



# Understanding multiple sclerosis

# Table of contents

<b>What you need to know about multiple sclerosis.....</b>	<b>1</b>
How MS affects nerves.....	1
Who gets MS? .....	2
Causes.....	2
Diagnosis .....	2
Types.....	3
Relapses .....	4
Symptoms.....	4
<b>Managing symptoms .....</b>	<b>7</b>
Bladder problems.....	7
Bowel problems .....	8
Depression .....	9
Fatigue .....	10
Mobility problems .....	10
Pain and other sensory problems .....	13
Sexual changes and problems.....	15
Thinking and learning problems .....	16
Vision problems.....	17
<b>Living with MS.....</b>	<b>18</b>
Staying on track with treatment .....	18
Complementary and alternative medicine .....	18
Lifestyle changes .....	18
Pregnancy and breastfeeding .....	21
Ongoing care.....	21
References .....	23
Resources .....	25

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# What you need to know about multiple sclerosis

Learning how to manage multiple sclerosis (MS) might feel like a challenge, especially at first. But understanding your diagnosis can help you take control of your health. There is no cure for MS. But multiple treatment options, along with lifestyle changes, can help you live a full and active life. You can work with your doctor and your healthcare team to create a treatment plan that works best for you. And you can adjust your treatment as your needs change. This booklet provides information about MS, what to expect after diagnosis and how to manage your symptoms and maintain your health.

## How MS affects nerves

MS is a long-term, or chronic, condition that affects the central nervous system (CNS). The brain, spinal cord and optic nerve make up the CNS (see Figure 1). Sclerosis refers to hardening of tissue in the body. In MS, scar tissue forms in the CNS. This makes it hard for messages to travel smoothly between the brain and the rest of the body.<sup>1</sup>

**Figure 1. The central nervous system**



MS is thought to be an immune-mediated disease. This means it occurs because of a problem in the immune system. Normally, the immune system makes antibodies that seek out and attack bacteria and viruses that might cause illness. In MS, the immune system mistakenly attacks the CNS.<sup>1</sup>

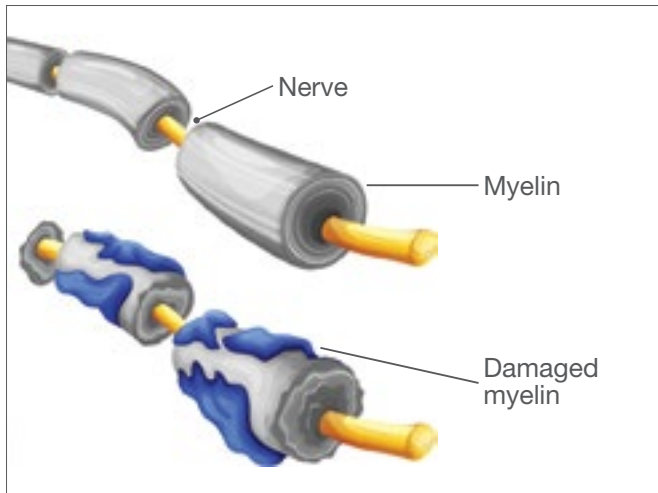
To understand MS, think of the spinal cord as a bundle of wires tucked inside the backbone. These wires are really nerves. They send messages, like electric currents, back and forth between the brain and the rest of the body.

Just like electrical wires are wrapped in a rubbery coating, CNS nerves are wrapped in myelin (see Figure 2). Myelin keeps messages traveling within nerves. It prevents messages from slowing down or getting lost.

In MS, the immune system mistakenly attacks and destroys myelin. This is called demyelination (see Figure 2). The body can heal some of this damage. But sometimes it can't keep up. Instead, plaques, or lesions, form on the nerves. These can slow or stop messages from moving between the brain and body. This causes MS symptoms. These can include fatigue, vision problems or trouble moving body parts.<sup>1</sup>

## What you need to know about multiple sclerosis (cont.)

**Figure 2: Normal nerve and nerve with demyelination**



### Who gets MS?

An estimated 2.3 million people worldwide have MS.<sup>2</sup> It can occur at any age, but happens most commonly between the ages of 15 and 50. Most people are diagnosed between the ages of 20 and 50.<sup>2</sup> Women are affected two to three times as often as men. MS affects most ethnic groups. But it is more common among Caucasians with Northern European ancestry.<sup>2</sup>

### Causes

The exact cause of MS is unknown. Research suggests many things can influence whether a person develops MS<sup>2</sup>:

- Genes. The chance of developing MS might be partly genetic, or passed down through a family.
- Geography. Where people live might play a role. MS is more common in areas farther away from the equator.
- Hormones. Certain hormones might also have an effect. Women are more likely than men to develop MS.

- Outside factors. Something in the environment, like a virus or bacteria, might trigger the condition in someone who already is at risk.

### Diagnosis

There is no single test to diagnose MS. Your doctor likely used many tests and procedures. Along with a review of medical history, tests for MS may include<sup>3,4</sup>:

- Evoked potential tests. These measure how quickly messages move from the spinal cord to other parts of the body. Electrodes on the head measure brain signals when a person looks at a blinking light, listens to clicking noises or tones through headphones or feels electrical pulses on the wrist or knee.
- Lumbar puncture/spinal tap. This tests a small sample of spinal fluid for levels of specific immune system components present in MS.
- Magnetic resonance imaging (MRI). This helps a doctor view the brain and spinal cord without breaking the skin. MRI can also help track the progression of MS.
- Nervous system function tests. These check reflexes, balance, coordination and vision.

