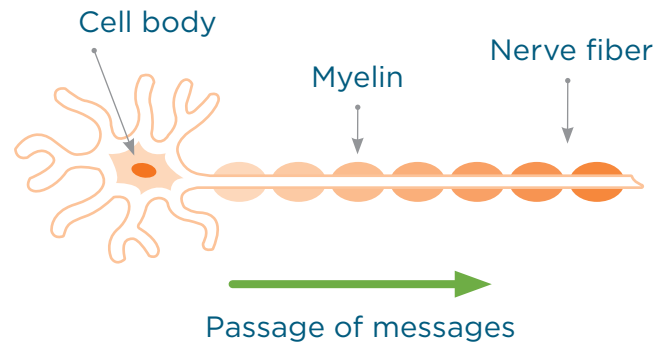
How MS affects the nerves

You depend on your nerves to feel, see, move, and think. Each nerve has a covering that functions much like the rubber coating around an electrical wire. It protects the nerves inside, but when damaged, it can cause changes in any one of these functions. That's why people living with multiple sclerosis (MS) can experience pain, feel tired, or have changes in mood.

If you have any questions about what you read here, talk to your healthcare team.

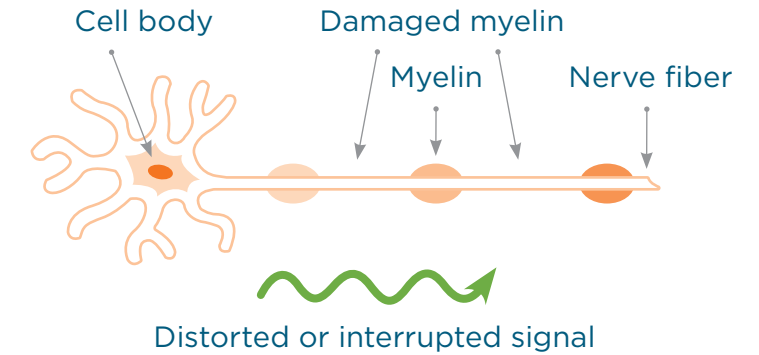
► Healthy nerve

In a healthy nerve, nerve fibers are protected by something called myelin. This allows messages to be sent without interruption.



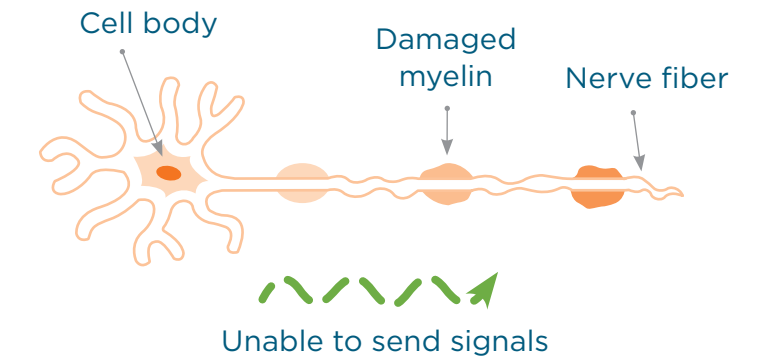
► Damaged nerve

In people with MS, the immune system attacks the myelin, wearing it down. This makes it harder to send messages.



► Scarred nerve

After wearing down the myelin, the immune system can actually damage the nerve fiber or cause loss of the nerve fiber altogether. Damaged nerves can make it difficult or even impossible for the nerve to send messages.



Some of the most common symptoms

Multiple sclerosis (MS) affects everyone differently, so people can have different types of symptoms. Some are considered visible and can be seen by others. Most are considered invisible and are seen or felt only by the person with MS. Over time, symptoms can get worse and new symptoms can appear:

- Walking problems
- Difficulties with attention, learning, and memory (cognition)
- Mood changes
- Muscle stiffness
- Numbness and tingling
- Pain in arms and legs
- Bladder and bowel dysfunction
- Sensitivity to hot and cold
- Sexual difficulties
- Tiredness and exhaustion (fatigue)
- Vision problems
- Weakness or poor coordination

All these symptoms may affect you and your daily life in a number of ways. Always talk to your healthcare team if you have any questions regarding your MS, symptoms, or ways to manage them.

