Vital Signs

Temperature
Pulse
Respirations
Blood Pressure
TEMPERATURE

- The measurement of core body heat
Routes to Measure Temperature

- **Oral:** By mouth
- **Rectally:** By rectum
- **Axillary:** In the armpit
- **Tympanic/Aural:** In the ear
Types of Thermometers

- **Digital or electronic:** To be used for oral, tympanic, or axillary

- **Mercury or glass:** To be used for oral, rectal, and axillary
NORMAL RANGES

- **Orally:** 98.6 degrees Fahrenheit
- **Rectally:** 99.6 degrees Fahrenheit
- **Tympanic:** 97.6 degrees Fahrenheit
- **Axillary:** 97.6 degrees Fahrenheit
Duration for Taking Temperatures

- **Tympanic:** Until the thermometer beeps
- **Electronic:** Until the thermometer beeps
- **Mercury Oral:** Three minutes
- **Mercury Rectal:** Three minutes
- **Mercury Axillary:** Ten minutes
CAREFUL!

- Always hold the thermometer in place while measuring both temperatures.
- Always use lubricant with rectal temperatures.
- Always remove clothing around axilla.
Mercury Fahrenheit thermometers are read by degree and 0.2 of a degree
- Long lines indicate degrees
- Short lines indicate 0.2 of a degree
- Four short lines between each long line (0.2, 0.4, 0.6, 0.8)
PULSE

The wave of blood created by the heart pumping
How to measure

- **Palpation**
  - The act of using the hands to **feel** body parts during an examination

- **Auscultation**
  - Process of **listening** for sounds in the body
Pulse Sites

- Temporal
  - Near front edge of ears
- Carotid
  - Alongside the trachea
- Posterior tibial
  - Just behind the medial ankle
- Brachial
  - Along the humerus
- Radial
  - On the wrist
- Femoral
  - In the groin
- Popliteal
  - Behind the knee
- Dorsal Pedalis
  - On the top of the foot
- Apical
  - Over the heart
  - Must be auscultated
Characteristics of Pulse

- **Rate**
  - Measured in beats per minute
  - In some cases, may be measured for 30 seconds and multiplied by 2

- **Rhythm**
  - Pattern of the heartbeats

- **Volume**
  - Strength of the pulse as it presses against the arterial wall

- **Bilateral presence**
Pulse Rates

- Women tend to have faster rates than men
- As the cardiovascular system matures with age, the pulse rates decrease
- If someone is physically fit, the pulse rate is usually on the low side
- Illness and disease can cause variations
Pulse Rates

- Pulse norms are 60 - 100 beats per minute
- Pulses between 90 - 100 are in a gray area - high normal
- Faster than 100 - tachycardia
- Slower than 60 - bradycardia
## Pulse Rates

<table>
<thead>
<tr>
<th>Age</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborns</td>
<td>120-160 BPM</td>
</tr>
<tr>
<td>Infants</td>
<td>80-140 BPM</td>
</tr>
<tr>
<td>Children 1-6</td>
<td>80-120 BPM</td>
</tr>
<tr>
<td>Children over 7</td>
<td>75-110 BPM</td>
</tr>
<tr>
<td>Adults</td>
<td>60-90 BPM</td>
</tr>
</tbody>
</table>
Pulse Volume

Can be described by the following scale:

0 - Absent, unable to detect
1 - *Thready* or weak, difficult to palpate and easily obliterated by light fingertip pressure
2 - *Normal* or strong, easily found and obliterated by strong fingertip pressure
3 - *Bounding* or full, difficult to obliterate with fingertip pressure
Pulse Rythms

- **Regular**
  - Evenly spaced beats

- **Irregular**
  - Not evenly spaced
  - Referred to as *arrhythmia* or *dysrhythmia*
  - Must count pulse for a full minute to determine an average rate if patient has irregular rhythm
Respirations

- The mechanical act of breathing in air and expelling air from the body
  - inspiration
  - expiration
Respirations

- **Rate**
  - Measured in breaths per minute
  - Normal range is 14 - 20 breaths per minute
  - Greater than 24 - **tachypnea**
  - Less than 14 - **bradypnea**
  - Without breathing - **apnea**

- **Quality**
  - Difficult breathing/ shortness of breath - **dyspnea**

- **Rhythm**
  - Should be regular
Blood Pressure

The force exerted on the blood vessels as the heart propels the blood through them
Blood Pressure

- Blood pressure readings are taken at a large artery – the brachial artery in the upper arm
- Instrument called a sphygmomanometer and a blood pressure cuff are used to measure blood pressure
Blood Pressure

Blood pressure reading is measured in millimeters (mm) of mercury and is given as two numbers separated by a slash (/).

Normal readings
  - male at rest is 120/80
  - Female at rest is 110/70.
Blood Pressure

- First number, called the **systolic pressure**, measures the force of the blood during the contraction of the heart.
- Second number, called the **diastolic pressure**, measures the force during the relaxation phase.
Blood Pressure

- Abnormally high blood pressure – **hypertension**
- Abnormally low pressure - **hypotension**
  - systolic pressure of much lower than 80 is usually associated with shock
Order of Measuring V/S

- If using a mercury thermometer, measure the pulse and respiration while waiting for the temperature.
- If using another method of measuring the temperature, complete the temperature - then measure the pulse and respiration.
- Keep your fingers on the pulse while measuring the respiration.
- Take blood pressure last.
Charting

- Chart in order temperature - pulse - respiration
  - Example: 98.6 - 78 - 16 - 120/80
- Do not write T =, etc.

- Write (Ax) after axillary temperatures
- Write (R) after rectal temperatures