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# Secondary hypertension

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## Overview

Secondary high blood pressure (secondary hypertension) is high blood pressure that's caused by another medical condition. It can be caused by conditions that affect the kidneys, arteries, heart or endocrine system. Secondary hypertension can also occur during pregnancy.

Secondary hypertension differs from the usual type of high blood pressure (primary hypertension or essential hypertension), which is often called simply high blood pressure.

Proper treatment of secondary hypertension can often control both the high blood pressure and the condition that causes it. Effective treatment reduces the risk of serious complications — including heart disease, kidney failure and stroke.

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## Symptoms

Like primary hypertension, secondary hypertension usually has no specific symptoms, even if blood pressure has reached dangerously high levels.

For people diagnosed with high blood pressure, having any of these signs may mean the condition is secondary hypertension:

- High blood pressure that doesn't respond to blood pressure medications (resistant hypertension)
- Very high blood pressure — systolic blood pressure over 180 millimeters of mercury (mm Hg) or diastolic blood pressure over 120 millimeters of mercury (mm Hg)
- High blood pressure that no longer responds to medication that previously controlled the blood pressure
- Sudden-onset high blood pressure before age 30 or after age 55
- No family history of high blood pressure
- No obesity

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If you have a condition that can cause secondary hypertension, you may need your blood pressure checked more frequently. Ask your health care provider how often to have your blood pressure checked.

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## Causes

Many health conditions can cause secondary hypertension. Several kidney diseases may cause secondary hypertension, including:

- **Diabetes complications (diabetic nephropathy).** Diabetes can damage the kidneys' filtering system, which can lead to high blood pressure.
- **Polycystic kidney disease.** In this inherited condition, cysts in the kidneys interfere with kidney function and can raise blood pressure.
- **Glomerular disease.** Kidneys remove waste and sodium using tiny filters called glomeruli. In glomerular disease, these filters become swollen. This may raise blood pressure.
- **Renovascular hypertension.** This type of high blood pressure is caused by narrowing (stenosis) of one or both arteries leading to the kidneys.

Renovascular hypertension is often caused by the same type of fatty plaques that can damage the coronary arteries (atherosclerosis) or a separate condition in which the muscle and fibrous tissues of the renal artery wall thicken and harden into rings (fibromuscular dysplasia).

Medical conditions affecting hormone levels also may cause secondary hypertension. These conditions include:

- **Cushing syndrome.** In this condition, corticosteroid medications may cause secondary hypertension, or hypertension may be caused by a

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- **Aldosteronism.** The adrenal glands produce too much of the hormone aldosterone. This makes the kidneys retain salt and water and lose too much potassium, which raises blood pressure.
- **Pheochromocytoma.** This rare tumor, usually found in an adrenal gland, produces too much of the hormones adrenaline and noradrenaline. Having this tumor can lead to long-term high blood pressure or short-term spikes in blood pressure.
- **Thyroid problems.** When the thyroid gland doesn't produce enough thyroid hormone (hypothyroidism) or produces too much thyroid hormone (hyperthyroidism), high blood pressure can result.
- **Hyperparathyroidism.** The parathyroid glands control levels of calcium and phosphorus in the body. If the glands release too much parathyroid hormone, the amount of calcium in the blood rises — which triggers a rise in blood pressure.

Other possible causes of secondary hypertension include:

- **Coarctation of the aorta.** In this condition, present at birth, the body's main artery (aorta) is narrowed (coarctation). This forces the heart to pump harder to get blood through the aorta and to the rest of the body. As a result, blood pressure increases — particularly in the arms.
- **Sleep apnea.** In this condition, often marked by severe snoring, breathing repeatedly stops and starts during sleep, causing a lack of oxygen.

Not getting enough oxygen may damage the lining of the blood vessel walls, which may make it harder for the blood vessels to control blood pressure. Also, sleep apnea causes part of the nervous system to be overactive and release certain chemicals that increase blood pressure.

- **Obesity.** As body weight increases, the amount of blood flowing through the body increases. This increase in blood flow puts added pressure on artery walls, increasing blood pressure.

Being overweight also increases the heart rate and makes it harder for the heart to pump blood. This can lead to high blood pressure.

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- **Pregnancy.** Pregnancy can make existing high blood pressure worse or cause high blood pressure to develop (pregnancy-induced hypertension or preeclampsia).
- **Medications and supplements.** Various prescription medications — such as pain relievers, birth control pills, antidepressants and drugs used after organ transplants — can cause or worsen high blood pressure in some people.

Some decongestants and herbal supplements, including ginseng, licorice and ephedra (ma-huang), may have the same effect. Many illegal drugs, such as cocaine and methamphetamine, also increase blood pressure.

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## Risk factors

The greatest risk factor for developing secondary hypertension is having a medical condition that can cause high blood pressure, such as kidney, artery, heart or endocrine system problems.

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## Complications

Secondary hypertension can worsen the underlying medical condition that's causing the high blood pressure. Without treatment, secondary hypertension can lead to other health problems, such as:

- **Damage to arteries.** This can result in hardening and thickening of the arteries (atherosclerosis), which can lead to a heart attack, stroke or other complications.
- **Aneurysm.** Increased blood pressure can cause blood vessels to weaken and bulge, forming an aneurysm. If an aneurysm ruptures, it can be life-threatening.

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time pumping enough blood to meet the body's needs, which can lead to heart failure.

- **Weakened and narrowed blood vessels in the kidneys.** This can prevent the kidneys from working properly.
- **Thickened, narrowed or torn blood vessels in the eyes.** This can result in vision loss.
- **Metabolic syndrome.** This syndrome is a cluster of disorders of the body's metabolism — including increased waist circumference, high triglycerides, low high-density lipoprotein (HDL) cholesterol (the "good" cholesterol), high blood pressure and high insulin levels.

If you have high blood pressure, you're more likely to have other components of metabolic syndrome. The more components you have, the greater your risk of developing diabetes, heart disease or stroke.

- **Trouble with memory or understanding.** Uncontrolled high blood pressure also may affect the ability to think, remember and learn. Trouble with memory or understanding concepts is more common in people who have high blood pressure.

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