

HIGH BLOOD PRESSURE

Scottie Misner



Overview

High Blood Pressure or hypertension is a risk factor for heart and kidney diseases, as well as strokes. In fact, more than a million heart attacks and a half a million strokes are caused in part by high blood pressure. Most people think high blood pressure affects only adults. That's not the case however. For some children, high blood pressure is caused by problems with kidneys or heart³. Poor lifestyle habits, such as unhealthy diet and lack of exercise, can contribute to high blood pressure. High blood pressure in children has become a natural extension of the nationwide obesity epidemic⁴.

According to 2008 data, about one in three adults have high blood pressure, yet only about half are being treated for it. Fortunately, you can find out if you have high blood pressure by having your blood pressure checked regularly. If it is high, you can then take steps to lower it.

What is Blood Pressure?

Blood pressure is the force created by the heart as it pushes blood into the arteries through the circulatory system. Each time the heart contracts or "beats", the blood is pumped out and creates a surge of pressure in the arteries. Systolic blood pressure is when the heart beats pumping blood while diastolic pressure is when the heart relaxes between beats and the blood pressure goes down. Blood pressure is recorded in two numbers. Both are important. The "larger" (systolic) number is placed over the "smaller" (diastolic) number. For example, a blood pressure reading of 120/80 is expressed as "120 over 80 mm Hg" and is considered normal blood pressure.



What Causes High Blood Pressure?

High blood pressure occurs when the arterioles contract (become narrowed) for some reason, and the blood can't easily pass through them. When this happens the heart has to pump harder to force the blood through. When the pressure increases above normal and stays elevated, the result is high blood pressure.

The most common form of high blood pressure is primary (also known as essential) high blood pressure. The cause of primary high blood pressure is unknown. Several factors, such as heredity, race, obesity, lack of exercise and eating a large amount of salt on food may contribute to this type of high blood pressure.

What Can Happen If High Blood Pressure Goes Untreated?

High blood pressure often creeps up slowly and quietly. Until it is advanced, there usually are no symptoms. A person may look and feel great, but may have high blood pressure without knowing it. If untreated, high blood pressure can lead to serious medical problems such as:

- **Heart Attack.** Blood carries oxygen to the body. When the arteries that bring blood to the heart become blocked, the heart cannot get enough oxygen. This blockage can be caused by arteriosclerosis, or hardening of the arteries. This makes the arteries thick, stiff and clogged. Eventually the flow of blood may be stopped completely, causing a heart attack.
- **Enlarged Heart.** High blood pressure causes the heart to work harder and thicken and stretch. Eventually the heart fails to function normally, and fluids back up into the lung.
- **Kidney Damage.** Over a number of years, high blood pressure can narrow and thicken the blood vessels of the kidney, causing fluid and waste products to build up in the blood. This causes kidney failure, requiring treatment such as dialysis or kidney transplant.
- **Stroke.** High blood pressure can cause the arteries going to the brain to become narrower, thus restricting blood flow to the brain. If a blood clot forms in one of the narrowed arteries, it can cause a break in a weakened blood vessel, resulting in a stroke.

Who's Most Likely to have High Blood Pressure?

Anyone can develop high blood pressure, but some people are more likely to develop it than others. Risk factors include:



- **Family History.** If one or more of your parents has high blood pressure, you are more likely to develop it. Be sure to know your parents medical history.
- **Race.** African Americans have a higher incidence of high blood pressure than other races. They also develop it earlier in life, thus are more prone to complications
- **Overweight.** Extra body fat, increases the risk for high blood pressure by putting more strain on the heart.
- **Age.** For many people, blood pressure goes up as they get older. Men tend to get high blood pressure earlier than women, around age 45-50.
- **Smoker.** Smoking makes your heart work harder, raising your blood pressure. This can cause the heart damage associated with the disease. If you are a smoker, it is never too late to quit.
- **Heavy Alcohol Consumption.** This may increase high blood pressure. Be sure to only consume alcohol in moderation.
- **Diseases including diabetes, kidney disease and hormonal abnormalities.** If not monitored carefully, these diseases can contribute to high blood pressure.
- **Medications.** Certain drugs such as amphetamines, oral contraceptives and diet pills can increase risk of high blood pressure. Make sure you use these drugs properly under a doctor's care.

CATEGORIES FOR BLOOD PRESSURE LEVELS IN ADULTS* (Ages 18 Years or Older)		
Normal Blood Pressure Levels (mm HG)		
Category	Systolic	Diastolic
Normal	120 or below	85 or below
High Normal	130-139	85-89
High Blood Pressure (mm HG)		
Stage 1	140-159	90-99
Stage 2	160-179	100-109
Stage 3	180 or above	110 or above

* For those not taking medication for high blood pressure and not having a short term serious illness. These categories are from the National High Blood Pressure Education Program.

