

Drug used for treating

Drugs used in the treatment of hypertension are called antihypertensives. They are of many different types

When your blood pressure remains at or above 140/90mmHg despite implementing lifestyle changes, then you need to start medications. If you have grade 2 hypertension, you would need to start medications immediately to avoid complications that may arise from such BP spikes. It is always more beneficial to combine antihypertensives with lifestyle approaches that help reduce BP. This combination decreases the need for high-dose antihypertensives and multiple drugs for hypertension.

Types of hypertension drugs

This section will outline the various groups of antihypertensives, examples, uses and side effects.

Calcium-channel blockers (CCBs)

Calcium is a type of mineral in your body. When calcium enters the muscles in your blood vessels, it narrows your blood vessels by causing vasoconstriction, which leads to a rise in your BP.

Calcium-channel blockers (CCBs) stop calcium from going into your muscle cells. This includes muscles in your heart and blood vessels.

Most calcium channel blockers end with “dipine”. Few have a different sounding name, such as verapamil and Diltiazem. Examples of calcium channel blockers are:

- Nifedipine
- Amlodipine
- Felodipine
- Nicardipine
- Isradipine
- Nimodipine

Calcium channel blockers are safe for the treatment of hypertension in pregnancy. They are also safe when you are breastfeeding.

Side-effects of CCBs include:

- Headaches
- Swollen feet
- Painful ankle or feet

- Dizziness,
- Tiredness,

Angiotensin-converting enzyme inhibitors (ACE inhibitors)

Angiotensin II is a chemical in your body that causes your body to produce aldosterone, a hormone that makes your body retain water and sodium. Increased blood volume from water retention increases blood pressure. In addition, it also makes your blood vessels constrict, which contributes to a rise in BP.

Angiotensin-converting enzyme (ACE) hastens the conversion of angiotensin II to aldosterone. Therefore a drug that inhibits the action of ACE will reduce BP by reducing water retention.

ACE inhibitors end with '-pril', and examples are

- Lisinopril
- Ramipril
- Captopril
- Enalapril
- Perindopril
- Fosinopril
- Imidapril

ACE inhibitors are recommended for people with hypertension and diabetes, as it protects the kidneys from the effects of diabetes. It is also used in the treatment of heart failure in low doses.

ACE inhibitors are unsafe in pregnancy and breastfeeding because they can damage the baby's body organs.

The most common side effects of ACE inhibitors include

- Dry cough
- Swelling of your throat, lips, tongue, and airways (angioedema), which can cause difficulty with swallowing and breathing.
- Changes in the sense of taste
- Headache
- Increased potassium levels in the blood
- Skin rashes and itching

Angiotensin-II receptor blockers (ARBs)

Angiotensin II triggers water and sodium retention when it is attached to its receptors. The receptor and the chemical are like a puzzle that needs to fit well before angiotensin can exert its effects on your body. Its primary effect is an increase in your BP. Angiotensin receptor blockers occupy the receptor sites for angiotensin II, thereby stopping the attachment of angiotensin II to its receptors. This stops water and sodium retention and narrowing of blood vessels. Thereby, reducing blood pressure.

ARBs have names that end with 'sartan' and are recommended for people with adverse ACE-I effects, such as a dry cough. It is also used as a first or second-line drug for hypertension in people of African and Caribbean descent. Examples of ARBs are

- Losartan
- Candesartan
- Valsartan
- Telmisartan
- Irbesartan
- Olmesartan
- Eprosartan

ARBs can cause malformation in babies if taken during pregnancy. Other side effects of ARBs include:

- Dizziness
- Headaches
- Cold or flu-like symptoms.

Diuretics

Diuretics are medications that make you lose fluid through urine. So they reduce blood pressure by reducing blood volume. They also make the walls of your blood vessels less narrow, thereby reducing blood pressure. Thiazide diuretics and potassium-sparing diuretics are commonly used types of diuretics for treating hypertension. Loop diuretics are more commonly used in kidney, heart or liver failure. Diuretics are also known as 'water tablets' because they increase the production of urine, which removes excess fluid from your blood. This reduces your blood volume and, ultimately, your blood pressure.

Some thiazide diuretics end with 'thiazide' while others do not. Examples of thiazide diuretics are

- Hydrochlorothiazide
- Bendroflumethiazide
- Cyclopenthiazide
- Chlorthalidone
- Indapamide
- Metolazone

Thiazide diuretics can reduce your blood potassium levels (hypokalaemia) and worsen joint pain if you have gouty arthritis. Thiazide diuretics may also increase blood sugar levels in people with diabetes and are therefore avoided, especially in the 1st three examples above.

Loop diuretics end with '-ide', and examples are:

- Frusemide
- Torsemide
- Bumetanide

Low potassium is a common side effect of loop diuretics and thiazide diuretics. Symptoms of low potassium are body weakness, constipation, muscle cramps, confusion, numbness or tingling sensation in the limbs etc.

Potassium-sparing diuretics cause loss of fluid but do not cause loss of potassium in the urine. Potassium-sparing diuretics may be prescribed to correct the low potassium levels caused by other diuretics. Some single-pill combinations of different diuretics are available, e.g. Moduretic, a combination of thiazide and potassium-sparing diuretic.

