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## High blood pressure - children

Blood pressure is a measurement of the force exerted against the walls of your arteries as your heart pumps blood to your body. High blood pressure (hypertension) is an increase in this force. This article focuses on high blood pressure in children, which is often a result of being overweight.

Blood pressure readings are given as two numbers. Blood pressure measurements are written this way: 120/80. One or both of these numbers can be too high.

- The first (top) number is the systolic blood pressure.
- The second (bottom) number is the diastolic pressure.

High blood pressure in children up to age 13 is defined differently than in adults. This is because what is considered normal blood pressure changes as a child grows. A child's blood pressure numbers are compared with the blood pressure measurements of other children the same age, height, and sex.

Normal blood pressure ranges in children ages 1 to 13 years are published by the National Heart, Lung and Blood Institute, a US government agency. You can also ask your health care provider. Abnormal blood pressure readings are described as follows:

- Elevated blood pressure
- Stage 1 high blood pressure
- Stage 2 high blood pressure

Children older than age 13 follow the same guidelines for high blood pressure as adults.

## Causes

Many things can affect blood pressure, including:

- Hormone levels
- The health of the nervous system, heart, and blood vessels
- The health of the kidneys

Most of the time, no cause of high blood pressure is found. This is called primary (essential) hypertension.

However, certain factors can increase the risk of high blood pressure in children:

- Being overweight or obese
- Family history of high blood pressure
- Race -- African Americans are at increased risk for high blood pressure
- Having type 2 diabetes or high blood sugar
- Having high cholesterol
- Problems breathing during sleep, such as snoring or sleep apnea
- Kidney disease
- History of preterm birth or low birth weight

In most children, high blood pressure is related to being overweight.

High blood pressure can also be caused by another health problem. It can be caused by a medicine your child is taking. Secondary causes are more common in infants and young children. Common causes include:

- Thyroid problems
- Heart problems
- Kidney problems
- Certain tumors
- Sleep apnea
- Medicines such as steroids, birth control pills, NSAIDs, and some common cold medicines

High blood pressure will usually return to normal once the medicine is stopped or the condition is treated.

The healthiest blood pressure for children is based on a child's sex, height, and age. Your provider can tell you what your child's blood pressure should be.

## Symptoms

Most children do not have any symptoms of high blood pressure. High blood pressure is often discovered during a checkup when a provider checks your child's blood pressure.

## Exams and Tests

In most cases, the only sign of high blood pressure is the blood pressure measurement itself. For healthy weight children, blood pressure should be checked every year starting at age 3. To get an accurate reading, your child's provider will use a blood pressure cuff that fits your child properly.

If your child's blood pressure is elevated, the provider should measure blood pressure twice and take the average of the two measurements.

Blood pressure should be taken at every visit for children who:

- Are obese
- Take medicine that raises blood pressure
- Have kidney disease

- Have problems with the blood vessels leading to the heart
- Have diabetes

The provider will measure your child's blood pressure many times before diagnosing your child with high blood pressure.

The provider will ask about family history, your child's sleep history, risk factors, and diet.

The provider will also do a physical exam to look for signs of heart disease, damage to the eyes, and other changes in your child's body.

Other tests your child's provider may want to do include:

- Blood and urine tests
- Blood sugar test
- Echocardiogram
- Ultrasound of the kidneys
- Sleep study to detect sleep apnea

## **Treatment**

The goal of treatment is to reduce high blood pressure so that your child has a lower risk of complications. Your child's provider can tell you what your child's blood pressure goals should be.

If your child has elevated high blood pressure, your provider will recommend lifestyle changes to help lower your child's blood pressure.

Healthy habits can help your child not gain any more weight, lose extra weight, and lower blood pressure. Working together as a family is the best way to help your child lose weight. Work together to help your child:

- Follow the DASH diet, which is low in salt with plenty of fruits and vegetables, lean meats, whole grains, and low-fat or non-fat dairy
- Cut back on sugary drinks and foods with added sugar
- Get 30 to 60 minutes of exercise every day
- Limit screen time and other sedentary activities to less than 2 hours a day
- Get plenty of sleep

Your child's blood pressure will be checked again at 6 months. If it remains high, blood pressure will be checked in all of your child's limbs. Then blood pressure will be rechecked at 12 months. If blood pressure remains high, then the provider may recommend blood pressure monitoring continuously over 24 to 48 hours. This is called ambulatory blood pressure monitoring. Your child also may need to see a heart or kidney specialist.

Other tests may also be done to look for:

- High cholesterol level
- Diabetes (HbA1C test)
- Heart disease, using tests such as an echocardiogram or electrocardiogram

- Kidney disease, using tests such as a basic metabolic panel and urinalysis or ultrasound of the kidneys

The same process will occur for children with stage 1 or stage 2 high blood pressure. However, follow-up testing and specialist referral will take place in 1 to 2 weeks for stage 1 high blood pressure, and after 1 week for stage 2 high blood pressure.

If lifestyle changes alone don't work, or your child has other risk factors, your child may need medicines for high blood pressure. Blood pressure medicines used most often for children include:

- Angiotensin-converting enzyme inhibitors
- Angiotensin receptor blockers
- Beta-blockers
- Calcium channel blockers
- Diuretics

Your child's provider may recommend that you monitor your child's blood pressure at home. Home monitoring can help show if lifestyle changes or medicines are working.

## **Outlook (Prognosis)**

Most of the time, high blood pressure in children can be controlled with lifestyle changes and medicine, if needed.

## **Possible Complications**

Untreated high blood pressure in children may lead to complications in adulthood, which may include:

- Stroke
- Heart attack
- Heart failure
- Kidney disease

## **When to Contact a Medical Professional**

Contact your child's provider if home monitoring shows that your child's blood pressure is still high.

## **Prevention**

Your child's provider will measure your child's blood pressure at least once a year, starting at age 3.

You can help prevent high blood pressure in your child by following lifestyle changes designed to bring blood pressure down.

A referral to a pediatric nephrologist may be recommended for children and adolescents with hypertension.

## **Alternative Names**

Hypertension - children; HBP - children; Pediatric hypertension

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