Vital Signs

- **DO NOT TREAT NUMBERS ------ TREAT PEOPLE!!!!**

What are the Vital Signs

- Measurements of the body's most basic functions.

- Vital to life
  - If one or more is missing or compromised = *medical emergency*
  - Vital signs are useful in detecting or monitoring medical problems

The Vital Signs

- Heart Rate (Pulse)
- Breathing Rate (Respiration)
- Blood Pressure
- Temperature

How to check your pulse

- Using the first and second fingertips, press firmly but gently on the arteries until you feel a pulse.
- Begin counting the pulse when the clock's second hand is on the 12.
- Count your pulse for 60 seconds (or for 15 seconds and then multiply by four to calculate beats per minute).
- When counting, do not watch the clock continuously, but concentrate on the beats of the pulse.

Pulse

- Push lightly at first, adding pressure if there is a lot of subcutaneous fat or you are unable to detect a pulse. If you push too hard, you might occlude the vessel and mistake your own pulse for that of the patient.

Pulse

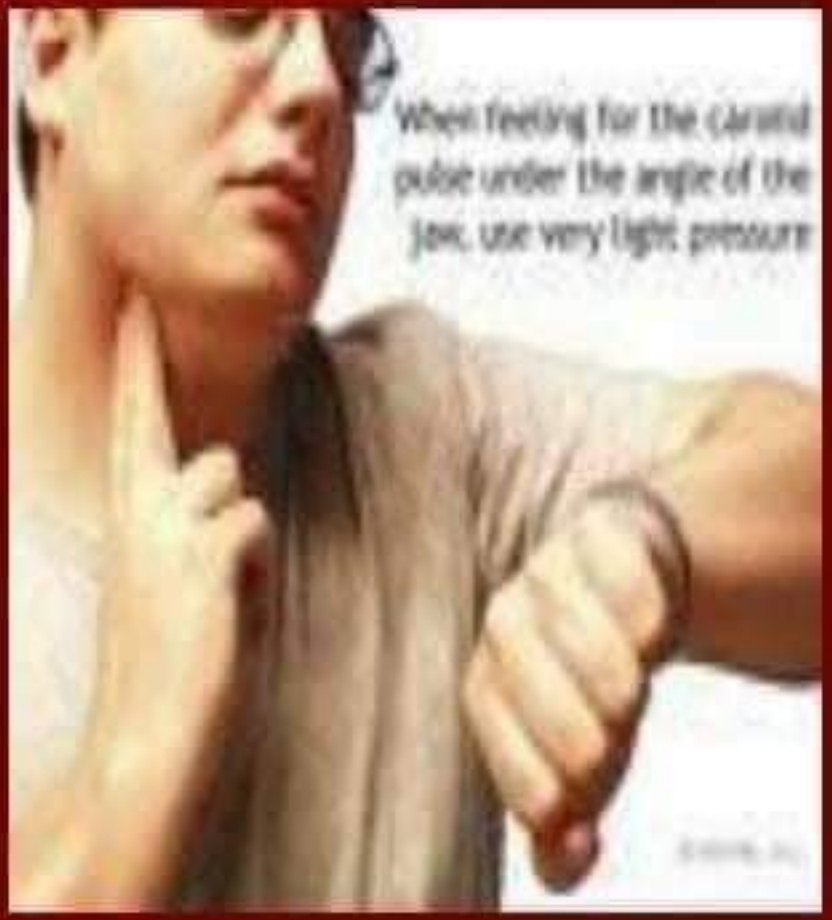
- Pulse Points

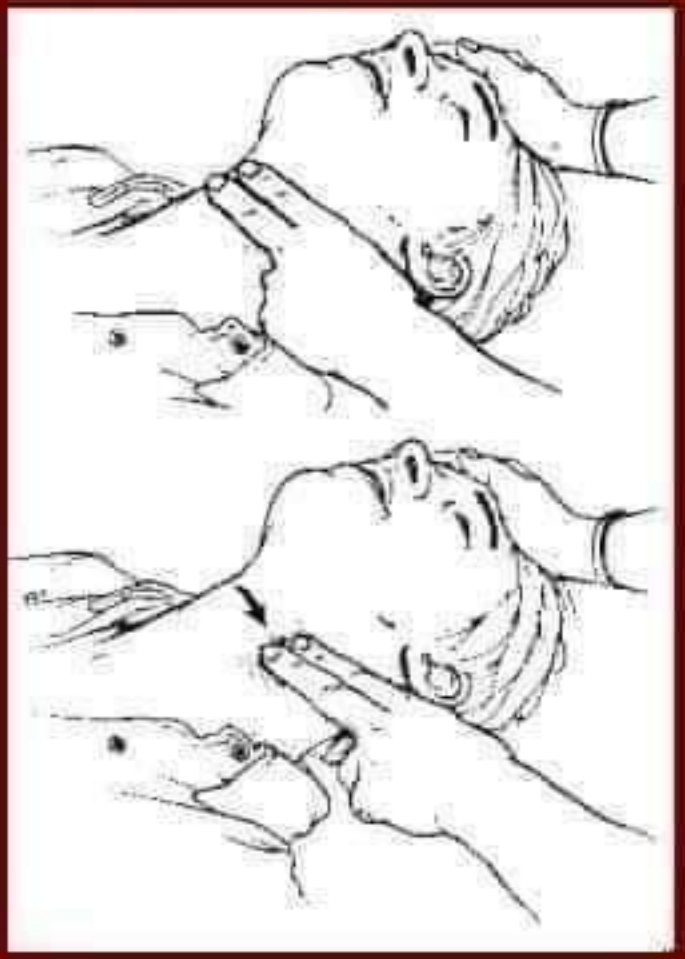
Dorsal Pedal

Posterior Tibial

(Posterior and slightly inferior to medial Malleolus)

Neck (carotid Pulse)





Using the heart rate

- Max HR 220 minus your age
  - Multiply that number by .65 = 65% of max
  - Multiply that number by .85 = 85% of max
- 65% - 85% is the training zone
- Figure out yours.....

Respiratory Rate

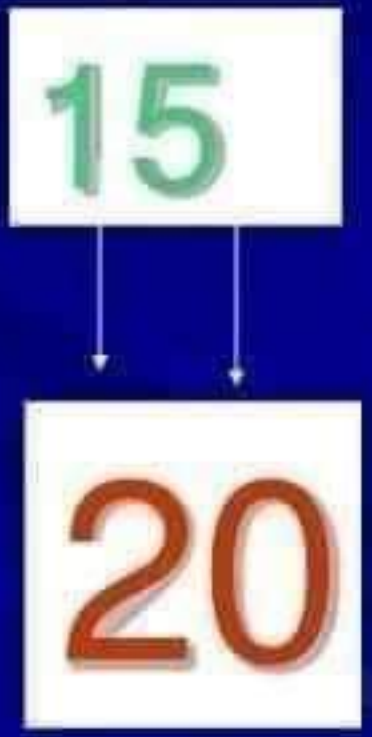
- Try to do this as surreptitiously as possible. Observing the rise and fall of the patient's hospital gown while you appear to be taking their pulse.

