How To Obtain Vital Signs

Vital signs are the most accurate way of monitoring the patient's status in the pre-hospital setting. A complete set of vitals includes respiratory rate, heart rate, and blood pressure. *Remember that if you find your patient's vital signs to be out of the normal range, YOU ARE NOT WRONG; you cannot control what the patient's vital signs are, all you can do is document your findings and treat them appropriately.*

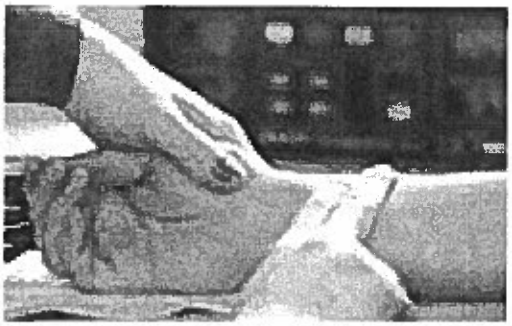
Heart Rate

The patient's heart rate, or pulse, is the measurement of how many times the heart beats in one minute. Please see the chart below for the normal heart rate for each age range. If the patient's heart rate is faster than the normal range they are considered to be Tachycardic (tachy=fast). If the patient's heart rate is too slow they are considered to be Bradycardic (brady=slow).

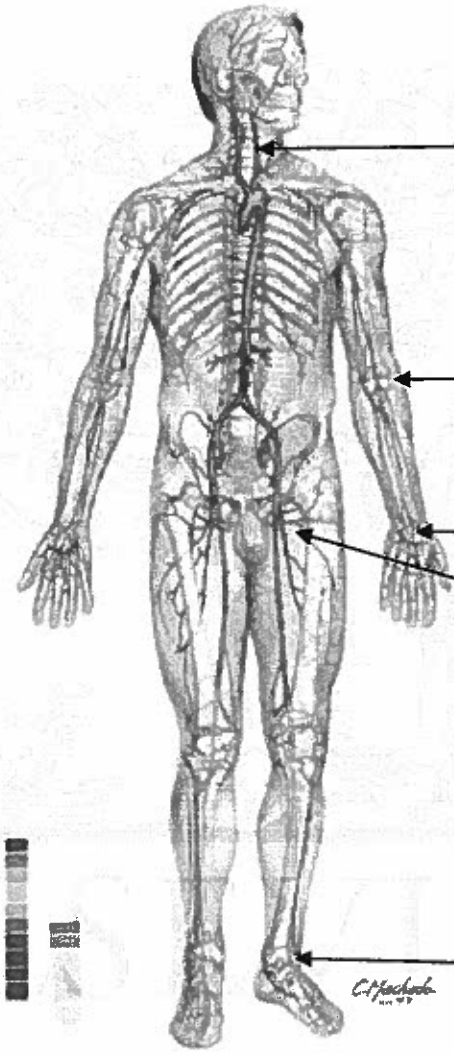
Age	Rate: beats per minute
Adult (over 18)	60-100
Child	70-150
Infant/Neonate	100-160

There are several ways to obtain the patient's heart rate. Most commonly, the heart rate is felt at the radial artery. The radial pulse can be found at the distal portion of the arm, slightly proximal to the wrist. The term "radial pulse" comes from the bone below this area, the Radius-one of two bones in the forearm. To locate the radial pulse, locate the "wrist bone" and move the pads of your fingers slightly proximal and medial. You should feel a slight indent or "valley" where you will feel the pulse. Remember that you must press down slightly, however pressing down too much will occlude (stop) the pulse and you will be unable to obtain a heart rate.

Once the pulse has been found, count the number of beats in one minute. In the beginning, get comfortable counting for an entire minute to ensure that you are accurate. As you develop your skills over time you may find it easier and more convenient to take a heart rate for 30 seconds, and then multiply the number of beats by two (or take the pulse for 15 seconds and then multiply by four). *If you are using the shortcut to a heart rate you MUST remember to multiply your findings.*



Pulses can be found in the following places in the body:



Carotid- used to check the presence of a pulse in cardiac arrest

Brachial-where you listen for BP, where you should take an infant/neonatal pulse

Radial- most common for pulse

Femoral- used to check the presence of a pulse in cardiac arrest

Pedal-top of foot, checked when doing PMS for spinal immobilization

Always document the quality of the pulse on your PCR with the following:

-Regular; you can count beat in a regular pattern with no gaps; 1, 2, 3, 4, 5, 6, 7
-Irregular; beat does not happen in even increments; 1, 2, x, 3, x, 4, 5, 6, x, 7
-Strong/bounding
-Weak/faint

