Understand your multiple sclerosis medications

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Multiple sclerosis (MS) is a chronic, progressive condition. This means it can worsen over time, especially if it is left untreated. Although there is no cure for MS, several medications can help slow the progression of the disease, reduce the frequency and severity of serious flare-ups, or relapses, improve recovery from those relapses and provide relief from symptoms.

MS is active in your body and can damage your nervous system even if you are not experiencing symptoms. Taking your medications as directed by your doctor, even when you feel well, will give you the best chance of managing MS and improving your quality of life.

**Staying on track with your medications**

MS medications intended to reduce the frequency of relapses are designed to benefit you over the long term—after months on a regular schedule of therapy. You can create ways to remind and encourage yourself to stay on track with your medications:

- **Find the time.** If you are taking medications by injection, choose the time of the day and week that work best for you.

- **If you are taking an interferon medication** like Avonex® (interferon beta-1a), Betaseron® (interferon beta-1b), Extavia® (interferon beta-1b) or Rebif® (interferon beta-1a), consider taking your injections before bedtime so you can sleep through the first few hours, when some side effects may be at their worst.

- **Write it down.** Keep a diary or calendar of when to take your medication. This can make it easier to see when you took your last dose and whether you have missed one.

- **Talk it out.** Join an MS support group. Sharing your experiences with others can help you learn new ways to cope with your condition and its treatments.

- **Plan ahead.** If you are going to be traveling, make sure you have an adequate supply of medication. Discuss your travel plans with your doctor or pharmacist before you leave and make sure you understand the correct way to store your medication.

Taking your medication can be difficult when the side effects are bothersome. Suggestions for minimizing and coping with side effects are provided in this booklet. If side effects continue or interfere with your ability to take your medications, talk to your doctor or pharmacist.

**Understanding your treatment options**

Your doctor may prescribe one or more types of medication designed to manage your MS. None of these medications can cure MS. However, they can help improve your quality of life by slowing down the course of the disease and minimizing the severity of your symptoms.

Disease-modifying therapies (DMTs) can help decrease the number of relapses you experience. They are also the only MS medications that can help slow the progression of the disease in your body.

Corticosteroids, or steroids, are generally used as treatment for relapses, or flare-ups. They can help shorten the length of a relapse and speed recovery from its symptoms.
Disease-modifying therapies

Other medications, including pain relievers and antidepressants, can help eliminate or ease MS symptoms, including pain and depression.

To work properly, some MS medications cannot be taken by mouth. You may take them as:

• Subcutaneous injections, given under the skin
• Intramuscular injections, given into a muscle
• Intravenous infusions, given directly into a vein, and usually performed by a nurse or doctor

Learning to give yourself an injection can be challenging, but you can learn how to perform it comfortably. Many doctor's offices, as well as MS medication manufacturers, offer free one-on-one training with a clinician in the doctor's office or the home. Talk with your nurse or doctor about your concerns. They can offer helpful tips or even provide a device that can help deliver your injections. More information regarding administering your injectable medication is provided in the booklet, Welcome to specialty pharmacy services.

Disease-modifying therapies (DMTs)

During a relapse, your body's immune system attacks itself, damaging nerves and causing swelling in the central nervous system (CNS). The resulting damage can interrupt or slow the nerve impulses and cause MS symptoms to get worse.

Often, your body can heal itself after a relapse. The swelling subsides, symptoms fade and you return to your previous level of ability. Other times, your body cannot keep up with the damage and the nerves may be injured or destroyed, so a return to your previous level of ability cannot occur.

How DMTs work

DMTs are currently the best defense against the effects of relapsing forms of MS. They are most effective when started early, before MS has caused significant damage to the CNS.

DMTs may reduce the number and severity of relapses a person experiences. They may also slow the accumulation of physical disability. DMTs are taken over a long period of time. Though they do not relieve symptoms, they help protect you from the long-term effects of MS.
DMTs used for relapsing MS

Eight DMTs are designed to treat relapsing forms of MS. Because each person responds uniquely to different types of medication, talk with your doctor about the potential risks and benefits of each one. Table 1, on the following page, offers more information about these medications. Devices designed to ease the injection process and patient support programs are available for some medications by calling the manufacturer. Manufacturer contact information is provided at the end of this booklet.

