

This activity was contributed at the 2003 Catalyst Idea Exchange by Kathryn Dishaw of Sullivan Heights Secondary in Surrey. It addresses BC Learning Outcomes in Science 9 and Biology 12.

Systolic and Diastolic Blood Pressure

1. Clean the stethoscope earpieces with rubbing alcohol and place the stethoscope in your ears. Ensure that the earpieces are facing the correct direction (slightly forward).
2. Place the sphygmomanometer bladder against your patient's upper arm. Wrap the cuff firmly and Velcro in place.
3. Place the stethoscope receiver just under the bottom edge of the sphygmomanometer cuff on your patient's brachial artery; - just above the "elbow crease". Hold it in place with your thumb. The less you touch the receiver, the better (less sound interference).
4. Close the air valve on the sphygmomanometer bulb by "rolling it down". Pump the black bulb until the pressure reaches 150 mm Hg. This will collapse (occlude) the brachial artery.
5. Slowly release the air valve by slowly "rolling it up". The pressure will drop. You want the pressure to drop at a rate of 2-3 mm Hg per heartbeat.
6. Record the pressure when you first hear the tapping sounds (**Korotkoff sounds**). This is the earliest sign of flow through the collapse artery and represents the **Systolic Blood Pressure** (Blood Pressure during Ventricle Contraction).
7. Continue to deflate the system at a rate of 2-3 mm Hg. You will notice that the sounds will change, become dull, muffled and then cease. When you no longer hear any Korotkoff sounds record the pressure value. This is your **Diastolic Blood Pressure** (Blood Pressure during Ventricle Relaxation and Refilling). It indicates the "tone" of your blood vessel.
8. Record your patient's **Pulse Pressure as Systolic / Diastolic**.
 - A healthy Pulse Pressure for the average adult is approximately 120/80 mm Hg.
 - A healthy young woman in your age group should have a systolic pressure of approximately 110 mm Hg.
 - The systolic pressure for a healthy young man of your age group may range between 120-130 mm Hg.

Trouble Shooting:

- * Try finding the brachial pulse first without using the cuff.
- * Fully deflate the cuff; empty the air bladder between each trial.
- * If you cannot hear the sounds clearly, try the other arm.
- * If the sounds never cease, record the diastolic pressure at the time the sounds become muffled.

Variations:

- Choose one of the following variations and carry it out. Be prepared to present and discuss your findings with the class.
- Have your patient do jumping jacks for 2 minutes while wearing the cuff. Immediately take a blood pressure reading. How has it changed? What is responsible for the change? Explain.
- Have your patient tense his entire body except for the arm wearing the cuff. Take a blood pressure reading. How has it changed? What is responsible for the change? Explain.
- While your patient is still wearing the cuff, have them lie down for two minutes and then quickly stand up.

- Immediately take a blood pressure reading. How has it changed? What is responsible for the change? Explain.