

Chronic Hypertension

A plain-English guide for you and your family

WHAT IS HAPPENING

Blood pressure is the force of blood pushing against artery walls. It comes from two things working together: how hard the heart pumps and how tight the blood vessels squeeze. Your kidneys adjust how much water and salt your body keeps, which changes how much fluid fills the vessels. Your nerves and hormones (especially a system called renin-angiotensin-aldosterone) tighten or relax the vessel walls. Normally all these parts balance perfectly to keep pressure steady. In most people with chronic high blood pressure, no single cause explains it — doctors call this essential or primary high blood pressure (hypertension), and it comes from a mix of genes, eating too much salt, carrying extra weight, stress, and getting older. In about one out of ten people, high blood pressure has a fixable cause: narrowed kidney arteries, a hormone gland making too much aldosterone or adrenaline, sleep pauses in breathing (apnea) that stops breathing at night, or medicines like birth control pills. When pressure stays high month after month, artery walls thicken to resist the force (like a water hose getting stiffer under high pressure). The heart's left pumping chamber works harder against those stiff arteries, so its muscle thickens and gets stiff too. Delicate filters in the kidneys and tiny vessels in the eyes sit right in the path of that high-pressure blood, so over time they crack, leak, scar, and bleed. Eventually the thickened heart cannot relax or fill well, kidneys lose their filtering power, and blood vessels in the brain or heart can burst or clog. Every one of these changes is the body trying to survive the high pressure — but the very defenses that buy time (thicker walls, bigger heart muscle) become the problem. The real fix is lowering the pressure upstream before those defenses break down completely.

What you might feel

- Blood pressure reading stays at 130/80 mmHg or higher
- No symptoms at all (most common)
- Headache (dull, on both sides of the head, often in the morning)
- Blurred vision or seeing spots
- Chest pain or pressure
- Shortness of breath with activity or when lying flat

- Nosebleed that won't stop easily
- Fatigue or feeling unusually tired

Call the doctor right away if...

- Blood pressure 180/120 mmHg or higher (hypertensive crisis—the vessels and organs are at risk of tearing or failing right now)
- Sudden, severe headache with confusion, trouble speaking, or weakness on one side (possible stroke from a burst or blocked brain vessel)
- Chest pain with sweating or nausea (possible heart attack—not enough blood reaching the heart muscle)
- Sudden trouble breathing or coughing up pink, frothy spit (fluid flooding the lungs because the heart can't pump well)
- Sudden vision loss or double vision (bleeding or swelling in the eye or brain)

What the care team will do

- Measure blood pressure in both arms with the correct cuff size after the patient sits quietly for 5 minutes with feet flat and back supported.
- Ask about and document chest pain, sudden severe headache, confusion, one-sided weakness, or trouble breathing, and notify the provider immediately if any are present.
- Teach the patient to check blood pressure at home twice daily (morning and evening) and bring the log to every visit.
- Review all current medications, including over-the-counter NSAIDs (ibuprofen, naproxen), decongestants (pseudoephedrine), and herbal supplements, because many raise blood pressure.
- Teach the DASH eating plan (4 to 5 servings of fruits, 4 to 5 servings of vegetables, 2 to 3 servings of low-fat dairy daily) and how to read food labels to keep sodium under 2,300 milligrams (1 teaspoon) per day.
- Screen for depression, anxiety, and financial barriers to medication, and connect the patient to a pharmacist or social worker if cost is preventing adherence.
- Teach the patient the signs of common medication side effects—dry cough (ACE inhibitors), ankle swelling (calcium channel blockers), dizziness when standing (all blood pressure pills)—and when to call instead of stopping the pill.
- Schedule or confirm follow-up for blood tests (creatinine to check kidney function, potassium) 2 to 4 weeks after starting an ACE inhibitor or ARB, and arrange yearly urine albumin and eye exams.

Medicines you may be given — and why

Lisinopril (ACE inhibitor)

Blocks an enzyme (a protein that speeds up chemical reactions) that makes a squeezing chemical called angiotensin II. When you block the enzyme, less angiotensin II is made, so blood vessels relax and widen. Wider pipes mean lower pressure. The kidneys also let go of extra salt and water, which lowers the volume of fluid in the pipes.

Losartan (ARB)

Angiotensin II is a chemical that makes blood vessels squeeze tight. Losartan sits on the receptors (landing spots) where angiotensin II would normally dock and blocks it. Even if your body still makes angiotensin II, it cannot do its job because the landing spots are occupied. Blood vessels stay relaxed and open, and the kidneys let go of extra salt and water.

Amlodipine (calcium channel blocker)

Muscle cells in blood vessel walls need calcium to squeeze. Amlodipine blocks the gates (channels) that let calcium into the muscle cells. Without calcium rushing in, the muscle cannot contract tightly. Blood vessels relax and open wider, so the heart pumps against less resistance and pressure drops.

Chlorthalidone (thiazide-like diuretic)

Tells the kidneys to let go of extra sodium (salt) in the urine. Water follows sodium, so more water leaves too. This lowers the total volume of fluid in the blood vessels (like draining some water out of a full hose). Over weeks, blood vessel walls also relax and become less stiff, which lowers resistance. Both effects bring blood pressure down.

Hydrochlorothiazide (thiazide diuretic)

Works just like chlorthalidone: blocks a sodium pump in the kidney so sodium and water leave in the urine instead of being saved. This drops the volume of blood, and over time blood vessel walls relax. Pressure falls. Hydrochlorothiazide is shorter-acting than chlorthalidone, so it is often dosed once or twice daily.

Spironolactone (potassium-sparing diuretic, aldosterone antagonist)

Aldosterone is a hormone that tells the kidneys to hold onto sodium and water and to throw away potassium. Spironolactone blocks aldosterone receptors in the kidney, so the kidney lets go of sodium and water but keeps potassium. This lowers blood volume and pressure without dropping potassium. Often added when other drugs are not enough or when aldosterone is too high.

Metoprolol (beta blocker)

Blocks receptors (landing spots) for adrenaline and similar stress chemicals on the heart. When those receptors are blocked, the heart beats slower and less forcefully, so it pumps less blood per minute. This lowers pressure. Over time, the heart also remodels and becomes less stiff. Beta blockers are especially helpful in people with heart failure, prior heart attack, or fast heart rates.

Where this information comes from

- ACC/AHA 2017 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults
- KDIGO 2021 Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease
- American Heart Association
- U.S. Preventive Services Task Force (USPSTF) Hypertension Screening Recommendation

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