### Nerves at work

Taking a step seems simple. The brain sends a signal down the spinal cord and out to the lower body. This tells the hip, leg and foot to move. In MS, plaques can make this difficult. Sometimes, the signal from the brain jumps from nerve to nerve. Other times, the signal is stopped completely.<sup>1</sup> This causes issues with balance and muscle control. Some people with MS might not be able to move certain body parts, no matter how hard they try. Others might have plaques on the optic nerve that cause blurry, double or lost vision.<sup>1</sup>



## Types

There are four types, or courses, of MS, as shown in Table 1. Patterns of remission and relapse vary in different courses of MS.

Remissions are times when symptoms seem to fade. Relapses are times when existing symptoms get worse or new symptoms begin. During relapses, symptoms last at least 24 hours and are not caused by infection, fever or other stress.<sup>1</sup> These commonly occur in two of the four types of MS.

**Table 1. Types of MS<sup>6-9</sup>**

Type	Description
Clinically isolated syndrome (CIS)	<ul style="list-style-type: none"><li>• A first episode of neurologic symptoms that lasts at least 24 hours.</li><li>• A doctor's examination and MRI indicate CIS is caused by inflammation or demyelination in the CNS</li></ul>
Relapsing-remitting (RRMS)	<ul style="list-style-type: none"><li>• RRMS is the most common type of MS, accounting for about 85% of all initial MS diagnoses</li><li>• Relapses are followed by partial or complete remissions</li><li>• It is characterized as active or not active, worsening or not worsening</li><li>• Most people with this type of MS eventually develop secondary-progressive MS</li></ul>
Secondary-progressive (SPMS)	<ul style="list-style-type: none"><li>• Most people with RRMS eventually develop SPMS</li><li>• MS worsens more steadily, causing nerve damage or loss</li><li>• Remissions might or might not occur</li><li>• It is characterized as active or not active, with progression or without progression</li></ul>
Primary-progressive (PPMS)	<ul style="list-style-type: none"><li>• PPMS accounts for about 15% of all initial MS diagnoses</li><li>• Symptoms get worse over time</li><li>• There are no clear relapses or remissions</li><li>• It is characterized as active or not active, with progression or without progression</li></ul>

## What you need to know about multiple sclerosis (cont.)

### Relapses

During a relapse, increased demyelination causes swelling in certain areas of the CNS.<sup>1</sup> This is also called an exacerbation. Some relapses last several days. Others can last many weeks.<sup>1</sup>

Doctors often prescribe a short course of corticosteroids for a relapse. This can shorten a relapse. It can also reduce swelling in damaged areas of the CNS. This can help with recovery.<sup>10</sup>

Some relapses do not respond to corticosteroids. In these cases, treatment might include a process called plasma exchange. This takes blood out of the body and removes antibodies that are causing the relapse. The remaining blood is then transfused back into the body.<sup>10</sup>

### Pseudo-relapses<sup>11</sup>

A pseudo-relapse, sometimes called a pseudoexacerbation, looks and feels like a regular MS relapse. But unlike a true relapse, it doesn't cause physical damage. It is also temporary.

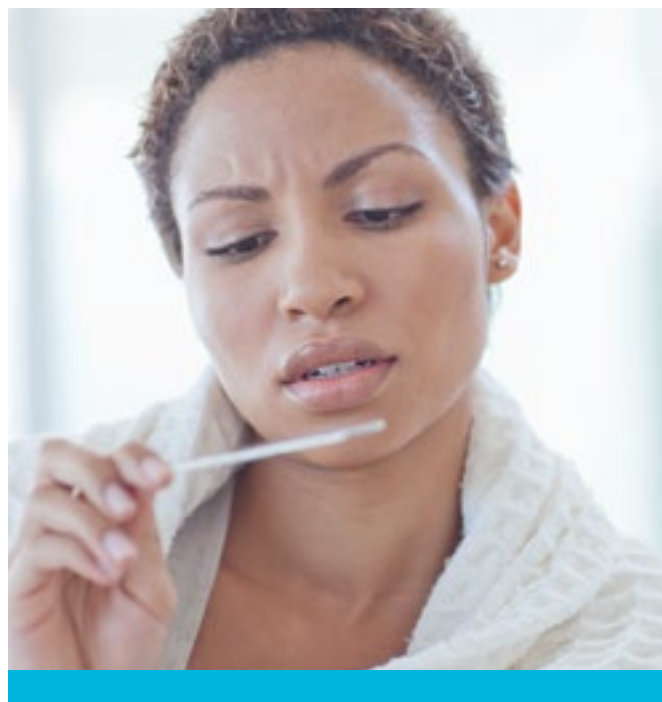
Most pseudo-relapses are triggered by things that raise body temperature. Common triggers include:

- Exercise
- Fever
- Hot or humid weather
- Infections

Symptoms usually improve when the body cools down. Call your doctor if symptoms last longer than 24 hours.

### Symptoms

MS is unpredictable. Symptoms differ, depending on where plaques have formed. Some symptoms might come and go. Others might be more lasting. Symptoms can vary from person to person. Not everyone experiences every symptom. Table 2 lists the range of more common MS symptoms.