DMTs, pregnancy and breastfeeding

Women taking a DMT should tell their doctor about any plans to become pregnant. Doctors advise women with MS who are planning pregnancy to stop taking their MS medication before becoming pregnant and to stay off the medication throughout the pregnancy. After delivery, women should also talk to their doctor about whether they should breastfeed or restart DMT therapy right away. None of the DMTs are recommended for use during breastfeeding because the impact on the newborn is unknown.
### Table 1: Common disease-modifying therapies (DMTs) used to treat relapsing MS

<table>
<thead>
<tr>
<th>Brand name (generic name)</th>
<th>Indication</th>
<th>How taken</th>
<th>Side effects</th>
<th>Other information</th>
</tr>
</thead>
</table>
| Avonex® (interferon beta-1a) | Relapsing forms of MS       | Intramuscular injection, once a week | • Injection-site reactions (redness, pain, swelling and bruising)  
• Muscle aches  
• Fever  
• Chills  
• Sweating  
• Fatigue  
• Depression | Injection may be aided by the Avogrip®. |
| Betaseron® (interferon beta-1b) | Relapsing forms of MS       | Subcutaneous injection, every other day | • Injection-site reactions  
• Muscle aches  
• Fever  
• Chills  
• Sweating  
• Fatigue  
• Depression | Can be injected using the Betaject®3, an automatic injection device |
| Copaxone® (glatiramer acetate) | Relapsing-remitting MS      | Subcutaneous injection, once a day | • Injection-site reactions  
• Weakness  
• Nausea  
• Joint pain  
• Infection  
• Muscle stiffness  
• Flushing, chest pain, heart palpitations, anxiety and trouble breathing immediately after injection, usually subsiding after 15 minutes | • Can be injected using the autoject®2 for glass syringe  
• An injection reaction to Copaxone may cause symptoms similar to those of a heart attack. If you are unsure whether you are experiencing a medication reaction or a heart attack, seek immediate medical attention. Symptoms of a heart attack include:  
  - Discomfort, pressure, heaviness or pain in the chest, arm or below the breastbone  
  - Discomfort that spreads to the back, jaw, throat or arm  
  - A feeling of fullness, indigestion, choking or heartburn  
  - Sweating, nausea, vomiting or dizziness  
  - Extreme weakness, anxiety or shortness of breath  
  - Rapid or irregular heartbeat |
<table>
<thead>
<tr>
<th>Brand name (generic name)</th>
<th>Indication</th>
<th>How taken</th>
<th>Side effects</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extavia® (interferon beta-1b)</td>
<td>Relapsing forms of MS</td>
<td>Subcutaneous injection, every other day</td>
<td>Injection-site reactions, Muscle aches, Fever, Chills, Sweating, Fatigue, Depression</td>
<td>Can be injected using the Auto-Injector II injection device</td>
</tr>
<tr>
<td>Gilenya® (fingolimod)</td>
<td>Relapsing forms of MS</td>
<td>Orally (by mouth), 0.5 mg once daily, with or without food</td>
<td>Headache, Flu, Diarrhea, Back pain, Cough, Slow heart rate, Infection, Vision problem called macular edema, Breathing problems, Liver problems</td>
<td>The first dose of Gilenya is given in your doctor’s office or clinic, where you will be observed for six hours after that first dose. If you stop taking Gilenya for two weeks or more, you will need to start the process over in your doctor’s office or clinic.</td>
</tr>
<tr>
<td>Novantrone® (mitoxantrone)</td>
<td>Worsening relapsing-remitting MS, Progressive-relapsing MS, Secondary progressive MS</td>
<td>Intravenous infusion, once every three months with a lifetime cumulative dose limit</td>
<td>Nausea, Mild hair thinning, Bladder infection, Loss of menstrual periods, Mouth sores, Can cause the whites of the eye to turn blue-green, Can cause discoloration of urine 24 hours after administration, May affect heart function</td>
<td>Your doctor will perform certain tests to see that your heart is working normally before you start to take Novantrone. These heart tests will be repeated before you receive each dose of Novantrone.</td>
</tr>
<tr>
<td>Rebif® (interferon beta-1a)</td>
<td>Relapsing forms of MS</td>
<td>Subcutaneous injection, three times a week</td>
<td>Injection-site reactions, Muscle aches, Fever, Chills, Sweating, Fatigue, Depression</td>
<td>Can be injected using Rebiject II®, an automatic injection device</td>
</tr>
</tbody>
</table>
Table 1: Common DMTs used to treat relapsing MS (continued)