Respiratory Rate

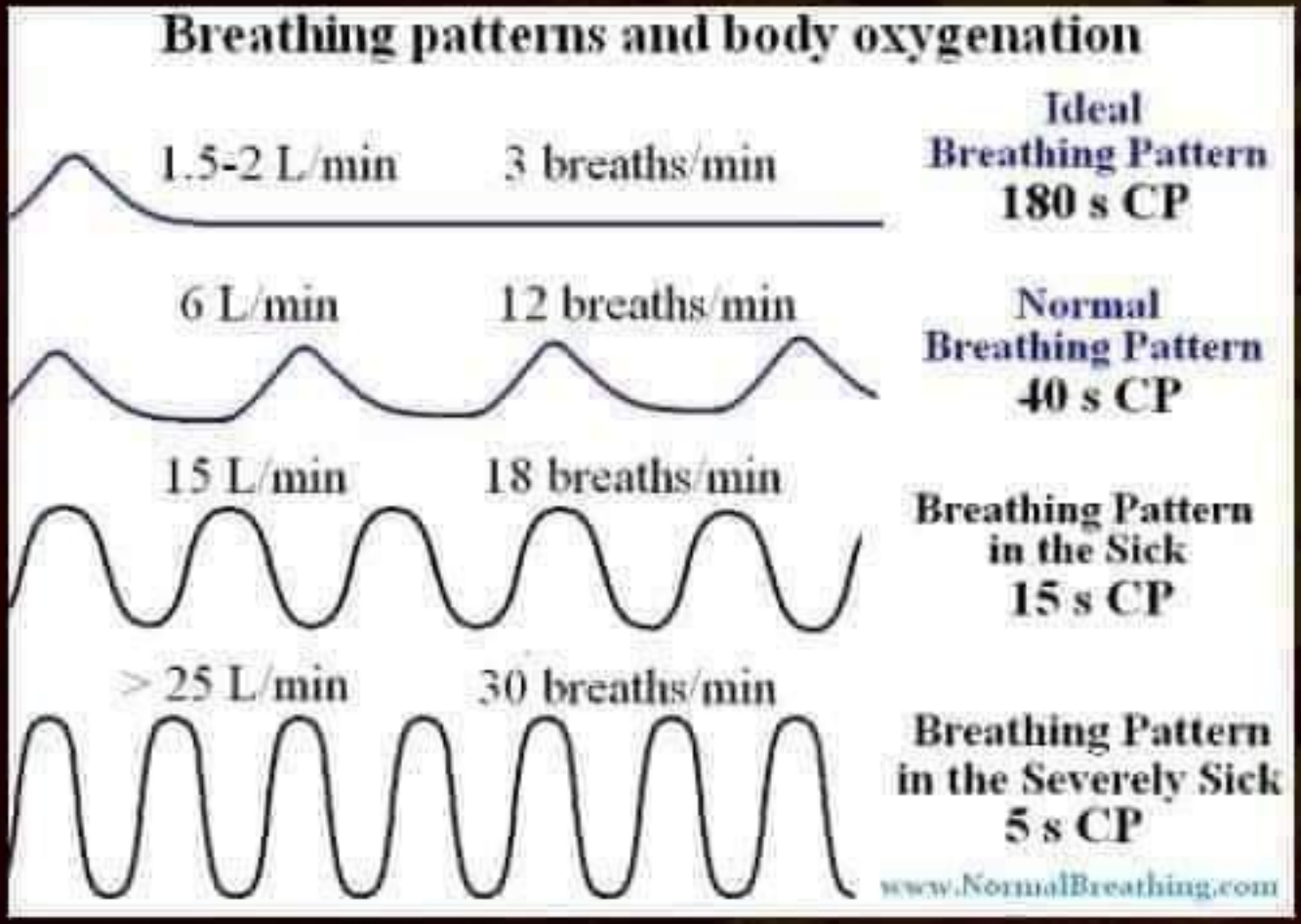
- They should be counted for at least 30 seconds 15 second period is rather small and any miscounting can result in rather large errors when multiplied by 4.

Respiratory Rate

- Normal respiration rates at rest range from 15 to 20 breaths per minute. In the cardio-pulmonary illness, it can be a very reliable marker of disease activity.



Breathing Patterns



Cheyne-Stokes respirations

- Respiratory pattern characterized by periods of respirations during which breathing starts shallow and gets progressively deeper, and then gets progressively shallower, followed by periods of apnea that can last up to 30 seconds or longer, then the cycle starts over. Each cycle can take anywhere between 30 seconds and 2 minutes or longer.

Kussmaul's respirations

- A type of labored or hyperventilation characterized by a consistently deep and rapid respiratory pattern.
- This type of labored hyperventilation is usually seen in the late stages of a severe metabolic acidosis such as diabetic ketoacidosis. The patient becomes very "air-hungry" and the desperate gasping characteristic of Kussmaul's breathing almost appears involuntary

Measure

C. Measured in breaths per minute.

D. Normal range = 12-24 breaths per minute.

E. > than 24 = tachypnea – if breathing in great depth then called hyperpnea

F. < than 12 = bradypnea

G. Difficulty in breathing is called dyspnea

Temperature

- Old people, people with disabilities, babies and young children typically feel more comfortable at higher temperatures.

Temperature

- **By ear a** special thermometer can quickly measure the temperature of the ear drum, which reflects the body's core temperature.

Places to take the Temperature

- Oral – mouth
- Aural – ear
- Axillary – armpit
- Rectal – rectum

*** most accurate – rectal

***Least accurate - Axillary

Preparation for measurement

- Patient should abstain from eating, drinking, smoking and taking drugs that affect the blood pressure one hour before measurement.