**Table 2. MS symptoms<sup>11-13</sup>**

Symptom	Description
Bladder and bowel problems	<p>Bladder problems affect about 80% of people with MS. Bladder problems might include:</p> <ul style="list-style-type: none"><li>• Difficulty starting a urine stream</li><li>• Dribbling or leaking urine</li><li>• Feeling unable to empty the bladder</li><li>• Urgency to urinate</li><li>• Urinary tract infections (UTIs)</li><li>• Urinating more than normal</li><li>• Waking many times a night to urinate</li><li>• Weak urine stream</li></ul> <p>Bowel problems might include:</p> <ul style="list-style-type: none"><li>• Constipation</li><li>• Inability to control bowel movements</li></ul>
Depression	<ul style="list-style-type: none"><li>• Depression can be a side effect of MS or MS medications</li><li>• It is more common in people with MS than in the general population or those with other chronic conditions</li><li>• This is the second most common symptom of MS</li></ul>
Fatigue	<p>Fatigue occurs in about 80% of people with MS. It can cause:</p> <ul style="list-style-type: none"><li>• Difficulty concentrating</li><li>• Forgetfulness</li><li>• Mood swings</li></ul>
Mobility (movement) problems	<p>Common mobility problems include difficulty with:</p> <ul style="list-style-type: none"><li>• Balance</li><li>• Speaking</li><li>• Swallowing</li><li>• Walking</li></ul>
Pain and other sensory problems	<p>Pain might include:</p> <ul style="list-style-type: none"><li>• Facial pain, called trigeminal neuralgia</li><li>• Muscle pain from spasms</li><li>• “Pin-pricking” sensation on the skin called paresthesia</li><li>• Weakness, numbness, tingling or burning feeling in the arms or legs</li></ul> <p>Sensory issues might include:</p> <ul style="list-style-type: none"><li>• Hearing loss, though rare</li></ul>

## What you need to know about multiple sclerosis (cont.)

**Table 2. MS symptoms<sup>11-13</sup> (cont.)**

Symptom	Description
Sexual problems	Sexual problems often include: <ul style="list-style-type: none"><li>• Low sex drive in men and women</li><li>• Erectile dysfunction in men</li><li>• Vaginal dryness in women</li></ul>
Thinking or learning (cognitive) problems	More than half of those with MS experience cognitive problems. Common problems include: <ul style="list-style-type: none"><li>• Difficulty performing everyday tasks</li><li>• Forgetfulness and short-term memory loss</li><li>• General confusion and impaired judgment</li></ul>
Vision changes	Vision problems are usually caused by swelling in the optic nerve. Problems can include: <ul style="list-style-type: none"><li>• Blurry or double vision</li><li>• Difficulty focusing</li><li>• Eye pain</li><li>• Rapid, involuntary back-and-forth or up-and-down movement of the eyes</li></ul>



You can work with your doctor to find the best ways to manage your symptoms and feel better each day. Many people with MS also find it helpful to seek support from nurses, physical therapists, dietitians and counselors. Together, you can find the lifestyle changes and medications that work best for you. The following discussion offers some guidelines on managing common MS symptoms.



# Managing symptoms

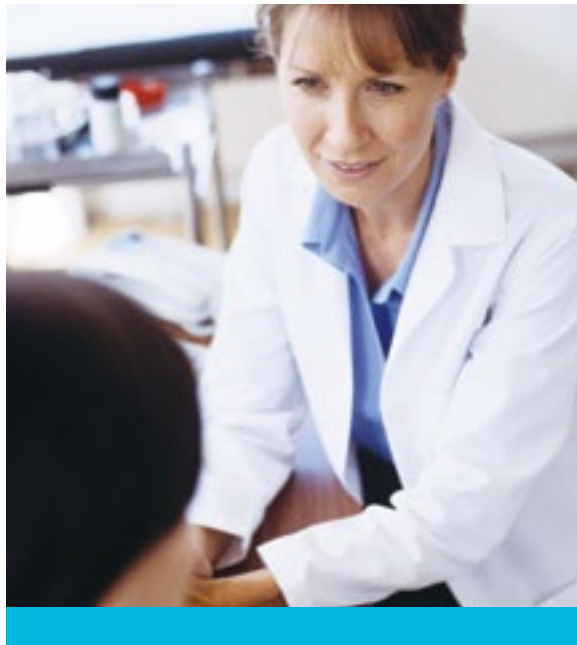
## Bladder problems

Storing and releasing urine are complex tasks regulated by the nervous system. MS can damage nerves that control these actions. This can cause a condition called neurogenic bladder.<sup>11</sup> Bladder problems can also be caused by drug side effects or other MS symptoms, like fatigue or constipation.

Urine storage problems usually happen when the bladder muscle that squeezes out urine becomes overactive. Your doctor might prescribe a drug to help relax this muscle. You can take other steps to help<sup>13</sup>:

- Drink six to eight full glasses of fluid each day. Water is best. This keeps you hydrated and helps flush out the bladder.
- Take a bathroom break every two hours. Do this even if you don't feel the need to at the time. This will help reduce stress on your bladder. It might also help limit your anxiety about unexpected trips to the bathroom.
- Avoid alcoholic, caffeinated or diet drinks. These can irritate the bladder.
- Drink most fluids early in the day. Drink fewer fluids before bedtime.

If urine stays in your bladder after you urinate, your doctor might suggest intermittent self-catheterization (ISC).<sup>11</sup> This is the use of a tube to remove urine from the body. This helps retrain your bladder. Some people find that bladder function returns to normal or near normal after just weeks or months of ISC. For others, ISC becomes a part of daily life. If ISC is not enough, your doctor might suggest an indwelling catheter. This is a flexible rubber tube that stays in the bladder to drain urine out of the body and into a drainage bag.



## UTIs

Anyone can develop a UTI. But it is more common in those who are not able to fully empty their bladders.<sup>13</sup> Urine that stays in the bladder for a long time can breed bacteria. This can lead to infection. UTIs can cause pseudo-relapses. They usually get better after the UTI has been treated.