What are MS relapses?

Relapses are when new symptoms not brought on by fever, heat, or infection temporarily appear or symptoms you already have get worse for a period of time. Your healthcare team may call relapses flare-ups or exacerbations.

Relapses are not always the same. Some are worse than others, and they may last anywhere from a few days to several months.

How do you know if you're having a relapse?



Symptoms typically last at least 24 hours



Symptoms typically appear at least 30 days after your last relapse

Think you may be having a relapse or have any questions?
Talk to your healthcare team right away.

Even mild flare-ups may cause damage, so it's important to take every relapse seriously.

Understanding the words your healthcare team uses

Making sense of multiple sclerosis (MS) can be difficult, especially if there are words you may not know yet.

Here are some of the most common terms you'll hear when learning about MS. If your healthcare team uses any other words you don't know, be sure to ask what they mean.

Autoimmune disease

When the immune system mistakenly attacks the body's own tissues, as it would foreign invaders such as viruses or bacteria

Central nervous system (CNS)

The CNS is made up of the brain, spinal cord, and optic nerves. It controls most functions of the body and the mind

Evoked potential test

A diagnostic test that measures the electrical response in the brain to sound, light, or other sensations

Infusion

The process of flowing a solution into the body, usually through a vein (or infusion port)

Injectable

A type of treatment you may be able to give yourself with a needle

Intravenous (IV)

The passing of medicines into a vein through a needle attached to a tube

Magnetic resonance imaging (MRI)

A way to create images of the inside of the body with powerful magnets and radio waves. An MRI produces detailed pictures of areas that are difficult to see using other types of scanning devices. Along with other tests, an MRI may help confirm or determine a diagnosis

Myelin

The fatty layer of protective material around nerve fibers

Neurological test

A way to measure a person's thinking, coordination and strength, vision and hearing, and other senses

Relapse

When MS symptoms appear, reappear, or become worse. Also called a flare-up, attack, or exacerbation

Sclerosis

The scarring of tissue



DIAGNOSIS AND TREATMENT

Multiple sclerosis (MS) can sometimes take a while to diagnose. In general, no single test can diagnose it. So healthcare teams may use a few different tests, such as a neurological test, a spinal fluid test, an evoked potential test, or an MRI.

What is an MRI?

An MRI—or magnetic resonance imaging test—uses powerful magnets and radio waves to show images of the inside of a person's body.

In people with MS, MRIs can show brain and spine lesions. Lesions are areas where nerve tissue is damaged from MS.

Three types of lesions are visible with an MRI

Gadolinium-enhanced (Gd+) lesions These lesions show active inflammation. This lesion type might indicate a flare-up and current damage occurring in the brain (which may not be reflected in other lesion types)

T2 lesions In an MRI scan, these lesions appear as white spots and indicate the long-term impact of multiple sclerosis (MS)

T1 lesions In an MRI scan, these lesions appear as dark spots. This lesion type indicates nerve tissue damage, which may be permanent

Depending on where the lesions show up, there may be different symptoms:

Cerebrum (front part of the brain) Difficulty with attention, learning, memory, and mood changes

Cerebellum (back part of the brain) Poor balance, poor coordination

Brain stem Impaired speech

Optic nerve (nerve behind the eye) Vision problems

Spinal cord Muscle stiffness, numbness and tingling, pain in arms and legs, problems with urinating or bowel movements

It's also important to ask your healthcare team if you have questions about what your MRI shows.



MRIs can detect changes in the disease when there are no signs or symptoms of relapse. Lesion activity may occur 5 to 10 times more frequently than relapses and that's why getting regular MRI tests is important. Since MRIs may help determine whether or not you are responding to treatment, they provide one way to determine whether it may be time to talk about your treatment options.

The importance of treatment

Disease modifying therapies (DMTs) aim to work at the “root” of multiple sclerosis (MS) disease activity. It’s important to know that treatment may also come with risks, so keep working with your healthcare team. Together, you can find a treatment that’s right for you.

Treatments can be given in different ways



Injections



Infusions



Orally

MS is different for everyone, and not everyone responds to the same DMT the same way. You may have to try several different DMTs until you find the one that’s right for you.





