

Who should take high blood pressure medicines?

Not everyone who has [high blood pressure](#) needs to be treated with drugs – some people can control their blood pressure just by adopting healthy lifestyle habits, such as eating heart-healthy foods and exercising regularly. However, most people with high blood pressure have to take two or more medications in addition to lifestyle changes to get their blood pressure under control. Medicines to lower high blood pressure (

hypertension

) are called

antihypertensives

. Research suggests that these medications work equally well in men and women.

1

The goal of therapy with high blood pressure medications is to lower blood pressure and reduce the occurrence of health problems such as heart attack, heart failure, stroke, and kidney damage. Medications that can treat high blood pressure are also used to treat patients with other conditions such as heart attack, heart failure, or kidney disease, even if they have normal blood pressure.

How do blood pressure lowering drugs work?

There are several ways drugs can lower blood pressure, and some medications work in more than one way:

- Opening and widening the blood vessels (drugs that work in this way are called vasodilators)
- Preventing the blood vessels from narrowing
- Reducing the heart's workload
- Reducing the amount of fluid in the body

How do doctors decide which type of medication I should take?

Doctors choose which blood pressure medications to prescribe based on your medical history and other current medical conditions and symptoms.

Some types of high blood pressure medicine lower blood pressure and treat other medical conditions at the same time. Medical conditions that may affect the choice of blood pressure medicine include:

- heart failure
- previous [heart attack](#)
- previous [stroke](#)
- known coronary artery disease (or high risk for it)
- [diabetes](#)
- chronic kidney disease
- left ventricular hypertrophy (enlargement of the left pumping chamber of the heart)

Many types of high blood pressure drugs lower blood pressure and reduce the health problems caused by high blood pressure in men and women.² Most people with high blood pressure and no other major diseases should be prescribed a thiazide diuretic, either alone combined with an ACE inhibitor, angiotensin receptor blocker, beta blocker, or calcium channel blocker. Large studies have shown that these drugs are best at reducing the risk of heart attack, heart failure, stroke, and kidney disease in men and women.

^{1, 3}

However, everyone responds differently to high blood pressure medications and what worked for most people in a study might not work for you. You may have to try various drugs or combinations of drugs to find the best treatment for you with the fewest side effects.

How long do I have to take my high blood pressure medications?

Blood pressure medications do not cure high blood pressure—your blood pressure is only lowered while you are taking the drugs regularly. It will shoot up again once you stop taking them. Since high blood pressure is a risk factor for heart attack and heart disease, you may need to take high blood pressure medications for the rest of your life.

It is important that you adopt a heart-healthy lifestyle such as eating heart-healthy foods and exercising in addition to taking your blood pressure medication regularly. A heart-healthy lifestyle can lower blood pressure as well as several other risk factors for heart disease. Some people can reduce the dosage or the number of medications they are taking after achieving and maintaining normal blood pressure for a year or more. If you haven't made enough

heart-healthy lifestyle changes, this “step-down therapy” may not be possible for you.

How do ACE inhibitors work?

Angiotensin converting-enzyme (ACE) inhibitors widen blood vessels by blocking the production of angiotensin II, a chemical that causes blood vessels to narrow. The result is that blood requires less force (pressure) to flow through the vessels and the heart doesn't have to work as hard.

Who should take ACE inhibitors?

ACE inhibitors are often the first choice drugs for treating patients with high blood pressure who also have heart failure or diabetes. This is because ACE inhibitors have other beneficial effects (besides just lowering blood pressure). They can slow the progression of kidney disease in people with high blood pressure and Type 1 diabetes (insulin-dependent). They may also be used after a heart attack or bypass surgery, or to treat diabetes or kidney disease.

Angiotensin Converting Enzyme (ACE) Inhibitors

Commonly prescribed brands:

Benazepril

Captopril

Lisinopril

Fosinopril

Ramipril

Quinapril

Lotensin

Capoten

Prinivil

Zestril

Monopril

Altace

Accupril

How they are given:

- Oral (tablet, capsule, liquid) or IV

What they are used for:

- To treat high blood pressure
- To treat congestive heart failure when used with diuretic and digitalis medications
- To improve survival after a heart attack

You should not be treated with them if:

- You have a history of swelling beneath the skin (angioedema) related to previous treatment with ACE inhibitors

Possible side effects:

- Dry hacking cough, dizziness, weakness

Pregnancy/nursing:

- ACE inhibitors should not be taken during pregnancy or nursing as they are harmful and even fatal

What side effects do ACE inhibitors have?

A dry cough is the most common side effect. It occurs in about 12% of patients and is more common in women than men.⁴ It is usually not serious, but if it bothers you, your doctor may switch you to another type of medication. The cough goes away almost immediately after you stop taking the ACE inhibitor (talk to your doctor before you stop taking any medication). If you are taking ACE inhibitors, you need to drink plenty of fluids when outside in hot weather or when exercising, since you are more likely to have side effects if you are dehydrated.