Symptoms of a UTI can include<sup>14</sup>:

- Cloudy or bloody urine with a strong smell
- Low fever
- Pain or burning with urination
- Pressure or cramps in the back or lower belly
- Urge to urinate more often than usual

Call your doctor if you have any of these symptoms. If you have a UTI, your doctor will likely prescribe antibiotics.<sup>14</sup> You should finish the antibiotic prescription even if you start to feel better, unless your doctor instructs otherwise. If you stop taking your antibiotic earlier than prescribed, symptoms might return because the infection was not successfully treated.

## Managing symptoms (cont.)

### Other causes of bladder problems

Other conditions and medications unrelated to MS might also cause bladder problems. For example, diabetes, pregnancy and enlarged prostate in men can affect the bladder. Certain drugs might also affect urinary function.<sup>14,15</sup> Tell your doctor about any other conditions you have and any other drugs you are taking. This includes over-the-counter products and supplements, such as vitamins and herbs.

### Bowel problems

#### Constipation

Constipation is having three or fewer bowel movements per week or having a hard time passing stool.<sup>16</sup> Waste products normally move through the intestine before being stored in the colon. There, water is removed and reabsorbed. If bowel activity slows down, more water is removed from the stool. This can make it hard to pass. You can take some steps to avoid constipation<sup>17</sup>:

- Drink eight to 10 cups of fluids a day. Do not limit liquids unless instructed by your doctor. Limiting liquids can make constipation worse.
- Eat a high-fiber diet. This includes fruits, vegetables, cereals and whole grains. Ask your doctor how much fiber you should get each day.
- Exercise regularly. This will help stimulate your bowels.
- Go to the bathroom at the same time each day. This can help train your bowels to be more regular.
- Ask your doctor about fiber supplements, laxatives, stool softeners or other products, if needed.



#### Stool incontinence

Stool incontinence is being unable to control when solid waste passes out of the body. It can be caused by several things, including<sup>18</sup>:

- Constipation that results in stool overflow
- Decreased rectal sensation
- Diet
- Medications
- Problems with the anal sphincter, the valve that releases stool out of the body

You can take steps to ease stool incontinence<sup>18</sup>:

- Avoid alcohol, caffeine and other foods that might irritate the bowel.
- Go to the bathroom at the same time each day. This can train your bowels to be more regular.
- Ask your doctor about drugs to help prevent stool incontinence.

## Depression

Depression is a common symptom in MS.<sup>12</sup> It can be caused by MS-related changes in the body. It can also be the side effect of some MS drugs.<sup>13</sup> It is important to know the signs of depression and when to get help.

Symptoms of depression can include some or all of the following<sup>19</sup>:

- Aches and pains that don't go away with treatment
- Being tired or lacking energy
- Eating too much or too little
- Feeling hopeless or negative
- Feeling restless or irritable
- Feeling sad, empty or anxious most of the time
- Feeling worthless, helpless or guilty
- Having a hard time concentrating or making decisions
- Losing interest or pleasure in activities that you used to enjoy
- Sleeping too much or too little
- Thinking about death or suicide

If you have thoughts of suicide, call 911 or your local emergency services number. You can also call a doctor, mental health professional, crisis center or hotline for help.

Talk to your doctor if you feel depressed. Your doctor might suggest counseling, an antidepressant medication or both. In counseling, you can talk with a therapist about your thoughts and feelings.

Antidepressants help balance brain chemicals that affect your mood. It can take up to several months before they start to work. You might notice side effects sooner. These might include<sup>20</sup>:

- Headache
- Nausea
- Restlessness
- Sexual problems
- Sleep problems

Talk with your doctor if your antidepressant does not help. You should not stop taking it on your own. Your doctor might need to adjust your dose or prescribe a different antidepressant.

### Improve your mood

- Sleep well. Keep a regular sleep schedule to prevent fatigue. Talk with your doctor about any sleeping problems.
- Reduce stress. Try calming activities, like yoga or meditation.
- Express yourself. Write your thoughts in a journal. Tell family, friends or support groups how you feel. Share positive and negative thoughts.
- Stay active. Choose activities that you enjoy.

## Managing symptoms (cont.)

### Fatigue

Perhaps one of the most common MS symptoms is fatigue. This is a lack of physical or mental energy that can interfere with daily life. Fatigue can occur at any stage of MS. It can develop regardless of age, gender, disability level or type of MS. About 80 to 90% of people with MS report feeling fatigue.<sup>13</sup>

Work with your doctor to find what causes your fatigue. Some causes might include<sup>13</sup>:

- Bladder problems
- Depression
- Leg weakness and other movement issues
- Medication side effects
- Pain
- Sleep problems
- Spasticity

If your doctor finds no other cause, you might have primary MS-related fatigue. This is also called lassitude.<sup>13</sup> This is unique to MS. It is a feeling of being drained and unable to perform everyday tasks. MS-related fatigue is different from normal fatigue because it<sup>21</sup>:

- Can occur at any time of day, even after a good night's sleep
- Gets worse in heat or humidity
- Happens suddenly
- Is more likely to affect everyday tasks
- Is worse than normal fatigue
- Occurs daily
- Worsens throughout the day

### Managing MS-related fatigue<sup>21</sup>

- Simplify tasks and save energy. Ask your doctor for a referral to an occupational or physical therapist. Together, you can plan how to simplify daily tasks to use your energy more efficiently.
- Keep cool. Fatigue from overheating usually eases when you cool down. Drape a cool, wet towel around your neck if you're exercising or feeling warm. Stay in air-conditioned areas in hot weather.
- Get moving. Physical activity helps strengthen muscles. It might also make you feel more energetic. Talk to your doctor before starting any exercise program. You might also want to meet with an occupational or physical therapist who can design a program for your specific needs.
- Get plenty of rest. Try to find times to rest or nap throughout the day. Focus on getting a good night's sleep. If bowel or bladder problems interrupt your sleep, talk with your doctor about ways to cope.
- Ask your doctor about medications to ease fatigue.

