

Multiple Sclerosis

What is Multiple Sclerosis?^{1,2}

- Multiple Sclerosis (MS) is a nervous system disease that affects the brain and spinal cord.
- The cause of MS is unknown. But, many investigators believe MS is an autoimmune disease where the body attacks itself. Specifically, the body through the immune system attacks the material that covers and protects the nerves, the myelin sheath. This causes nerve damage.

What are some symptoms of Multiple Sclerosis?^{1,3}

- The damage to nerve cells slows down or blocks messages between your brain and your body, which leads to symptoms of MS. They can include:
 - Vision problems
 - Muscle weakness
 - Trouble with coordination and balance
 - Sensations such as numbness, prickling, or "pins and needles"
 - Thinking and memory problems
- When you have worsening old symptoms or new symptoms, it is called an exacerbation or relapse. An exacerbation lasts at least 24 hours and can last for a few days to weeks, sometimes months. Disease modifying medications can reduce the frequency and severity of your MS exacerbations.

What types of MS are there?⁴

There are 4 types of MS.

Relapsing-Remitting <ul style="list-style-type: none">• Most common form of MS• Relapses (or attacks) followed by partial or complete recovery periods	Secondary-Progressive <ul style="list-style-type: none">• Initial period of relapsing-remitting disease followed by worsening of the disease• Relapses or flare-ups may occur
Primary-Progressive <ul style="list-style-type: none">• Rare type of MS• Slow but continuous worsening of the disease• It might occur without obvious relapses	Progressive-Relapsing <ul style="list-style-type: none">• Rare type of MS• Relapses with or without recovery• Steady worsening of the disease from the onset

If you are not sure what type of MS you have, please talk to your doctor.

Who gets MS?⁴

- MS is more common in women than men.
- MS is not directly passed down from parents to children. But, your chance of getting MS is higher if you have a close relative with MS.
- MS occurs most commonly in Caucasians of northern European descent, but it can affect anyone.

How can my MS be treated?^{4,5}

- There is no cure for MS. But, one important way to treat your MS is by taking a disease-modifying medication.
- Disease-modifying medications are a group of medications that can:
 - Reduce the frequency and severity of your MS attacks.
 - Slows the progression of your MS.
- There is also a new medication (called Ampyra™) that can help with one of the symptoms of MS; it can help improve walking.

What are some medications that are available for my MS?

The table below lists the disease-modifying medications currently available for the treatment of MS and the medication that can be used to improve walking in people with MS.

Table 1. Medications for MS⁵

Brand Name	Generic Name	Generic Available?	Other Information
Avonex [®]	Interferon beta-1a	No	<ul style="list-style-type: none">• Used for relapsing forms of MS• Injected into the muscle
Betaseron [®] Extavia [®]	Interferon beta-1b	No	<ul style="list-style-type: none">• Used for relapsing forms of MS• Injected under the skin
Rebif [®]	Interferon beta-1a	No	<ul style="list-style-type: none">• Used for relapsing forms of MS• Injected under the skin
Copaxone [®]	Glatiramer acetate	No	<ul style="list-style-type: none">• Used for relapsing forms of MS• Injected under the skin
Tysabri [®]	Natalizumab	No	<ul style="list-style-type: none">• Used for relapsing forms of MS• Given to patients who have tried other medications• Injected into a vein

Brand Name	Generic Name	Generic Available?	Other Information
Novantrone®	Mitoxantrone	No	<ul style="list-style-type: none"> Used for progressive-Relapsing MS Used for secondary-Progressive MS Used for worsening-Relapsing Remitting MS Injected into a vein
Gilenya™	Fingolimod	No	<ul style="list-style-type: none"> Used for relapsing forms of MS Taken by mouth
Ampyra®	Dalfampridine	No	<ul style="list-style-type: none"> Used to improve walking in MS patients Some people who have taken Ampyra were able to walk faster Taken by mouth

What are some of the common side effects of MS medications?

Some of the common side effects of MS medications are listed in Table 2. If these symptoms continue or get worse, please talk to your pharmacist or doctor.

Table 2. Common Side Effects of MS Medications⁵

Medications	Common Side Effects	
Avonex Betaseron Extavia Rebif Tysabri	<ul style="list-style-type: none"> Injection site pain or redness Insomnia Fatigue or weakness 	<ul style="list-style-type: none"> Flu-like symptoms Muscle pain Nausea
Copaxone	<ul style="list-style-type: none"> Injection site pain or redness Flushing Chest pain Anxiety 	<ul style="list-style-type: none"> Trouble breathing Nausea Joint pain
Gilenya	<ul style="list-style-type: none"> Abnormal liver tests Back pain Cough 	<ul style="list-style-type: none"> Diarrhea Headache Flu
Novantrone	<ul style="list-style-type: none"> Nausea Hair Loss 	<ul style="list-style-type: none"> Blue-green color of the urine Diarrhea
Ampyra	<ul style="list-style-type: none"> Back pain Burning, tingling, or itching of your skin 	<ul style="list-style-type: none"> Problems with balance Trouble sleeping Urinary tract infection

Medications	Common Side Effects
	<ul style="list-style-type: none"> • Dizziness • Headache • Nausea

What are some of the more serious side effects that I should be aware of?