The first time you take ACE inhibitors, your blood pressure may drop quickly, and you may feel dizzy or faint. This is known as a “first dose effect.” You may be instructed to take your first dose just before going to sleep so you do not feel its effects.

How do angiotensin II receptor blockers work?

Angiotensin II receptor blockers (ARBs) widen blood vessels. They work by blocking the effects of angiotensin II, a chemical that narrows blood vessels. Blood vessels have special receptors for angiotensin II, and when angiotensin II hits them, it causes the blood vessels to narrow. Instead of decreasing the production of angiotensin II (as ACE inhibitors do), ARBs block the blood vessel receptors for this chemical.

Who should take angiotensin II receptor blockers?

ARBs are often used to treat high blood pressure or heart failure and can slow the progression of kidney disease in patients with diabetes. ARBs are a relatively new medicine and it is not yet known if they are as effective as ACE inhibitors. However, they do not cause the dry cough common with ACE inhibitors, so they are often used in patients who cannot tolerate this side effect.

Angiotensin II Receptor Blockers (ARBs)

(check with manufacturer for specific information)

Commonly prescribed brands:

Candesartan

Irbesartan

Losartan

Valsartan

Atacand

Avapro

Cozaar

Diovan

How they are given:

- Oral (tablet or capsule)

What they are used for:

- To treat high blood pressure

You should not be treated with them if:

- You have a history of swelling beneath the skin (angioedema) related to previous treatment with A
- You have swelling beneath the skin of hereditary or unknown origin
- You cannot produce urine

Possible side effects:

- Upper respiratory tract infection
- Dizziness, headache, cough, fatigue

Pregnancy/nursing:

- Pregnant women should not take angiotensin II receptor blockers because they can harm the fetus

How do aldosterone antagonists work?

Aldosterone is a hormone that causes the body to retain salt and water. Certain cells in the body have special receptors for aldosterone. Aldosterone antagonists block these receptors in the kidneys, heart, blood vessels, and brain. This triggers the body to get rid of more salt and water in the form of urine. This reduces the volume of blood in the body, lowering blood pressure.

Who should take aldosterone antagonists?

Aldosterone antagonists work well at reducing blood pressure in patients with mild to moderate high blood pressure, particularly when combined with ACE inhibitors or ARBs. They may also be useful in treating heart failure after a heart attack.^{5, 6}

Older aldosterone blockers (such as spironolactone) also block other hormone receptors that can cause problematic side effects, including lowering of the voice or excessive hair growth in women and men, or enlarged breasts in men. A new class of drugs called selective aldosterone-receptor antagonists (SARAs) block only aldosterone receptors, resulting in fewer side effects. The first of these drugs, eplerenone (Inspra), was approved by the FDA to treat high blood pressure in 2002. Since these drugs are fairly new, it is not yet known which patients benefit the most, so they are usually used only in patients who still have high blood pressure after trying other types of blood pressure drugs.

Aldosterone Antagonists

(check with manufacturer for specific information)

Commonly prescribed brands:

Spironolactone

Eplerenone

Aldactone

Inspra

How they are given:

- Oral

What they are used for:

- To treat high blood pressure
- Swelling (edema) caused by various conditions, including heart failure

You should not be treated with them if:

- You are taking potassium supplements or potassium-sparing diuretics
- You have high blood potassium levels
- Have Type 2 diabetes with microalbuminuria
- Are taking certain medicines for fungal infections (ketoconazole, itraconazole)

Possible side effects:

- Dizziness, weakness, coughing, flu-like symptoms, diarrhea
- Irregular menstrual periods
- Enlarged or painful breasts
- Frequent urination
- High blood potassium levels

Pregnancy/nursing:

- The safety of these drugs during pregnancy is unknown
- The safety of drugs during nursing is unknown. These drugs can enter a woman's breast milk, but

What side effects do aldosterone antagonists have?

One possible side effect of aldosterone antagonists is the development of high potassium in the blood (*hyperkalemia*), which can have dangerous effects on heart function. If you are on this drug, your doctor will monitor you for this condition. Lowering the dose usually eliminates this side effect.

How do alpha blockers work?

Alpha blockers lower blood pressure by blocking the effects of stress hormones such as adrenaline that can narrow blood vessels. Alpha blockers also slow the heart rate and reduce the force of the heartbeat.

Who should take alpha blockers?

Alpha blockers are not often used in the treatment of high blood pressure because recent evidence shows that using them alone may increase the risk of heart failure. In addition, these drugs are not as effective as other blood pressure medications at reducing the risk of heart attack and stroke.⁷ Alpha blockers alone have a small blood pressure lowering effect, so when they are prescribed it is usually in combination with a drug from another class, such as beta blockers (often in a single pill). In men, alpha blockers are mainly useful in patients with an enlarged prostate gland (not cancerous) who also have hypertension, since they can treat both conditions at the same time.