### Mobility problems

Mobility is being able to move when and how you want to move. It is affected by balance and coordination. These two things depend on your ears, eyes, brain, depth perception and sense of position. MS can affect all of these. Table 3 lists some mobility problems in MS.

**Table 3. Mobility problems in MS** <sup>11-13</sup>

Symptom	Description	Things that can help	What to ask your healthcare team
Balance issues	<ul style="list-style-type: none"> <li>• Unsteady, swaying walk</li> <li>• Heavy feeling in legs or feet that causes one foot or both feet to drag when walking</li> </ul>	<ul style="list-style-type: none"> <li>• Small changes to body positioning</li> <li>• Exercise</li> <li>• Assistive devices</li> </ul>	<ul style="list-style-type: none"> <li>• Ask your doctor about tests to identify causes</li> <li>• Consider physical therapy to improve balance</li> </ul>
Spasticity	<ul style="list-style-type: none"> <li>• Uncontrollable tightening or stiffening of muscles</li> <li>• Triggered by many things, including sudden movements, extreme temperatures, humidity, infections</li> <li>• Can affect grooming, bathing, walking and sexual activity</li> <li>• Can affect mood, self-image and motivation</li> </ul>	<ul style="list-style-type: none"> <li>• Smooth-motion exercise, such as swimming, biking or walking, to relax spastic muscles</li> <li>• Avoiding triggers, like a full bladder, constipation or tight-fitting clothes</li> </ul>	<ul style="list-style-type: none"> <li>• Ask your doctor about drugs to ease spasticity</li> <li>• Ask an occupational or physical therapist about exercises or changes in daily activities</li> </ul>
Tremor	<ul style="list-style-type: none"> <li>• Uncontrollable shaking</li> <li>• Can occur when moving or at rest</li> <li>• Occurs in arms, legs, trunk, head or eyes</li> <li>• Can make it difficult to walk, speak or swallow</li> </ul>	<ul style="list-style-type: none"> <li>• Weights or supportive braces to help stabilize affected parts of the body</li> </ul>	<ul style="list-style-type: none"> <li>• Ask your doctor about drugs to ease tremor</li> <li>• Ask an occupational or physical therapist about weights and assistive devices</li> </ul>
Weakness	<ul style="list-style-type: none"> <li>• Loss of strength or function in the arms or legs</li> </ul>	<ul style="list-style-type: none"> <li>• Light weight training</li> </ul>	<ul style="list-style-type: none"> <li>• Ask an occupational or physical therapist about assistive devices</li> <li>• Tell your doctor if your weakness is severe, as a sudden increase in weakness could be due to infection, fever or drug side effects</li> </ul>



## Managing symptoms (cont.)

### Speech and swallowing

MS can affect the brain's control of the lips, tongue, soft palate, vocal cords or diaphragm.<sup>22</sup> This can make speaking and swallowing difficult. Ask your doctor for a referral to a speech and language therapist who can help with these issues.

An estimated 40% of people with MS have speech problems at some point.<sup>22</sup> Common speech problems include:

- Hoarseness
- Loss of voice volume
- Slow speaking
- Slurred speech
- Trouble speaking clearly

Swallowing problems can range from constant coughing or difficulty clearing the throat to trouble swallowing thin liquids or rough foods.

Try these tips to ease swallowing problems<sup>22</sup>:

- Add moisture to solid foods using sauces, broth, water or milk.
- Alternate each bite of food with a sip of liquid.
- Blend your food so it is easier to chew and swallow.
- Eat four to six small meals a day. This might be less tiring than eating three large meals.
- Eat slowly. Keep mealtimes calm.
- Sit upright when eating or drinking.
- Swallow solid foods at least two times per mouthful: once to pass the food down, then again to catch any leftover pieces.
- Take one small bite or sip at a time. This will reduce fatigue and help lower the risk of choking.

### Walking

Over time, MS might make it harder to walk. Balance problems and weakness can affect how you walk. Exercise, medication, physical therapy or an assistive device, like a cane or walker, can help.

Some people think assistive devices are a sign of weakness or giving up. But assistive devices can provide independence and safety. For example, a cane might help give you stability to walk confidently. A motorized scooter might help you save energy during daily tasks. Ask your doctor if an assistive device might be right for you. You can also learn more at [abledata.acl.gov](http://abledata.acl.gov), a national source on assistive devices and technologies.

### Staying safe

Some MS-related changes and mobility problems might affect your safety. They might also affect how you can respond during an emergency. You can take steps to prevent accidents and keep safe at home and work.

- Ask your police and fire departments for a home inspection to identify any safety concerns.
- Create a visual reminder in your kitchen that will remind you to turn off the stove or oven to prevent fire.
- Install electric door lock and intercom systems to make it easier for you to open doors for yourself and guests.
- Keep electrical cords and computer cables out of your walkways to prevent tripping and falling.
- Make sure you can get to and use phones, doors, window latches and assistive devices, especially when you are at your weakest.

