

MAOI Antidepressants

Monoamine Oxidase Inhibitors (MAOIs) are powerful antidepressants that treat depression and anxiety. They include selegiline (Emsam), isocarboxazid (Marplan), phenelzine (Nardil), and tranylcypromine (Parnate).

Although they are generally well tolerated, they have two serious but avoidable risks:

1. Food interactions. They can cause dangerous high blood pressure with taken with certain foods. Most of these are rarely eaten (like gourmet cheese and house-made wine or beer; see list).
2. Drug interactions. MAOIs can cause dangerous

Key Points

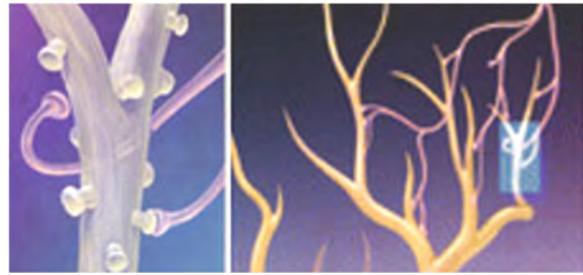
1. MAOI antidepressants work gradually over 3-6 weeks.
2. Avoid tyramine-rich foods. They can cause dangerous high blood pressure (unless on the low dose, 6 mg/day, of selegiline skin patch).
3. Check for dangerous drug interactions before starting new medications with them.

serotonin syndrome when taken with serotonergic medications (including most antidepressants).

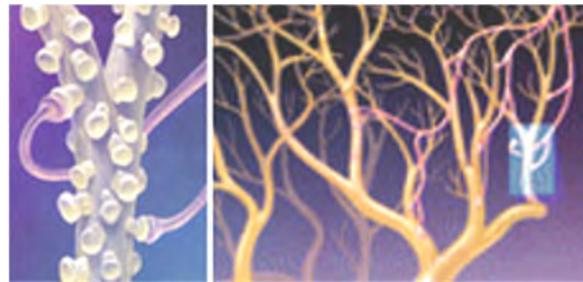
Like other antidepressants, MAOIs takes 3-6 weeks to work (although some people respond earlier). They do not change who you are, although it may allow you freedom to develop in ways that depression had prevented. Some people say that they feel more like their usual self, or are better able to deal with stress, after taking them.

How they work

MAOIs enhance the transmission of serotonin and dopamine in the brain. These neurotransmitters are involved in depression. Serotonin also relieves anxiety, and dopamine improves energy and concentration. These medicines also enhance brain growth in the hippocampus and amygdala, which are involved in mood and memory.



Before treatment: depression and stress has caused this nerve cell to shrink back like a tree with few branches.



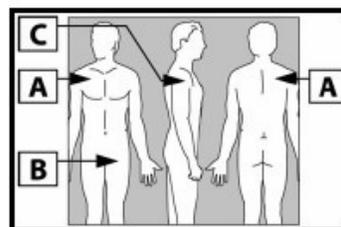
After treatment: MAOIs strengthened the roots and connections of the brain cell. The result is better stress management.

How to take an MAOI

MAOIs can be taken day or night depending on whether they make you tired. Some are more activating (tranylcypromine) and others are more sedating (phenelzine). They can be taken with or without food. Most are taken once a day, except selegiline, a skin patch which is applied daily.

How to use the selegiline (Emsam) patch

Apply a new Emsam patch every day (24 hours). Change it at the same time (eg, after a shower).



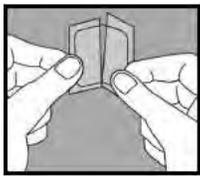
Apply to dry, smooth skin on your (A) upper chest or back (below the neck and above the waist), (B) upper thigh, or (C) to the outer surface of the upper arm. If you experience skin irritation, change the site you apply

it too each day. If skin problems persist talk to your doctor about a cream to reduce irritation.

Apply to skin that is not hairy, oily, irritated, broken, scarred, or calloused. Do not place where your clothing is tight, which could cause the patch to rub off.