TREATING WITH WELLNESS IN MIND

Beyond understanding the details of multiple sclerosis (MS), you should know that a focus on wellness can also help you too.

What's wellness?

A combination of your physical, mental, and social well-being. Paying attention to wellness may impact your overall health.

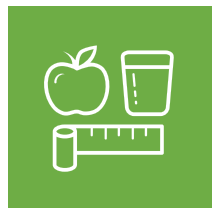
How can it help?

While more research is needed, studies have shown that sticking to a healthier lifestyle may have a positive impact on MS symptoms. For example, eating fresh, natural ingredients may help with fatigue—and stretching may help with spasticity and stress.

Read on for more tips to consider. Keep in mind that everyone is different and you should work with your healthcare team to find a wellness plan customized for you.

Wellness starts with forming healthy habits

Consider the following to see if they are right for you:



A nutritious diet

Try choosing a variety of fresh, natural ingredients over frozen or canned foods. Focus on fruits and veggies, lean proteins, and whole grains.



Exercise routines

Physical activity doesn't have to feel like a chore. Find something that fits your current level of ability, such as walking with a friend, an active hobby, or simple stretches.

Exercise may not be for everyone. Talk to your healthcare provider before beginning any exercise routine.



Mental activities

Sudoku and crossword puzzles are 2 options for keeping your mind active. It's also important to get enough sleep and stick to a daily routine as much as possible.



Emotional wellness

Having a positive outlook can go a long way. You can also try practicing mindfulness by meditating and staying aware of how you feel.

Part of developing healthy habits also means avoiding risk factors such as smoking and alcohol use, which can have an effect on your health. Talk to your healthcare team about developing daily routines that are comfortable and right for you.

Visit [AboveMS.com/Wellness](https://www.abovems.com/wellness) to watch exercise videos, get healthy recipes, play brain games, and more.



TALKING WITH YOUR HEALTHCARE TEAM

When it comes to treating your multiple sclerosis (MS), it's important to maintain open communication with your healthcare team. The following information can help you have a more productive conversation and stay on top of managing your MS.

Together, you can make a decision that may be right for you.

Tips for making the most of your healthcare visit

Monitor your mood and symptoms. When your healthcare team better understands what goes on between appointments, you can make better treatment decisions together. Try keeping a journal with helpful notes.

Be prepared. Talk about the most important symptoms, recent changes, and treatment goals first to help make sure you don't run out of time.

Ask questions. People with MS can have many different symptoms and they can be hard to figure out. It's okay to ask your healthcare team, "Is this normal?"

Take notes. It's easy to forget something your healthcare team says. Taking notes (or bringing a friend or loved one to take them) can help make sure you get all the important details. You could also ask if you can record audio of your appointments.

Take your time. It's okay to ask for an explanation if you don't understand everything your healthcare team says. And if you run out of time at your appointment, be sure to ask how you can get the information you need.

Taking charge of your treatment

You know your body best. One way to help play an active role in your treatment is to regularly discuss how you feel with your healthcare team.

Here are ways to help take charge of your MS treatment:

Consider treatment as soon as you're diagnosed. With treatment, you may be able to help prolong physical ability by slowing disability progression. You and your healthcare team should decide what's best for you.