Alpha Blockers, Peripheral & Combinations

Commonly prescribed brands:

Doxazosin

Terazosin

Prazosin

Cardura

Hytrin

Minipress

How they are given:

- Oral

What they are used for:

- To treat high blood pressure

You should not be treated with them if:

N/A

Possible side effects:

- Dizziness, drowsiness, fluid retention

Pregnancy/nursing:

- The safety of these medications during pregnancy is unknown
- Thiazides (a type of diuretic found in some combination pills, including Minizide) pass across the placenta
- Prazosin can enter a woman's breast milk

What side effects do alpha blockers have?

Alpha blockers may cause dizziness and fainting, usually after the first dose and in the following days. This side effect is reduced with continued use of the drug.

How do beta blockers work?

Beta blockers reduce the workload of the heart by slowing the heart rate and reducing the force of the heartbeat. This reduces the force with which blood is pushed through the blood vessels, lowering blood pressure. Beta blockers also cause the arteries in the legs and arms to narrow, causing less blood to flow through your limbs. This is why some patients who take beta blockers have cold hands and feet, and are generally more sensitive to cold.

Who should take beta blockers?

Beta blockers are used to treat a wide variety of heart conditions in addition to high blood pressure, including chest pain (angina), heart attack, heart failure, and heart rhythm problems. They are also given to people who undergo bypass surgery. They are usually the first choice drug to treat patients who:

- have high blood pressure and [stable chest pain](#)
- have [unstable angina](#) (chest pain that may occur at rest)
- have had a heart attack

Beta blockers are often prescribed in combination with ACE inhibitors.⁸

Beta Blockers

Commonly prescribed brands:

Atenolol

Bisoprolol

Metoprolol

Nadolol

Propranolol

Sotalol

Timolol

Tenormin

Zebeta

Toprol-XL

Corgard

Inderal LA

Betapace

Blocadren

How they are given:

- Oral (tablets, time-release caplets, or liquid solutions)

What they are used for:

- To treat high blood pressure
- To treat chest pain
- To treat stable heart failure

You should not be treated with them if:

- You have been diagnosed with:
- Abnormally low heart rate
- Cardiogenic shock (a damaged heart muscle that cannot pump properly causing a shock-like state)
- Second- or third-degree heart block (a delayed or complete lack of electrical communication between the heart's chambers)
- Heart failure

Possible side effects:

- Excessive slowing of the heartbeat, fatigue, vivid dreams, depression, increased blood sugar and cholesterol

Pregnancy/ nursing:

- The safety of beta blockers during pregnancy is unknown
- Pregnant women should not take atenolol because it can harm the fetus
- The safety of most beta blockers during nursing is unknown

- Women who are nursing should not take atenolol. If the treatment is essential, then nursing should

What side effects do beta blockers have?

Since beta blockers can lead to a dangerously slow heartbeat, you will probably be started on a low dose, gradually increasing. The most common side effects of beta blockers are slow heart rate, dizziness, increased tiredness, and sensitivity to cold. As with any medication, do not stop taking it without consulting your doctor. Patients who suddenly stop taking beta blockers could increase their risk of having a heart attack.

Because one of the risks of beta blockers is low heart rate, patients taking them should measure their heart rate periodically. Your doctor will show you how to do this. You should let him or her know if your heart rate is lower than usual or if it is below 50 beats per minute.

How do calcium channel blockers work?

Calcium channel blockers prevent calcium from entering the smooth muscle cells of the heart and blood vessels. Calcium is required for muscles to contract and for the blood vessels to narrow. Calcium channel blockers effectively widen blood vessels and decrease the strength of the heartbeat, causing blood pressure to fall.

Who should take calcium channel blockers?

In addition to treating high blood pressure, calcium channel blockers are also used to treat other heart problems including chest pain (angina) due to heart disease or coronary spasm (see [Prinzmetal's angina](#)), and some abnormal heart rhythms. For chest pain, calcium channel blockers are often prescribed along with nitrates.

There are two types of calcium channel blockers, and which kind you are prescribed may depend on whether you have certain heart conditions. One type (the *dihydropyridines*, such as amlodipine and nifedipine) does not slow the heart rate or cause other abnormal heart rhythms (arrhythmias). This type is most often used to treat high blood pressure. The other type (the *non-dihydropyridines*, such as verapamil and diltiazem) is not recommended in patients who have chronic heart failure or certain types of abnormal heart rhythms (arrhythmias), since they may make these conditions worse. This type of CCB is most often used to treat chest pain.

Many calcium channel blockers come in a short-acting form and a long-acting (sustained release) form. Short-acting calcium channel blockers increase the risk of heart attack and stroke when used over an extended period and are therefore no longer used to treat high blood pressure.⁹

A large study of women aged 50 to 79 with high blood pressure but no history of heart disease had a higher risk of heart-related death when given combination therapy with a diuretic and CCB than with a diuretic and a beta blocker. Women treated with a CCB alone had a higher risk of heart-related death than women treated with a diuretic alone. Because of these findings, calcium channel blockers are not the drug of choice for lowering blood pressure in older women.

10

Calcium Channel Blockers

Commonly prescribed brands:

Amlodipine

Diltiazem

Nifedipine

Verapamil

Felodipine

Norvasc