Remember the following for accuracy of your readings

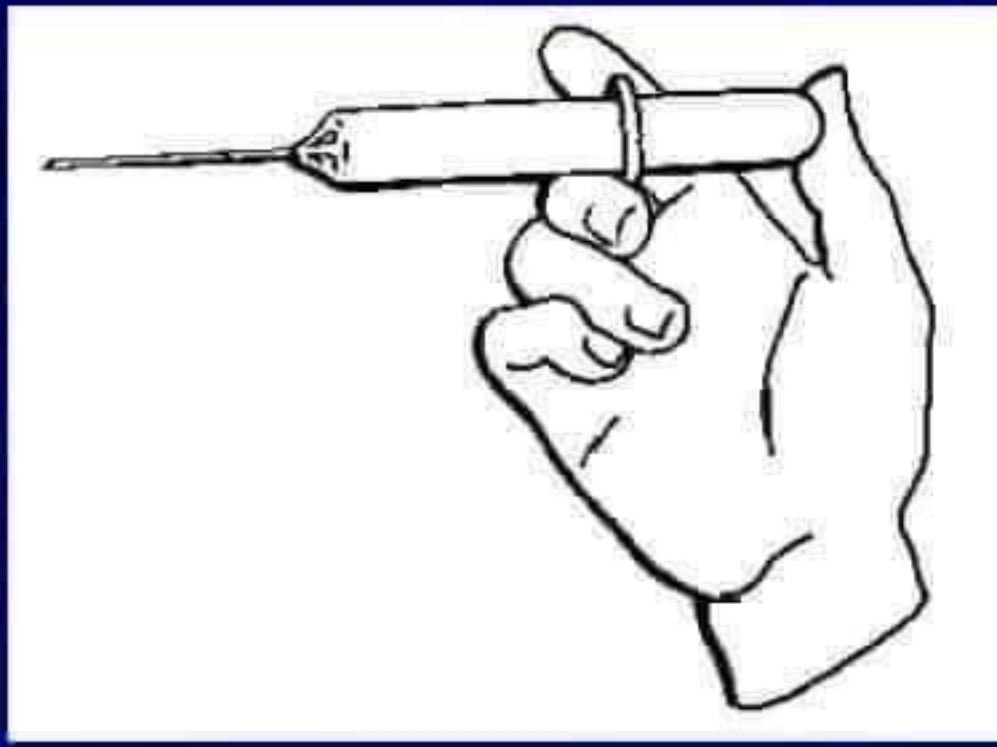
- Instruct your patients to avoid coffee, smoking or any other unprescribed drug with sympathomimetic activity on the day of the measurement

Preparation for measurement

- Because a full bladder affects the blood pressure it should have been emptied.

Preparation for measurement

- Painful procedures and exercise should not have occurred within one hour.
- Patient should have been sitting quietly for about 5 minutes.



Remember the following for accuracy of your readings

- First measuring BP when the patient is supine and then repeating them after they have stood for 2 minutes, which allows for equilibration.

Auscultated Blood Pressure

- Adult
  - Male

    $$\frac{100 + \text{Age (up to 50)}}{80}$$

  - Female

    $$\frac{90 + \text{Age (up to 50}}{80}$$

Estimating Blood Pressure

- Femoral Pulse Present?
  - >70 Systolic
  - <80 Systolic

Estimating Blood Pressure

- Carotid Pulse Present?
  - >60 Systolic
  - <70 Systolic

High Blood Pressure

- Causes the heart to work "harder"
  - Leaves the heart and the arteries more prone to injury
- High Blood Pressure increases the risk of heart attack, stroke, damage to the eyes, kidney failure, atherosclerosis and congestive heart failure.

Causes of High Blood Pressure

- Heredity
- Race (African Americans are more likely to develop high blood pressure)
- Males (men have a greater chance of developing high blood pressure than women until age 55. However, at over the age of 75, women are more likely to develop high blood pressure than men).
- Sodium sensitivity (salt)
- Obesity and overweight
- Heavy alcohol consumption
- Sedentary lifestyle
- Diabetics or individuals with gout or kidney disease
- Age (the older people get, the more prone to high blood pressure)
- Some medications

Other "vital" signs to check

- Pupil response
  - PEARL (Pupils Equal And Responsive to Light)
    - constricted pupils – injury to the central nervous system and/or intake of depressant drugs
    - dilated pupils – head injury, shock, hemorrhage and/of intake of stimulant drug
- Level of Consciousness
  - APVU Scale

    - Alert / Pain / Voice / Unresponsive
- Sensory Changes
  - Bilateral comparison

Normal Vital Signs for Adults (according to Medline Plus)

- Blood pressure: 90/60 mm/Hg to 120/80 mm/Hg
- Breathing: 12 - 18 breaths per minute
- Pulse: 60 - 100 beats per minute
- Temperature: 97.8 - 99.1 degrees Fahrenheit / average 98.6 degrees Fahrenheit