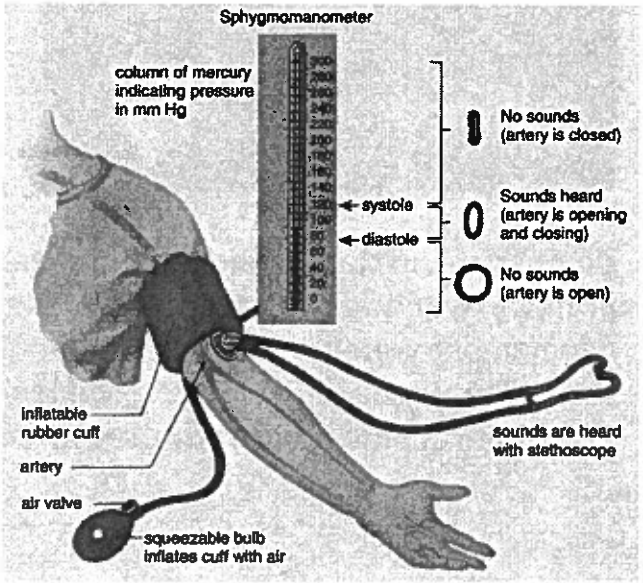
Blood Pressure

A blood pressure consists of two numbers; a top number and a bottom number. The top number is called the systolic (sys-tahl-ik) blood pressure, which is the pressure when the heart is contracting. The bottom number is known as the diastolic (dye-a-stahl-ik) blood pressure, which is the pressure when the heart is relaxing. See the chart below for normal ranges of blood pressure for each age group. *On a BLS level we do not take blood pressures on newborns/neonates*

Age	Systolic
Adult	90-140
Child (1-8)	80-110
Infant (<1 year)	50-96

To take a blood pressure you will need a blood pressure cuff (sphygmomanometer) and a stethoscope. Before starting, inspect your stethoscope by placing the stethoscope in your ears with the ear buds facing forward toward the nose, then tapping the diaphragm. If you are using a double bell stethoscope, make sure that you are using the larger of the two sides. If you do not hear any noise, your stethoscope may be broken.

To take a blood pressure: Wrap the blood pressure cuff around the upper arm, proximal to the elbow but distal to the shoulder, ensuring that you are able to see the gauge. The cuff should be snug; if it is too loose it will produce a false high blood pressure. Place the stethoscope in your ears with the ear buds facing forward. Palpate the brachial artery using the pads of your fingers; once found, place the diaphragm of the stethoscope over the brachial artery. Turn the twist dial on the bulb of the blood pressure cuff to the right to tighten it. Pump the cuff up to approximately 200PSI (pounds per square inch) for men, and approximately 170 for women. Slowly turn the dial on the bulb to the left to release pressure from the cuff. Watch the dial as it decreases while listening for the first time you hear a heart beat; the first heart beat you hear will be your systolic blood pressure. Keep listening to the heart beat while releasing the cuff; the last heart beat you hear will be your diastolic blood pressure. *Remember that each line on the gauge represents two increments, so you will never get an odd number for a manual blood pressure.* If you pump the blood pressure cuff up and hear heart beats as soon as you begin to release, tighten the dial and pump the cuff up higher.



Respiratory Rate

The respiratory rate of a patient is determined by how many times a patient in and out in one minute. Because a patient may alter their breathing pattern when they are aware you are watching them breathe, try not to tell the patient you are observing them. An easy trick to not let the patient know is to position the arm on the patient's stomach when taking a pulse. As soon as you are finished taking the pulse, keep the patient's arm over the stomach and begin to count respirations by looking at the rise and fall of the chest. Similarly to taking a heart rate, respirations should be taken for a full minute until you are comfortable in your skills, in which case you may find it easier to count respirations for 30 seconds and multiply by two. If you have trouble counting respirations on the patient's stomach, you can use your stethoscope to listen for lung sounds for a full minute.

Document the quality of respirations with one of the following:

-Regular; normal, adequate depth, without struggle or difficulty
-Shallow; inadequate depth- chest rise and fall will be very slight
-Labored; patient has difficulty inhaling/exhaling-may occur with pain/respiratory disease. The patient may use accessory muscles.

Age	Rate: breaths per minute
Adult (over 18)	12-20
Child	15-30
Infant/Neonate	25-50

Do not get frustrated when taking vital signs- remember that they are skills that you must practice over and over again. As EMT students and new EMTs when you come to the fire department you have the perfect opportunity to practice vital signs on anyone who is there. This is the only way you will learn! As always, remember that your senior EMT's and senior members are your resources for learning-ASK us