Before applying, wash the area gently and well with soap and warm water. Rinse until all soap is removed. Dry the area with a clean dry towel.

Just before you apply the patch, remove it from its sealed pouch. Do not keep or store the patch outside of the sealed pouch. Never cut an Emsam patch into smaller pieces to use. Wear only one Emsam patch at a time.



Picture 2.
Removing the protective backing from an EMSAM patch.



Picture 3.
Applying an EMSAM patch.

Remove half of the protective backing and throw it away. (See Picture 2) Try not to touch the exposed side (sticky side) of the patch, because the medicine could come off on your fingers. With your fingertips, press the sticky side of the patch firmly against the skin site that was just washed and dried. Remove the second half of the protective liner and press the remaining sticky side firmly against your skin. Make sure that the patch is flat against the skin (there should be no bumps or folds in the patch) and is sticking securely. Be sure the edges are stuck to the skin surface (See Picture 3).

After you have applied the patch, wash your hands well with soap and water to remove any medicine that may have gotten on them. Do not touch your eyes until after you have washed your hands.

After 24 hours, remove the patch slowly and carefully to avoid irritating the skin. Do not touch the sticky side. As soon as you have removed the patch, fold it so the sticky side sticks to itself.

Throw away the patch so that children and pets cannot reach it (it still has some med in it)

Gently wash the old application site with warm water and a mild soap to remove any sticky material (adhesive) that stays on your skin after removing the

patch. A small amount of baby oil may also be used to remove any adhesive. You may need to use a medical adhesive removal pad that you can get from your pharmacist. Alcohol or other dissolving liquids such as nail polish remover may cause skin irritation and should not be used.

Wash your hands with soap and water.

If the patch becomes loose, press it back in place. If your Emsam patch falls off, apply a new patch to a new site and resume your normal schedule for changing patches.

If you forget to change your patch after 24 hours, remove the old patch, put on a new patch in a different area and continue to follow your original schedule.

How long do I need to take it?

In general, the medicine should be taken at least 6-12 months after the symptoms resolve in order to prevent the problem from returning. That gives the brain time to build up habits of stability. Some people may need to take the medication longer to prevent the return of depression, especially if they have had 3 or more episodes of depression in their life.

What happens if I stop it?

MAOIs are best stopped gradually to prevent withdrawal symptoms. You cannot become addicted to MAOIs. In other words, if you stop the medicine, you will not crave it or be more likely to have depression or anxiety than before. In fact, treatment allows the brain form new connections in ways that help prevent future symptoms.

Can they cause harm?

MAOIs may may worsen certain psychiatric conditions, such as bipolar disorder (manic-depression). If you notice these signs while taking them, call me:

> Feeling hyper, irritable, speeded up, giddy or “too happy”; decreased need for sleep, paranoid feelings, racing thoughts, high anxiety, talking fast.

People may also feel worse on these medications because of side effects (see below). For example,

although they usually relieve anxiety, anxiety is also a rare side effect.

What side effects can I expect?

The following side effects are usually mild and often improve over time:

Dry mouth, nausea, diarrhea or constipation, dizziness or lightheadedness, fatigue, and sleep disturbances like insomnia. Weight gain and sexual dysfunction are rare.

There are three serious risks to know about:

1. Postural Hypotension

This when blood pressure drops after standing up and can cause falls or fainting. It is more likely when raising the dose or at a high dose. Use caution: Rise out of bed slowly (sit first on the bed for a minute) and hold on to a sturdy object when standing.

The following side effects indicate that the medicine may need to be stopped; call me if they occur:

Agitation, intense mood swings, racing thoughts, insomnia, restless feelings like you can't stop moving.

2. Serotonin syndrome

This can happen when MAOIs are taken with other serotonergic medications, including antidepressants (see list at end).

Early symptoms: restlessness, confusion, tremors, flushing, excess sweating, and involuntary muscle jerks.

Later, severe symptoms: muscle contractions, high fever, respiratory problems, renal failure, coma, and death.

