



Civil Air Patrol Safety

Hypertension





Definition

- **Blood Pressure:** Each time your heart contracts, it causes a wave or pulsation in the blood system of the body. This can be seen clearly when an artery is cut and the blood spurts out of the cut vessel with each beat of the heart.
- **Measuring Blood Pressure:** This is usually accomplished by putting a cuff around the upper arm and inflating the cuff with air. Once the air pressure in the cuff exceeds the pressure in the artery below the cuff, the flow of blood beyond the cuff stops. As the air pressure is slowly lowered, there comes a point at which blood begins to flow through the artery again (the systolic pressure) that can be heard or felt over the artery below the cuff. In between beats, the artery closes, and blood flow stops again. As the pressure is lowered further, a point is reached at which the artery stops closing between heart beats, called the diastolic pressure.
- Blood pressure is usually measured in terms of millimeters of mercury (or mm Hg).





Definition - cont.

- **Systolic:** The highest or peak pressure reached in the blood vessel during each contraction of the heart.
- **Diastolic:** The lowest pressure in the system during the time the blood pressure is being measured and coincides with the relaxation phase of the heart contraction.
- **Normal blood pressure:**
 - **Normal** Systolic pressure is usually between 90 - 140 mm Hg.
An “ideal” level for an adult is about 120 mm Hg.
 - **Normal** Diastolic pressure is usually between 60 - 90 mm Hg.
An “ideal” level for an adult would be 70 - 80 mm Hg.





Definitions - cont.

- **Hypertension:** An abnormally high blood pressure.
 - Pre-hypertension is a systolic pressure between 130 -140 mm Hg.
 - Stage 1 hypertension is a systolic pressure between 160 - 180 mm Hg.
 - Stage 2 hypertension is a systolic pressure greater than 180 mm Hg.
- **Hypotension:** An abnormally low blood pressure.
 - Shock: Is a condition where the blood pressure is abnormally low, and the body is beginning to “shut down.”





Causes of Hypertension

- Obesity
- Excess salt/sodium in the diet
- Sedentary lifestyle
- Age
- Sleep Apnea
- Drugs and Alcohol
- Overall poor diet
- Smoking
- Certain hormonal conditions (adrenal or thyroid disease)
- Kidney Disease
- Diabetes
- Medication side-effects
- Stress





Complications of Hypertension

- Stroke
- Heart Attack
- Atherosclerosis (hardening of the arteries)
- Kidney disease
- Eye disease
- Problems in pregnancy (eclampsia)
- Erectile dysfunction





Recognition and Identification

- Hypertension is identified through the measurement of one's blood pressure.
- There are few symptoms that indicate the presence of hypertension and in many people, virtually no recognizable symptoms are noticed.
- Blood pressure can be checked at medical offices, dental offices, pharmacies, and many other locations, as well as at home.
- Home blood pressure monitoring has several advantages and often is a more accurate indication of one's day to day blood pressure.





Treatment for Hypertension

Treatment potentially involves both lifestyle modification and medication.

Lifestyle modifications can include:

- Smoking cessation
- Weight loss
- Exercise and physical activity.
- Reducing the amount of alcohol, sodium and fat consumed.
- Stress management and relaxation techniques.





Treatment - cont.

Medication: When lifestyle modification is not sufficient to keep the blood pressure in a healthy range, medications may be necessary.

There are many categories of medication that a physician can prescribe:

- **Diuretics or fluid pills:** These reduce the blood volume through their effects on the kidneys.
- **ACE inhibitors:** These also work through the kidneys to influence an important hormonal system.
- **Beta blockers:** These medications work primarily on the heart to reduce the strength of the heart contraction and slow the rate of contractions.
- **Calcium channel blockers:** This group of medications slows down the heart contractions.





Thank You!

You can visit the **Mayo Clinic website** for any additional information on hypertension. This presentation was prepared by the Health Services Team - Senior Program Manager: Lt. Col. Stephen Leighton, MD, NC-052, narration by Maj. Randy Ankrom IN-806. Please contact us at Safety@capnhq.gov with any questions.