## Pain and other sensory problems

You might feel an odd, prickly pain around your waist or a burning pain in your foot. Or maybe you feel a cramp that tightens around your lower leg. These are all forms of MS pain. In one study, 55% of people with MS had clinically significant pain. Nearly half had pain that was chronic, or long term.<sup>23</sup>

Primary pain is caused by demyelination in the CNS. This is also called neurogenic pain. Primary pain can occur without warning. It can also result from physical contact, such as injury, touching or rubbing of a body part. Table 4 lists different types of primary pain.

**Table 4. Primary pain in MS<sup>23</sup>**

Location	Sensation	Description
Anywhere	Burning, itching or sensitivity	<ul style="list-style-type: none"><li>• Known as allodynia<sup>24</sup></li><li>• Caused by something that would not otherwise cause pain, such as light touch or fabric on the skin</li></ul>
Anywhere	Numbness, tingling, “pins and needles”	<ul style="list-style-type: none"><li>• Known as paresthesia</li><li>• Most common type of MS pain</li><li>• Can occur any time</li><li>• Worse at the end of the day</li></ul>
Face	Sharp or stabbing	<ul style="list-style-type: none"><li>• Known as trigeminal neuralgia</li><li>• Can occur any time</li><li>• Often mistaken for dental pain</li></ul>
Head	Dull, sharp, squeezing or throbbing	<ul style="list-style-type: none"><li>• Caused by demyelination of spinal nerves near the head, neck or optic nerve</li><li>• Can occur any time</li></ul>
Midsection	A dull, hugging sensation around the stomach	<ul style="list-style-type: none"><li>• Called the “MS hug”</li><li>• Distracting</li><li>• Persistent</li></ul>

## Managing symptoms (cont.)

Secondary pain is caused by other MS symptoms. Some triggers might include pressure sores, stiff joints, muscle contractions, bladder problems or infections. Secondary pain usually improves when its cause is treated.<sup>23</sup> Table 5 lists different types of secondary pain.

### Keeping track of pain

Try keeping track of your pain in a journal. This might help you and your doctor find what triggers your pain. It might also help your doctor suggest treatment to help control your pain. In your journal, keep clear, detailed notes, including:

- Activity that triggered the pain, such as specific physical movements
- Description of your pain, such as “sharp,” “achy” or “stinging”
- Pain rating on a scale of 0 to 10, with 0 meaning no pain and 10 meaning the worst pain

- Time of day and where you were when the pain started
- What you did for relief and how well it worked

### Managing pain

Many medications can help control MS pain.<sup>23</sup> But they can only help if they are taken as prescribed. Ask your doctor if medication might help control your pain.

You might also ask your doctor about additional, nondrug treatments. Some approaches include<sup>23</sup>:

- Acupuncture, which uses thin needles to stimulate certain points in the body
- Biofeedback, which uses monitoring equipment and techniques to help a person control how the body reacts to pain

**Table 5. Secondary pain in MS**<sup>12,23</sup>

Location	Sensation	Description
Anywhere	Stiffness and spasms	<ul style="list-style-type: none"><li>• Known as spasticity</li><li>• Caused by strong muscle contractions</li><li>• Made worse by irritating problems, like a full bladder</li></ul>
Lower back, radiating to hips and thighs	Dull, aching	<ul style="list-style-type: none"><li>• Known as indirect, chronic pain</li><li>• Can occur any time</li><li>• Can be triggered by poor posture, which strains weakened lower back muscles</li><li>• Usually related to low physical fitness and muscle strength prior to diagnosis</li></ul>

- Hypnosis, which uses deep concentration to control the body's responses to things like pain
- Stress management techniques, like massage, meditation, music or relaxation exercises
- Yoga, which uses focused breathing and gentle movement to stretch and strengthen muscles

No matter the treatment, try to stay active and keep a positive outlook. Staying as active as possible helps keep your mood up and your pain level down.<sup>23</sup> Keep in mind that changes in the severity, location or type of pain do not necessarily mean your MS is worsening.



## Sexual changes and problems

MS can affect the ability to have and enjoy sex.<sup>25</sup> Sexual arousal begins in the CNS. The brain sends messages to the sexual organs through nerves running through the spinal cord. Demyelination can disrupt these messages. This can affect sexual response, including arousal and orgasm.

Other MS symptoms can affect sexual activity, including:

- Embarrassment caused by bowel or bladder incontinence
- Fatigue and weakness
- Pain that interferes with pleasure
- Spasticity that causes cramping or uncontrollable spasms in the legs

There are many ways to treat sexual problems in MS.<sup>25</sup> For example, medications and sexual aids might help with erectile dysfunction. Water-based personal lubricants can help with vaginal dryness. In addition, counseling can help individuals and couples cope with the intimate physical and psychological issues that are part of living with MS. Talk to your doctor about what might be right for you.

## Managing symptoms (cont.)



### Thinking and learning problems

You might forget a conversation just minutes after it occurs. Or you might begin misplacing your car keys. Then, you might begin to forget simple instructions. When these problems happen repeatedly, they could be the result of plaques forming in sensitive areas of the brain. This can affect many types of thinking and learning, including<sup>26</sup>:

- Attention and concentration needed to divide your attention, or multitask
- Memory or recall, which can make it hard to remember new information even if you have no problems recalling information from the distant past

- Information processing, which slows down in some people with MS, making it hard to think about something and respond quickly
- Problem-solving or abstract reasoning needed to think through and carry out a plan or judge situations or reactions
- Visual-spatial ability needed for things like driving, packing a suitcase or navigating directions
- Verbal fluency needed to remember words that might be “on the tip of the tongue”

If you are having these kinds of problems, ask your doctor for an evaluation. You can also take some steps to help yourself<sup>26</sup>:

- Do the hardest mental tasks when you’re at your sharpest, like after a full night’s rest.
- Eat well, sleep well and stay active.
- Exercise your brain with books, puzzles or conversations.
- Organize and store important information in a digital or paper planner, calendar or notebook.
- Put frequently used items like car keys in the same place every time.
- Take extra time to learn new information and practice new tasks.