Testing: Know Your Blood Pressure

Whether you suspect high blood pressure or not, have your blood pressure checked at least every two years. Even children should be checked as part of their physical exam. If it's high normal (130-139 mm Hg over 85-89 mm Hg), also known as prehypertension, have it checked more often and take steps to bring it down. If your blood pressure is high (over 140/90 mm Hg), there's cause for concern. Usually high blood pressure is managed by a combination of medication, nutrition, and lifestyle changes.

What Can Be Done About High Blood Pressure?

Primary high blood pressure can't be cured. Damage resulting from high blood pressure can be prevented or reduced. Here are some ways to treat high blood pressure.

Maintain Healthy Weight

Being overweight can contribute to high blood pressure. In some cases, people who lose excess weight automatically lower their blood pressure. Any changes in diet should be gradual, never drastic. Following a sensible diet based on the Dietary Guidelines for Americans from the United States Department of Agriculture.



Stay Active

Fit in regular moderate to vigorous physical activity into your lifestyle. Physically active individuals have been shown to have lower blood pressure rates. Moreover, regular exercise can help you maintain a healthy weight.

Using the Dietary Approach

The DASH Diet for hypertension recommends that one decrease salt intake, eat more fruits and vegetables and consume more calcium-rich foods. Therefore:

Decrease Salt Intake

Eating a large amount of salt may contribute to high blood pressure in some people. Try to limit your sodium intake to less than 2,300 milligrams per day. Cut down on the amount of salt when cooking, use herbs and spices instead. Also, read food labels to check for sodium content.



Eat a Diet with Plenty of Fruits, Vegetables and Grains

Potassium and magnesium found in these foods may help control your blood pressure. Foods that are high in potassium include: bananas, catfish, orange juice, spinach, dried fruit, dried beans and potatoes. Food sources of magnesium include: whole grain breads and cereals, green leafy vegetables and beans.

Consume Dairy Products and Other Calcium-Rich Foods

People with low calcium intake have higher rates of high blood pressure. Current recommendations suggest a daily intake of 1200 milligrams per day for adults. Low-fat dairy products like milk, yogurt and cheese are rich sources of calcium. Green leafy vegetables including spinach and broccoli also contain calcium. Interestingly, no conclusive evidence shows calcium supplements offer extra benefits.

Take Medications

Medications may be prescribed to lower high blood pressure. Some of these medications get rid of excess fluids and sodium (salt) in the bloodstream. Other types of medications open up narrowed blood vessels, and still others prevent the blood vessels from constricting and narrowing. Any medication to lower blood pressure must be prescribed and reregulated by a doctor or other health care professional and must be taken exactly as instructed. Often these medications must be taken for life.



References

- ¹ National Heart, Lung, and Blood Institute Diseases and Conditions Index. High Blood Pressure. http://www.nhlbi.nih.gov/health/pubs/pub_gen.htm#hbp Dec 2006
- ² High Blood Pressure http://www.nhlbi.nih.gov/health/dci/Diseases/Hbp/HBP_WhatIs.html Nov 2008
- ³ HBP in Children and Risk Factors in Children and Teens: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbp/HBP_All.html May 2007
- ⁴ A Pocket Guide to Blood Pressure Measurement in Children: http://www.nhlbi.nih.gov/health/public/heart/hbp/bp_child_pocket/bp_child_pocket.pdf
- ⁵ American Heart Association/American Stroke Association National Center What is High Blood Pressure? <http://www.americanheart.org> Oct 20077272 Greenville Ave. 75231 Ph: 1-800-242-8721 (AHA) or 1-888-478-7653 (ASA) <http://mylifecheck.heart.org/Multitab.aspx?NavID=12&CultureCode=en-US> 2010

⁶Health Connections, Dairy Council of California, Managing Hypertension Through a Healthy Lifestyle Issue 6, Vol 4 Summer 2009, <http://www.dairyCouncilofca.org>

Material was originally written by Scottie Misner, May 2001. Revised by Scottie Misner and Carol Curtis, November 2009. Document located at <http://ag.arizona.edu/pubs/health/az1230.html>



THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE AND LIFE SCIENCES
TUCSON, ARIZONA 85721

SCOTTIE MISNER, PH.D., R.D.
Associate Nutrition Specialist

CONTACT:
SCOTTIE MISNER
misner@ag.arizona.edu

This information has been reviewed by university faculty.
cals.arizona.edu/pubs/health/az1230.pdf
Originally published: 2008

Other titles from Arizona Cooperative Extension can be found at:
cals.arizona.edu/pubs

Any products, services, or organizations that are mentioned, shown, or indirectly implied in this publication do not imply endorsement by The University of Arizona.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, James A. Christenson, Director, Cooperative Extension, College of Agriculture & Life Sciences, The University of Arizona.

The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation in its programs and activities.