<table>
<thead>
<tr>
<th>Brand name (generic name)</th>
<th>Indication</th>
<th>How taken</th>
<th>Side effects</th>
<th>Other information</th>
</tr>
</thead>
</table>
| Tysabri® (natalizumab)    | Relapsing forms of MS | Intravenous infusion, once a month, in a registered infusion facility | • Increased risk for a rare brain infection called progressive multifocal leukoencephalopathy (PML), which usually causes severe disability or death  
• Headache  
• Infection  
• Pain  
• Fatigue  
• Diarrhea  
• Rash | Because of the risk of PML, enrollment in the manufacturer’s TOUCH® Prescribing Program, is required. Talk to your doctor or pharmacist for more information. |
Managing side effects of DMTs

Some people have a difficult time continuing to take their DMTs because of bothersome side effects. However, it is important to keep taking your medication as directed to prevent relapses and to slow the progression and worsening of the condition. Two of the most common side effects are injection-site reactions and flu-like symptoms.

**Injection-site reactions**

The place where you receive an injection is called an injection site. An injection-site reaction is your body’s natural response to the “injury” caused by the needle delivering the medication into the lower layers of your skin. Common injection-site reactions include redness, rash, stinging, tingling, swelling, itching, pain and discomfort in the area. The following techniques can help prevent these reactions:

- Allow your prepared syringe to come to room temperature before injecting it. Do this by setting it on a counter for five to 10 minutes or simply holding it in your hand for a few minutes.
- Use the correct injection technique for the medication you are taking. If you are unsure about this, call your doctor, nurse or pharmacist.
- Change injection sites regularly to minimize pain.
- Keep a written record of where and when you received previous injections.
- Use a new, clean, dry needle for each injection.
- Never reuse needles.
- Don’t inject into an area that is red, hard or swollen.

If you experience a severe reaction after an injection, such as fever, nausea, vomiting or low blood pressure (experienced as dizziness or fainting), contact your doctor immediately. If your injection site does not heal completely within a day or two, tell your doctor.

**Flu-like symptoms**

Some DMTs can cause flu-like symptoms. You might experience fever, chills and muscle soreness, especially when you first begin taking a medication. These symptoms will lessen as you continue your treatment.

Fevers are triggered by your body’s immune system. Because interferon-based medications like DMTs jump-start your immune system, they can cause you to have a fever. The fever may range from 101°F to 104°F after the first few injections. Call your doctor if your fever remains at 101°F or higher for more than 24 hours. Interferon-based medications can also cause your muscles to swell and become sore and achy. Fever and muscle aches usually lessen as you continue treatment.

Depending on which DMT you are taking for MS, you may experience other side effects. Talk with your doctor for more information.
**Medication storage instructions**

Storage instructions for DMTs are provided in Table 2. You should always refer to the manufacturer’s instructions for storage, as this information can change at any time.

**Table 2: Medication storage instructions**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Storage instructions*†</th>
</tr>
</thead>
</table>
| Avonex® powder       | • Store in the refrigerator at 36°F to 46°F.  
                        • If refrigeration is unavailable, store at room temperature for up to 30 days.  
                        • After mixing, the product should be used within six hours when stored in the refrigerator at 36°F to 46°F.  
                        • Do not freeze. Protect from heat and light. |
| Avonex® prefilled syringes | • Store in the refrigerator at 36°F to 46°F.  
                             • If refrigeration is unavailable, these prefilled syringes can be stored at room temperature for up to seven days.  
                             • Do not freeze. Protect from heat and light. |
| Betaseron®           | • Store at room temperature. Excursions are permitted from 59°F to 86°F.  
                        • If not used immediately after mixing, refrigerate and use within three hours. |
| Copaxone®           | • Store in the refrigerator at 36°F to 46°F.  
                        • If refrigeration is unavailable, medication can be stored at room temperature for up to one month.  
                        • Do not freeze. Protect from heat and light. |
| Extavia®             | • Store at room temperature, up to 77°F.  
                        • If not used immediately after mixing, refrigerate and use within three hours. |
| Gilenya®            | • Store in the original blister pack in a dry place.  
                        • Store at room temperature between 59°F to 86°F (15°C to 30°C). |
| Rebif®              | • Store in the refrigerator at 36°F to 46°F.  
                        • If refrigeration is unavailable, store at room temperature for up to 30 days.  
                        • Do not freeze. Protect from heat and light. |