## Vision problems

Vision problems are common in MS. Demyelination in the optic nerve can change eyesight. These problems are usually temporary and do not cause permanent loss of vision.<sup>10</sup>

- Double vision. Weakened optic muscles can cause eyes to become misaligned.
- Optic neuritis. Demyelination and swelling around the optic nerve can cause blurred or grayed vision or loss of vision in one eye. It might affect how colors appear. It can also affect depth perception or cause a dark spot in the field of vision.
- Uncontrolled eye movements. MS-related changes might cause eyes to change direction unexpectedly, making it hard to see.

Tell your doctor if you are having vision problems. Most MS-related vision problems go away on their own. Others might require immediate attention.

# Living with MS

## Staying on track with treatment

The goals of MS treatment are to promote a person's overall health and ability to stay physically active. Along with lifestyle changes, medications called disease-modifying therapies (DMTs) can help reduce the frequency and severity of MS relapses. These drugs can also slow the progression of MS.<sup>10</sup> Treatment is most effective if it begins soon after diagnosis, before MS can progress further.<sup>27</sup>

Staying on track with treatment is important for controlling symptoms and improving your health. No matter which medications are part of your treatment, you should take them exactly as prescribed by your doctor—at the right times and the correct doses. Do not stop taking them on your own. Discuss your concerns with your doctor first. DMTs are meant to be taken consistently, even when you feel well. There are many types of DMTs. This means you can always work with your doctor to adjust your individual treatment if your needs change over time.

## Complementary and alternative medicine

Complementary and alternative medicine (CAM) refers to treatments used along with or instead of regular medical treatment. CAM might include special diets, supplements or procedures. There are many CAM options associated with MS.<sup>11,28</sup>

Most of these treatments are not tested the same way as conventional drugs or treatments. It is important to consider their risks and benefits carefully. If you are considering CAM, talk to your doctor first. Consider the following questions:

- What does the treatment involve?
- How and why is it supposed to work?
- How effective is it?
- What are the risks?
- How much does it cost?

Often, when something seems too good to be true, it is. If you are considering CAM, take steps to protect your health:

- Tell your doctor and pharmacist. They should know about all therapies you are using. They can tell you about possible side effects or drug interactions.
- If your doctor advises against CAM, you should not pursue it on your own.
- If your doctor approves of CAM, keep a detailed log of what you are doing or taking. Note any changes you experience. Tell your doctor or nurse about any unusual side effects.
- You should use CAM in addition to, not in place of, your conventional treatment.

## Lifestyle changes

Along with taking medications as prescribed, lifestyle changes can help control symptoms and progression of MS. Eating well, staying active, getting enough rest and quitting smoking if you smoke can help you take better control of your health. You might find it helpful to seek support from a care team that includes doctors, nurses, physical therapists, occupational therapists, dietitians and counselors. Together, you can create an individualized treatment plan that works best for you.

## Healthful eating

Good nutrition can help you increase your energy, maintain a healthy weight and improve your general well-being. Eating well can also help control bladder and bowel symptoms. Stick to a diet low in saturated fats and high in fiber. Avoid “special” diets or supplements advertised as treatments or cures for MS.<sup>29</sup> Most have not been proven to be effective. Some might be harmful. Talk to your doctor about what diet is best for you. You might also ask for a referral to a dietitian who can help you create a diet plan.



## Physical activity

Exercise can be hard for some people with MS. But research suggests that staying active can actually improve the following<sup>30,31</sup>:

- Balance
- Bladder and bowel function
- Brain and nervous system functioning
- Cardiovascular fitness
- Fatigue
- Mood
- Muscle strength
- Spasticity

Even just 20 minutes a day of moderate exercise can be good for you.<sup>31</sup> Talk with your doctor before starting any exercise program. You might also ask for a referral to an occupational or physical therapist or exercise specialist who can help you create an exercise plan.

Find an activity you enjoy. Look for something within your abilities. Some options might include<sup>31</sup>:

- Aerobic exercise, like walking outdoors or on a treadmill
- Balance and core exercises, like Swiss ball workouts
- Gentle martial arts, like tai chi
- Sports, like golf or tennis, adapted to your abilities
- Stretching exercises, like yoga
- Swimming and other exercise in cool water
- Weights and resistance training

No matter what activities you choose, stay safe when exercising<sup>31</sup>:

- Choose gyms or clubs with nonslip floors. Wear nonslip, supportive footwear.
- Exercise in cool temperatures or a controlled climate. Drink plenty of fluids before, during and after your activity. Use a cooling device, like a cooling collar.
- Lean against a wall or use a chair for support as needed.
- Take five to eight minutes to warm up slowly before exercise. Include another five to eight minutes to cool down after a workout.



### Rest

The body needs daily rest to heal and repair itself. Rest is even more important when you are living with MS.<sup>13,21</sup> These tips might help you get added rest:

- Don't do too much. Be honest about what you can do each day. Take breaks when you need them. Doing too much will make fatigue worse.
- Pace yourself. Make sure all your tasks are worth your time and effort. Take your time. Do the most important things when you have more energy.