Examples of potassium-sparing diuretics include

- Spironolactone
- Amiloride
- Triamterene
- Eplerenone.

Beta-blockers

Beta-blockers reduces the force and rate at which your heart contracts and relaxes your blood vessels. Beta-blockers also reduce the amount of angiotensin in your body, which contributes to blood pressure reduction.

Beta-blockers are used in pregnancy or when there is an urgent need to reduce blood pressure fast, such as when an individual is bleeding inside their brain with markedly raised BP. Most beta blockers end with '..lol'.

Examples of beta-blockers are

- Metoprolol,
- Atenolol
- Propranolol
- Nebivolol
- Carvedilol
- Bisoprolol
- Acebutolol
- Nadolol
- Pindolol

Beta-blockers can narrow airways and cause difficulty with breathing or asthmatic attack. They are therefore avoided in people that have asthma. When they must be given to an individual with asthma, they have to be monitored closely. Beta-blockers are also avoided in people with heart block or unstable heart failure. A side effect of beta-blockers in people with diabetes is that they can make them unaware of when their blood glucose level is low. Beta-blockers stop them from experiencing symptoms of hypoglycemia, such as sweating and tremors when their blood sugar level is lower than usual.

Other side-effects of beta-blockers include

- Low heartbeat rate
- Nausea
- Diarrhoea
- Depression
- Cold hands and feet,
- Problems with achieving erection in men.

Other less commonly used antihypertensives are reserved for special situations such as hypertension in pregnancy, in a nursing mother, secondary hypertension or those experiencing side effects with the more widely used medicines.

Alpha-blockers

Alpha-blockers prevent the hormone adrenaline from narrowing your blood vessels. Thereby allowing your blood vessels to relax and reduce your blood pressure.

Examples of alpha-blockers can include

- Doxazosin
- Prazosin
- Terazosin
- Indoramin

Side-effects of alpha-blockers can include:

- Loss of bladder control (incontinence)
- Sudden drop of BP with change in position from sitting to standing (postural hypotension)
- Feeling weak or tiredness
- Headaches
- Nausea
- Rash or itchiness of the skin
- Swollen legs or ankles
- Erectile problems in men (rarely)

Centrally-acting drugs (central alpha antagonists)

Centrally-acting drugs stop your brain from sending messages to your nervous system to increase your blood pressure. They work directly on the part of the brain that controls blood pressure. They block your brain from sending signals to the nervous system to increase heart rate and narrow blood vessels. This reduces the force of your heartbeat, and your heart does not pump as hard, making it easier for blood to flow through blood vessels which helps lower your blood pressure.

Your doctor may prescribe centrally-acting drugs if other medicines have not been able to lower your blood pressure.

Your doctor may monitor you closely while taking centrally-acting drugs if you have a history of heart disease, kidney or liver disease, depression or Parkinson's disease.

Examples of centrally-acting drugs can include Methyldopa Clonidine and Moxonidine.

Side effects can include: feeling tired, tiredness, dizziness, upset stomach or nausea, dry mouth, sleep disturbance, headaches, swollen legs, depression and rarely erectile problems in men. Methyldopa can cause liver problems, a slow heartbeat, and sudden drop in blood pressure when sitting up or standing up.

Direct-acting vasodilators

Direct-acting vasodilators work directly on your blood vessels, causing the muscles in the blood vessels to relax. Relaxation of the muscles makes your blood vessels widen, thereby reducing BP. They are used when BP is not responding to other conventional medications or when there is a need to reduce blood pressure immediately to avoid complications. It is an intravenous injection and can be used when someone cannot take anything through the mouth.

Examples of direct-acting vasodilators are Hydralazine and Minoxidil

Side-effects of direct-acting vasodilators are:

- Fluctuating blood pressure
- Headaches
- Swollen feet
- Irregular or fast heartbeat
- Skin rashes
- weight gain
- Excess body hair growth

Are high BP drugs safe?

Antihypertensive drugs can safely decrease your blood pressure and prevent the harmful effects of high blood pressure on your blood vessels and internal organs. Even though all antihypertensives have side effects, not everyone will experience severe side effects. The drug causing your side effects can be changed once you inform your healthcare provider.

The benefits of taking antihypertensives far outweigh the risks of uncontrolled blood pressure. Unfortunately, high BP has no symptoms, so it silently causes damage that will only manifest when it has caused permanent damage to one or more organ systems.

Are high BP medications blood thinners?

Antihypertensives are not blood thinners. Sometimes, an individual with hypertension may need to be on blood thinners such as aspirin. Those who have heart disease, have had a stroke, or are at a high risk of having a stroke or heart attack are the people who need to be on blood thinners. Blood thinners are, therefore, not routinely prescribed for everyone with hypertension. They should not be taken as a substitute for your high BP medications. If you need to be on blood thinners, it is an add-on medicine because blood thinners alone DO NOT reduce blood pressure.

Long-acting versus short-acting antihypertensives

Long-acting antihypertensives are preferred to short-acting drugs. The long-acting drugs can be taken once daily instead of multiple times daily.

Your medical history, age, gender, and race determine the best drug for any individual.

Treatment target for hypertension

The treatment target for good blood pressure control is to reduce the blood pressure to less than 120/80mmHg.