

Multiple be taken
orally or by injections,



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Multiple sclerosis is an autoimmune disorder in which the body's immune system attacks the myelin covering of your nerves, eventually resulting in damage to the nerves themselves. There is no cure, but treatment can help. Disease modifying therapies (DMTs) are designed to slow the long-term progression of the disease, reduce relapses and prevent new damage from occurring. DMTs can be taken orally or by injections, which are either self-injections or intravenous infusions.

All medications have benefits and side effects, and some come with warnings. Your doctor can help you compare the risks vs. benefits and find an option that works for your lifestyle. Tell your doctor if you plan to become pregnant before starting any medication.

Injectable - self-injections Self-injectable medications are available to treat your MS. A medical practitioner will train you in the injection process so that you can administer your own dose safely. Self-injectables are the largest category with the most options to choose from.

Self-injected medications are used for the long-term treatment of relapsing and relapsing remitting MS. Most of these medications create injection site pain and skin reactions in addition to other side effects.

Avonex Benefit: immune system modulator, anti-viral properties Dose frequency and method: weekly, intramuscular injection Side effects can include: flu symptoms, blood count and liver changes Warnings include: liver enzymes may need to be monitored

Betaseron Benefit: immune system modulator, anti-viral properties Dose frequency and method: every second day, subcutaneous

injection Side effects can include: flu symptoms, blood count and liver changes Warnings include: liver enzymes may need to be monitored Copaxone Benefit: immune system modulator, blocks attack on myelin Dose frequency and method: daily or three times per week, subcutaneous injection Side effects can include: self-resolving, temporary systemic reaction (10 percent of users) that includes anxiety, chest tightness and shortness of breath Warnings include: injection sites can become permanently indented because fatty tissue is destroyed Extavia Benefit: immune system modulator, anti-viral properties Dose frequency and method: every second day, subcutaneous injection Side effects can include: flu symptoms, blood count and liver changes Warnings include: liver enzymes may need to be monitored Glatopa Benefit: immune system modulator, blocks attack on myelin Dose frequency and method: daily, subcutaneous injection Side effects can include: self-resolving, temporary systemic reaction (10 percent of users) that includes anxiety, chest tightness and shortness of breath Plegridy Benefit: immune system modulator, anti-viral properties Dose frequency and method: every two weeks, subcutaneous injection Side effects can include: flu symptoms, blood count and liver changes Warnings include: liver enzymes may need to be monitored Rebif Benefit: immune system modulator, anti-viral properties Dose frequency and method: three times per week, subcutaneous injection Side effects can include: flu symptoms, blood count and liver changes Warnings include: liver enzymes may need to be monitored Zinbryta Benefit: binds to T cell receptor that activates in response to MS Dose frequency and method: monthly, subcutaneous

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injection Side effects can include: cold symptoms, infection, flu, pain, depression Warnings include: can cause severe liver injury - should be used only for those who haven't been helped by at least two other medications Injectable - intravenous infusions Another type of injectable option for treating MS is intravenous infusion. Instead of entering your system intramuscularly or subcutaneously, infusions go directly into a vein and have to be given in a clinical setting by a trained professional. The doses are not given as often. Intravenous infusions treat relapsing MS.

They can result in increased risk of infections in addition to other side effects. Lemtrada Benefit: suppresses myelin damaging immune cells Dose frequency and method: daily for five days, then one year later, daily for three days Side effects can include: nausea, vomiting, diarrhea, headache, rash, itching Warnings include: Can cause a bleeding disorder (ITP) and cancer Novantrone Benefit: immune system modulator and suppressor Dose frequency and method: once every three months (limit of two to three years) Side effects can include: hair loss, nausea, amenorrhea Warnings include: can cause heart damage and leukemia Tysabri Benefit: inhibits adhesion molecules Dose frequency and method: every four weeks Side effects can include: headache, joint pain, fatigue, depression, abdominal discomfort Warnings include: can increase risk of PML, a brain infection that is potentially fatal Ocrevus Benefit: targets white cells that damage nerves Dose frequency and method: first two doses are two weeks apart followed by doses every six months Side effects can include: flu symptoms, infection Warnings include: can cause cancer, and in rare instances life threatening infusion reactions Oral medications If you are

not comfortable with needles, there are oral options for treating MS. Taken daily or twice daily, oral medications are the easiest to self-administer but require that you maintain a regular dosing schedule.

Aubagio Benefit: immunomodulator, inhibits nerve degeneration **Dose frequency and method:** daily **Side effects can include:** headaches, liver changes, nausea, hair loss, reduced white cells **Warnings include:** can cause severe liver injury and birth defects **Gilenya Benefit:** blocks T cells from leaving lymph nodes **Dose frequency and method:** daily **Side effects can include:** flu symptoms and liver changes **Warnings include:** can cause changes in blood pressure, liver function and heart

function **Tecfidera Benefit:** anti-inflammatory, protects nerves and myelin from damage **Dose frequency and method:** twice daily **Side effects can include:** gastrointestinal changes, reduced white cell count, elevated liver enzymes **Warnings include:** can cause severe allergic reactions

The Takeaway The goal of MS treatment is to manage symptoms, control relapses and slow the long-term disease progression. Injectable MS treatments come in two forms: self-injectables and intravenous infusions. Most injectables don't have to be taken as often as oral medication, which is taken daily. All medications have benefits and side effects and some have risks. Your doctor can help you choose one that is right for you.