If this occurs, stop the medication and call me or go to your local emergency room.

3. Hypertensive crisis

A hypertensive crisis is a severe increase in blood pressure that can lead to a stroke. Extremely high blood pressure — above 180/110 — damages blood vessels. They become inflamed and may leak fluid or blood. As

a result, the heart may not be able to maintain adequate circulation of blood.

Besides high blood pressure, symptoms may include:

- Severe headache
- Severe anxiety
- Shortness of breath

Severe cases can cause fluid in lungs (pulmonary edema), brain swelling or bleeding, tear in aorta blood vessel (aortic dissection), heart attack, and stroke.

If you have a severe increase in your blood pressure (above 180/110 mm Hg), seek immediate medical attention. Treatment for hypertensive crisis may include oral medications, intravenous medications and hospitalization.

An allergic reaction is possible with any medication.

Symptoms include the following; stop the medication and call me if these occur:

Pounding heartbeat; swelling of the face, throat, tongue, lips, eyes, hands, feet, ankles, or lower legs; hoarseness; difficulty swallowing or breathing; hives; rash.

Cost and insurance coverage

Most MAOIs are generic. Emsam is brand-only; there may be coupons at www.emsam.com. If paying out of pocket, you'll find the lowest price at www.goodrx.com.

How to store and dispose of medication

- Keep out of the reach of children.
- Store away from heat, direct light and damp places.
- To safely dispose of unwanted pills: Do not pour in the toilet or sink (it will enter the water supply). To prevent children or pets from eating it, mix unwanted pills in a bag with a little water and inedible trash (such as coffee grounds or kitty litter) and throw in the trash.

—Chris Aiken, MD, updated 6/23/2025

Foods to avoid with MAOIs (tyramine-rich)

Avoid completely	Highly aged cheeses and aged beef (eg, charcuterie boards) Freshly baked sourdough bread Fermented soy bean (in Asian foods like tempeh, miso, pickled tofu, and bean paste); fermented fish or cheese Raw meat or fish that has not been refrigerated properly or is past its use-by date. Fermented fish or cheese. Homemade beer or wine
OK in small portions (less than a typical serving size)	Specialty soy sauce Dried, aged sausage and salami (prosciutto is ok) Sauerkraut Beer that is microbrewed, on tap, or requires refrigeration (no more than 1 standard drink)
OK in normal portions (but don't overindulge)	Cheeses that are not highly aged Chocolate Caffeinated beverages Wine from a commercial producer (no more than 2 glasses) Beer that is shelf-stable or pasteurized (no more than 2 pints) Fresh beef or fish Fava beans Bananas and avocados that aren't overly ripe Soy sauce or fish sauce from grocery store brands Worcestershire sauce Kimchi Commercially produced sourdough bread Fermented yeast products (Marmite and Vegemite)
No restrictions (barely any tyramine here)	Milk, yogurt, cream Non-matured, soft cheese (mozzarella, American, ricotta, cottage cheese, cream cheese) Smoked or pickled fish Fresh chicken, duck, pork, and sausage Stock cubes, powder, or bullion Non-fermented soy bean products

Drugs to avoid with MAOIs

Serotonergic psychotropics	Antidepressants (SSRIs, SNRIs, other MAOIs, vortioxetine, vilazodone, clomipramine, imipramine, and possibly trazodone/nefazodone); ketamine, esketamine, viloxazine, lumateperone, ziprasidone, and possibly lithium and buspirone
Stimulants	Amphetamine, methylphenidate, phentermine, and local anesthetics that contain sympathomimetics
Serotonergic opioids	Fentanyl, methadone, meperidine, oxycodone, propoxyphene, tramadol
Other	Fenfluramine, linezolid, methylene blue, moclobemide
Over-the-counter	L-tryptophan, SAMe, St. John's wort, and decongestants containing phenylephrine, pseudoephedrine, dextromethorphan, or chlorpheniramine
Drugs of abuse	Cocaine, amphetamines, LSD, MDMA, ecstasy, bath salts