Table 3 lists some of the more serious side effects of MS medications. If you notice any of these side effects, please call your doctor immediately.

Table 3. Serious Side Effects of MS Medications⁵

Medications	Serious Side Effects
Avonex Betaseron Extavia Rebif	<ul style="list-style-type: none"> • Depression, thoughts of suicide, and suicide attempts. If you feel sad or hopeless or feel like hurting yourself or others, tell a friend or family member right away and call your doctor immediately. <ul style="list-style-type: none"> ▪ If you think you have depression, tell your doctor or Prescription Solutions by OptumRx pharmacist. • Blood problems such as decrease in the levels of infection-fighting blood cells, red blood cells or cells that help to form blood clots • Liver problems such as yellowing of the eyes and skin, dark urine, pale stool color) • Serious allergic reaction • Severe skin damage • Thyroid problems • Infection
Copaxone	<ul style="list-style-type: none"> • Immediate reaction after injection such as flushing, anxiety, shortness of breath, and itching • Chest pain
Gilenya	<ul style="list-style-type: none"> • Breathing problems • Infections • Liver problems • Slow heart rate when you start taking Gilenya • Vision problem called macular edema
Tysabri	<ul style="list-style-type: none"> • Allergic reaction • A rare brain infection - Tell your doctor right away if you notice any clumsiness, weakness, or changes in your vision, speech, or personality.

Medications	Serious Side Effects
Novantrone	<ul style="list-style-type: none"> • Congestive heart failure • Skin problems • Infection • Liver problems (eg, yellowing of the eyes and skin, dark urine, pale stool color)
Ampyra	<ul style="list-style-type: none"> • Kidney or bladder infection • Seizure

How should I store the medication?

Listed in Table 4 are storage tips. (Tysabri and Novantrone are usually stored and given at an infusion center or doctor's office, so they are not listed in Table 4.) If you are traveling, keep the medication with you (eg, on the plane or in the car). A free travel kit may be available through the drug manufacturer. Please call them at the number provided in the Resources section below.

Table 4. Storage Tips⁵

Medications	Storage
Avonex	<ul style="list-style-type: none">• Refrigerate at 36°F-46°F.• Remove medication from refrigerator 30 minutes before injection.• Avonex powder can be stored at room temperature for 30 days.• Avonex pre-filled syringes can be stored at room temperature for 7 days.
Copaxone	<ul style="list-style-type: none">• Refrigerate at 36°F-46°F.• Remove medication from refrigerator 30 minutes before injection.• Copaxone can be stored at room temperature for 1 month.
Rebif	<ul style="list-style-type: none">• Refrigerate at 36°F-46°F.• Remove medication from refrigerator 30 minutes before injection.• Rebif can be stored at room temperature for 1 month.
Betaseron Extavia	<ul style="list-style-type: none">• Keep medication at room temperature.• Refrigerate medication after mixing if it's not used immediately. The medication must be used within three hours.
Ampyra Gilenya	<ul style="list-style-type: none">• Keep medication at room temperature.

What should I do if I miss a dose?⁵

- Generally, do not use extra medication to make up for a missed dose.
- Talk to your pharmacist or doctor. They'll be able to give you more specific directions.
- It is important to try not to miss any doses since your medication is preventing your MS from getting any worse.
- Some things you can do to remember to take you medication is to:
 - Take your medication around the same time.
 - Use a calendar and mark the dates that you need to take your medication.

Where can I get more information about MS and/or the medication I'm taking?

For more information, please contact the following resources:

Prescription Solutions by OptumRx 1-800-702-8423 www.prescriptionsolutions.com	Betaseron 1-800-788-1467 www.betaseron.com	Novantrone 1-877-447-3243 www.novantrone.com www.mslifelines.com
National Multiple Sclerosis Society 1-800-344-4867 www.nationalmssociety.org	Copaxone 1-800-887-8100 www.copaxone.com	Tysabri 1-800-456-2255 www.tysabri.com
Ampyra 1-888-881-1918 www.ampyra.com	Extavia 1-866-925-2333 www.extavia.com	Rebif 1-877-447-3243 www.rebif.com www.mslifelines.com
Avonex 1-800-456-2255 www.avonex.com	Gilenya 1-877-408-4974 www.gilenya.com	

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The information in this educational tool does not substitute for the medical advice, diagnosis or treatment of your physician. Always seek the help of your physician or qualified health provider for any questions you may have regarding your medical condition.

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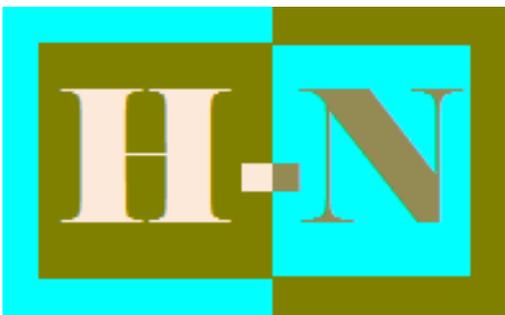
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