*Definition of room temperature may vary. Consult manufacturer storage instructions for exact temperature ranges.
†Celsius temperature conversions: 36°F to 46°F = 2°C to 8°C; 77°F = 25°C; 59°F to 86°F = 15°C to 30°C.
Traveling with your medication

• Keep all medications away from heat and direct sunlight.
• Some medication manufacturers can send you special travel bags that have space for an ice pack.
• Always carry your medication with you or in your carry-on bag.
• Don’t worry about airport X-ray machines, they can’t hurt your medication.
• You can take injection systems on board airplanes.

You may need to produce your pharmacy’s preprinted label clearly identifying the medication. Keep the original pharmacy prescription-labeled box when traveling with your medication and supplies.

These are minimum requirements. Each airline may have other requirements. Always contact your airline before your flight to confirm their policy.
Corticosteroids used to treat MS relapses

Medications known as corticosteroids, or steroids, are used to shorten the length of relapses. Table 3 lists corticosteroids commonly used to treat MS relapses.

For most people, side effects of corticosteroids do not require medical attention. If one or more of these symptoms are bothersome or do not go away, talk with your doctor. Corticosteroids can also lower your resistance to infections. Talk with your doctor if you notice any sign of infection, such as a sore throat, fever (temperature of 101°F or higher for more than 24 hours), coughing or sneezing, burning with urination, or redness or soreness at any wound site.

If you are pregnant or breastfeeding, discuss corticosteroid therapy with your doctor before you begin treatment.

Table 3: Corticosteroids used to treat MS relapses

<table>
<thead>
<tr>
<th>Brand name (generic name)</th>
<th>How taken</th>
<th>Common side effects</th>
</tr>
</thead>
</table>
| Depo-Medrol®, Solu-Medrol® (methylprednisolone) | Intramuscular injection or intravenous infusion | • Insomnia  
• Nervousness  
• Increased appetite  
• Indigestion  
• Increased risk for infection  
• Headaches  
• Increased sweating |
| H.P. Acthar® Gel (corticotropin) | Intramuscular or subcutaneous injection | |
| Prednisone | Oral (often given following Solu-Medrol treatment) | |
Managing common symptoms of MS

Some symptoms of MS can be minimized or managed with lifestyle changes and medication therapy. Talk with your doctor about how you can best control the MS symptoms that are most troublesome to you. Table 4 lists common symptoms of MS and ways to manage them. Additional information about MS symptoms is also available in *A patient guide to multiple sclerosis*. This is not a comprehensive list of every symptom you may experience. Talk with your doctor for more information.

Table 4: Managing common symptoms of MS

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Management</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder and bowel problems</td>
<td>• Drink six to eight glasses of noncaffeinated fluid each day.</td>
<td>Some prescription medications can treat a spastic bladder:</td>
</tr>
<tr>
<td></td>
<td>• Get enough fiber in your diet.</td>
<td>• dicyclomine (Bentyl®)</td>
</tr>
<tr>
<td></td>
<td>• Stay physically active, if possible.</td>
<td>• oxybutynin (Ditropan® , Ditropan XL®)</td>
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<td></td>
<td>• Remember restroom locations of public places you frequently visit.</td>
<td>• propantheline (Pro-Banthine®)</td>
</tr>
<tr>
<td></td>
<td>• Try absorbent pads for extra security.</td>
<td>• tolterodine (Detrol®, Detrol® LA)</td>
</tr>
<tr>
<td></td>
<td>• If you smoke, stop.</td>
<td>For bowel problems:</td>
</tr>
<tr>
<td></td>
<td>• Eat a healthy diet.</td>
<td>• Baclofen (Lioresal®) can be prescribed to ease bowel problems.</td>
</tr>
<tr>
<td></td>
<td>• Plan your day’s activities around your body’s natural rhythms.</td>
<td>• Over-the-counter medications, including bisacodyl (Dulcolax®) and psyllium (Metamucil®) can help ease constipation.</td>
</tr>
<tr>
<td></td>
<td>• Establish a regular sleep schedule.</td>
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<td></td>
<td>• Take naps.</td>
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<td></td>
<td>• Adjust your activity levels.</td>
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<tr>
<td></td>
<td>• Consider an exercise program.</td>
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</tbody>
</table>