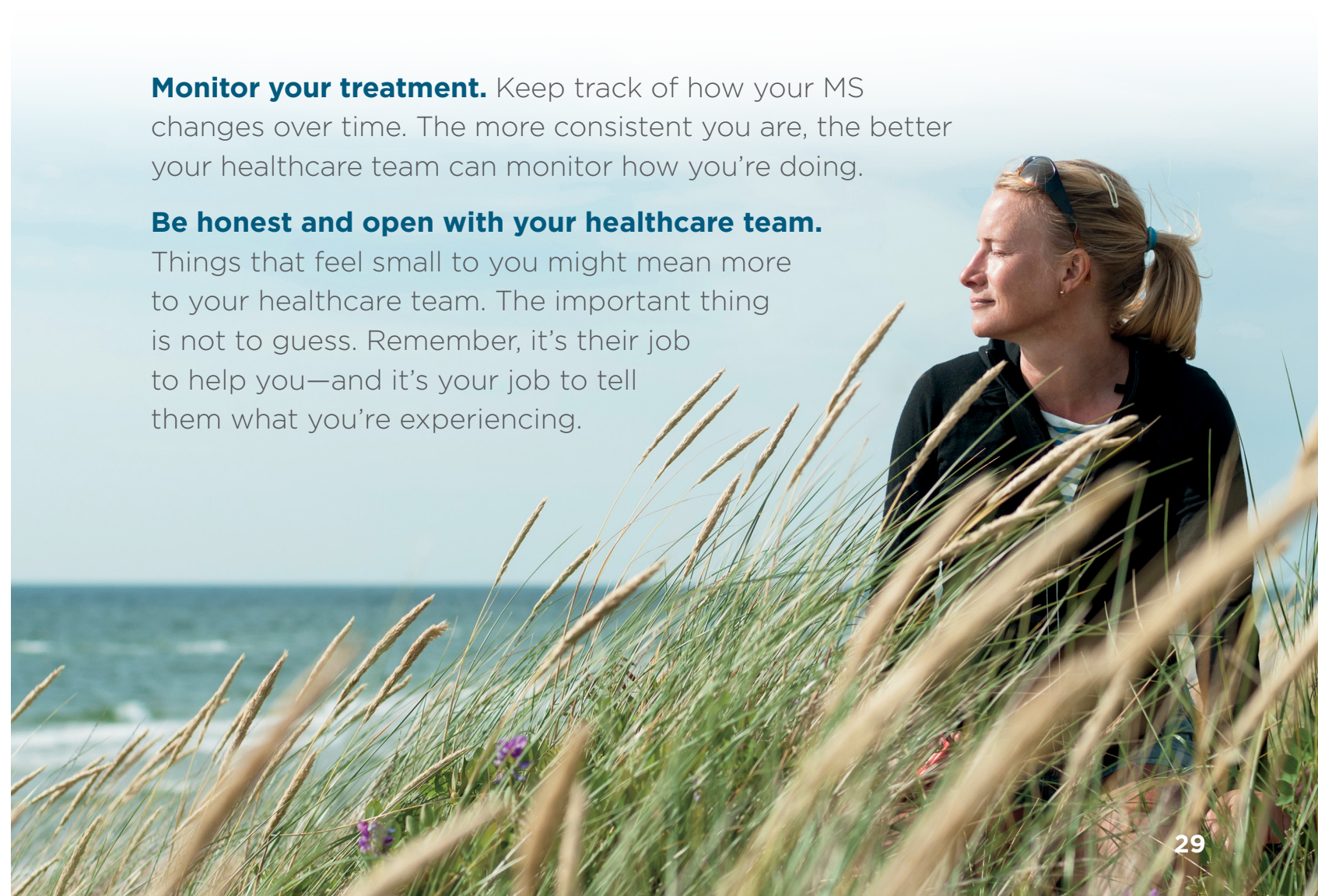
Stay on your treatment as prescribed. If you need help, set reminders to take your medicine and fill your prescription. You could also use your watch or any device with an alarm or calendar. Always tell your healthcare team about any side effects.

Set treatment goals. Work with your healthcare team to set both short- and long-term goals. At each appointment, make sure you're on track with your treatment plan.

Monitor your treatment. Keep track of how your MS changes over time. The more consistent you are, the better your healthcare team can monitor how you're doing.

Be honest and open with your healthcare team.

Things that feel small to you might mean more to your healthcare team. The important thing is not to guess. Remember, it's their job to help you—and it's your job to tell them what you're experiencing.





Whether you're living with MS or caring for someone who is, Above MS™ is here to help.

Sign up today at AboveMS.com/Register.

ABOVE MS

Above MS from Biogen offers extra support to help people living with multiple sclerosis (MS) in different aspects of their lives.

By joining Above MS, you'll be the first to get:

- Real stories and helpful information from people living with MS
- Insights from expert contributors in areas such as financial planning, cooking, exercise, and many others
- Information about ways to connect with the community, including our [Facebook](#) page and live events

Please keep in mind your healthcare team is your primary resource when it comes to your MS and treatment.

Sign up today at AboveMS.com/Register.

JOIN ABOVE MS



Sign up for Above MS™ and stay up to date with our latest **tips, tools, and offerings.**

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