Pulse

- Pulse – pressure wave of blood
- Monitored at “pressure points” where pulse is easily palpated
Blood Pressure

- Measurements by health professionals are made on the pressure in large arteries
  - Systolic – pressure at the peak of ventricular contraction
  - Diastolic – pressure when ventricles relax
- Pressure in blood vessels decreases as the distance away from the heart increases
Measuring Arterial Blood Pressure

Figure 11.18

(a) Blood pressure 120 systolic 70 diastolic (to be measured)
(b) Pressure in cuff above 120; no sounds audible
(c) Pressure in cuff below 120, but above 70
(d) Pressure in cuff below 70; no sounds audible

Brachial artery
Rubber cuff inflated with air
Brachial artery closed
120 mm Hg
120 mm Hg
70 mm Hg
70 mm Hg

Sounds audible in stethoscope

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Comparison of Blood Pressures in Different Vessels

Figure 11.17

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Blood Pressure: Effects of Factors

- Neural factors
  - Autonomic nervous system adjustments (sympathetic division)

- Renal factors (kidneys)
  - Regulation by altering blood volume
  - Renin – hormonal control
Blood Pressure: Effects of Factors

- Temperature
  - Heat has a vasodilation effect
  - Cold has a vasoconstriction effect

- Chemicals
  - Various substances can cause increases or decreases

- Diet
Factors Determining Blood Pressure

- Blood volume
- Exercise
- Postural changes

- Kidney conserves water and salt
- SNS Centers
- Chemicals (renin, nicotine and others)
- Blood viscosity

Which brings about

- SV (stroke volume)
- HR (heart rate)
- Vasoconstriction
- Peripheral resistance

- Cardiac output

Increased

Arterial blood pressure

↑ = increased
↓ = decreased

Figure 11.19
Variations in Blood Pressure

- Human normal range is variable
  - Normal
    - 110–140 mm Hg systolic
    - 70–80 mm Hg diastolic
  - Hypotension
    - Low systolic (below 110 mm Hg)
    - Often associated with illness
  - Hypertension
    - High systolic (above 140 mm Hg)
    - Can be dangerous if it is chronic