Blood Pressure

Blood pressure is...
- The force exerted against blood vessel walls
- Responsible for the flow of blood
- The result of:
  - Pumping action of the heart
  - Resistance of the blood vessels
  - Volume of blood

Pumping action of the heart...
- Systolic phase
- Systole
- Ventricles contract
- Blood flows to the body
Pumping action of the heart...

• Diastolic phase
• Diastole
• Heart relaxes

Blood pressure is...

• Recorded as a fraction 120/80
• Systolic pressure is the numerator
  – The first sound heard
• Diastolic pressure is the denominator
  – The change of sound or the last sound heard

Blood pressure sounds are...

• Auscultated through a stethoscope
• Sounds are correlated with the readings on a sphygmomanometer
• Blood pressure is recorded in millimeters of mercury (mm Hg)
Blood pressure variations...

- Determine baseline:
  - From medical record
  - Systolic palpated pressure
- Hypertension
  - High blood pressure
- Hypotension
  - Low blood pressure
- Orthostatic hypotension
  - Decrease in B/P with position change from supine to erect

Stethoscope

Figure 16.15
Parts of a Stethoscope

Aneroid Sphygmomanometer

Use the proper width cuff
Width should be approximately 80% of arm circumference
Mercury Sphygmomanometer

Korotkoff Sounds
- Sounds auscultated while assessing B/P
- 5 Phases:
  - Phase I: first sound, sharp tapping sound - systolic pressure
  - Phase II: soft swishing sound
  - Phase III: rhythmic tapping sound
  - Phase IV: muffling / fading of tapping sound
  - Phase V: point at which all sounds disappear – diastolic pressure

Trouble-shooting
- False high reading:
  - Cuff too small
  - Cuff too loose
  - Slow cuff deflation
  - Column or dial not at eye level
  - Poorly timed: anxiety, exercise, after eating
Take B/P first in infant or small child.
Trouble-shooting

• False low reading:
  – Incorrect position of arm or leg
    • Position at heart level
  – Failure to notice auscultatory gap
    • Sounds fade out for 10 to 15 mm Hg then return
  – Inaudibility of low volume sounds
  – Column or dial not at eye level

Blood pressure values

• Systolic normal range 90 – 140 mm Hg

• Diastolic normal range 60 – 90 mm Hg

• Pulse pressure: difference between systolic & diastolic pressure, approximately 40 mm Hg

Blood pressure readings...

• Use same arm for readings
• Do not take B/P on arm with:
  – An IV
  – Paralysis
  – Injury
  – A – V shunt
  – Edema