- Plan your activities. For example, write your shopping list in the order you'll find the items in the store. This can limit how much time you will be on your feet.
- Reduce stress. Take time for quiet activities. This might mean reading or listening to music. Relaxation training or a support group might also help.
- Sleep. General guidelines recommend about eight hours of sleep a night for most people.<sup>32</sup> But this might be different for people living with chronic conditions like MS. Talk to your doctor about how much sleep is best for your health. Ask your doctor or nurse for help if MS symptoms are keeping you up at night.

### Quitting smoking

Studies have shown that smoking cigarettes can increase the risk of developing MS. It can also worsen the progression of existing MS.<sup>33</sup> If you smoke, take steps to quit.

- Ask your doctor about any behavioral therapies, drugs or programs that might help you quit smoking.
- Find out if your health plan offers a program to quit smoking.
- Get free resources for quitting from the National Institutes of Health at [smokefree.gov](http://smokefree.gov) or 800-QUIT-NOW (800-784-8669).

## Pregnancy and breastfeeding

Pregnancy seems to have a protective effect in some women with MS. There is a 66% decrease in relapses during pregnancy. However, risk of relapse rises by 20 to 40% for up to six months after childbirth.<sup>13</sup> The effects of relapses that occur after pregnancy are usually temporary.

A blood product called intravenous immunoglobulin is sometimes used to treat MS relapses during or soon after pregnancy. This can give the body extra antibodies that might help fight or prevent the relapses.<sup>34</sup>



If you are pregnant or plan to become pregnant, talk with your doctor. Some drugs used to treat MS should be avoided during pregnancy or breastfeeding.<sup>35</sup>

## Ongoing care

Work with your doctor to keep track of your progress and your symptoms. You can discuss how well your medication therapy and lifestyle changes are working. Your doctor can also monitor side effects and adjust your treatment as needed. Each visit can help you stay on track with treatment and better manage MS.



We've provided this information because we believe the more you know about MS, the better prepared you will be to manage it. In addition, the AllianceRx Walgreens Prime specialty pharmacy Care Team is here to provide you with dependable, personalized support to help you manage medication side effects and stay on track with your prescribed therapy. We look forward to being a member of your healthcare team and helping you get the best results from your treatment.

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## Resources

You might find it helpful to contact these organizations for additional support and resources.\*

### American Chronic Pain Association (ACPA)

<https://theacpa.org/>

800-533-3231

[www.facebook.com/The-American-Chronic-Pain-Association-113362482021895/](http://www.facebook.com/The-American-Chronic-Pain-Association-113362482021895/)

@TheACPA

The ACPA offers support and educational tools for people with chronic pain and for their families, caregivers and clinicians. Its website features information about treatments and pain management tools.

### Can Do Multiple Sclerosis

[www.mscando.org](http://www.mscando.org)

800-367-3101

[www.facebook.com/CanDoMultipleSclerosis/](http://www.facebook.com/CanDoMultipleSclerosis/)

@CanDoMS

Can Do MS provides empowerment programs and tools for people with MS and their caregivers. Its website features information on programs and events, educational content and ways to connect with others for support.

### Caregiver Action Network (CAN)

[www.caregiveraction.org](http://www.caregiveraction.org)

202-454-3970

[www.facebook.com/CaregiverActionNetwork](http://www.facebook.com/CaregiverActionNetwork)

@CaregiverAction

CAN provides education and support for caregivers. Its website includes caregiver tools and resources and links to caregiver groups.

### Multiple Sclerosis Association of America (MSAA)

[www.mysaa.org](http://www.mysaa.org)

800-532-7667

[www.facebook.com/msassociation](http://www.facebook.com/msassociation)

@MSAssociation

MSAA provides support and services to individuals with MS, their families and caregivers. Its website features links to patient resources, news about MS and educational and advocacy events.

### Multiple Sclerosis Foundation (MSF)

[www.msfocus.org](http://www.msfocus.org)

888-MSFOCUS (6736287)

[www.facebook.com/MultipleSclerosisFoundation/](http://www.facebook.com/MultipleSclerosisFoundation/)

@MS\_Focus

The MSF offers programs and support for people with MS, their families and caregivers, MS support groups and clinicians. Its website features educational materials, tools for living with MS and information about MSF programs and activities.

### Multiple Sclerosis International Federation (MSIF)

[www.msif.org](http://www.msif.org)

United Kingdom: +44 (0)20 7620 1911

[www.facebook.com/MSInternationalFederation/](http://www.facebook.com/MSInternationalFederation/)

@MSIntFederation

The MSIF is a network of MS organizations from around the world. Its website includes educational content, tools for living with MS, research updates and MS news.

### National Multiple Sclerosis Society

[www.nationalmssociety.org](http://www.nationalmssociety.org)

800-344-4867

[www.facebook.com/nationalmssociety](http://www.facebook.com/nationalmssociety)

@mssociety

The National MS Society offers MS education, support, advocacy programs and funding for ongoing MS research. Its website provides educational content for patients and clinicians, including tools for managing symptoms and connecting with others for support.

### National Rehabilitation Information Center (NARIC)

[www.naric.com](http://www.naric.com)

800-346-2742

[www.facebook.com/NationalRehabilitationInformationCenter](http://www.facebook.com/NationalRehabilitationInformationCenter)

@NARICInfo

NARIC offers a searchable database of publications, research studies, organizations and online resources for people with disabilities.

\*The referenced organizations are provided for informational purposes only. They are not affiliated with, and have not provided funding to AllianceRx Walgreens Prime for this booklet. AllianceRx Walgreens Prime does not endorse or recommend any specific organization.

[alliancerxwp.com](http://alliancerxwp.com)