Some prescription medications can help ease fatigue and increase energy:

- amantadine (Symmetrel®)
- dextroamphetamine (Dexedrine®)
- methylphenidate (Ritalin®, Ritalin LA®, Ritalin SR®)
- modafinil (Provigil®)
Table 4: Managing common symptoms of MS (continued)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Management</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Your doctor might recommend counseling along with medication.</td>
<td>Some prescription medications can help ease symptoms:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• citalopram (Celexa®)</td>
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<td></td>
<td></td>
<td>• paroxetine (Paxil®)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• sertraline (Zoloft®)</td>
</tr>
<tr>
<td>Pain</td>
<td>• Stay active to relieve pain.</td>
<td>Mediations that can help ease different types of pain associated with MS include:</td>
</tr>
<tr>
<td></td>
<td>• Talk to your doctor about physical therapy, which might strengthen and stretch muscles to help prevent pain.</td>
<td>• acetaminophen (Tylenol®)</td>
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<td></td>
<td></td>
<td>• amitriptyline (Elavil®)</td>
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<td></td>
<td></td>
<td>• carbamazepine (Tegretol®)</td>
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<tr>
<td></td>
<td></td>
<td>• gabapentin (Neurontin®)</td>
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<td></td>
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<td>• ibuprofen (Advil®)</td>
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<tr>
<td></td>
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<td>• phenytoin (Dilantin®)</td>
</tr>
<tr>
<td>Sexual dysfunction</td>
<td>Your doctor might recommend counseling, along with medication therapy, as some changes in sexual functioning may occur due to the emotional challenges of living with MS.</td>
<td>• Water-soluble personal lubricants, available without a prescription, can help with vaginal dryness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prescription medications such as sildenafil (Viagra®) and tadalafil (Cialis®) can help with erectile dysfunction.</td>
</tr>
<tr>
<td>Spasticity</td>
<td>• Do stretching exercises daily.</td>
<td>Several medications, including baclofen (Lioresal®) and tizanidine (Zanaflex®), are used to treat spasticity in MS.</td>
</tr>
<tr>
<td></td>
<td>• Talk to your doctor about physical or occupational therapy to help maintain movement in affected body parts.</td>
<td></td>
</tr>
<tr>
<td>Tremor</td>
<td>• Reduce anxiety or stress, as they can worsen tremors.</td>
<td>Certain prescription medications, such as primidone (Mysoline®) and propranolol (Inderal®/Inderal® LA) may help ease tremors.</td>
</tr>
<tr>
<td></td>
<td>• Work with an occupational therapist to use weights or other devices to help control or compensate for tremors.</td>
<td></td>
</tr>
<tr>
<td>Walking problems (difficulty walking or getting around)</td>
<td>• Speak up—let your doctor know.</td>
<td>Dalfampridine (Ampyra®) is an oral medication that is indicated as a treatment to improve walking in patients with MS.</td>
</tr>
<tr>
<td></td>
<td>• Physical therapy, exercise, the right assistive device or medication may help.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Talk to your doctor about getting an assessment by a physical therapist.</td>
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</tbody>
</table>
To learn more

The more informed you are, the better you can manage your health. Our specialty pharmacy Care Team provides personalized, supportive and dependable care to help you achieve the best results from your prescribed therapy.

**Resources**

**Biogen Idec**
www.biogenidec.com
800-456-2255
Manufacturer of Avonex and Tysabri

**Bayer HealthCare Pharmaceuticals**
http://pharma.bayer.com
800-788-1467
Manufacturer of Betaseron

**EMD Serono, Inc.**
www.emdserono.com
877-447-3243
Manufacturer of Novantrone and Rebif

**Novartis Pharmaceuticals Corporation**
www.pharma.us.novartis.com
866-925-2333
Manufacturer of Extavia and Gilenya

**Teva Neuroscience**
www.tevaneuro.com

**Shared Solutions**
800-887-8100
Manufacturer of Copaxone
There's a way