BLOOD VESSELS AND BLOOD CIRCULATION

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CHAPTER OBJECTIVES

- Blood Vessels
- Systemic Arteries
- Systemic Veins
- Physiology of Circulation

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TYPES OF BLOOD VESSELS

- Five Types
  - Arteries
  - Arterioles
  - Capillaries
  - Venules
  - Veins

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BLOOD CIRCUITS

- Two Groups
  - Pulmonary Circuit
  - Systemic Circuit
    - Aorta

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VESSEL STRUCTURE

- Three tunics of the arteries
  - Endothelium
  - Smooth Muscle
  - Supporting Connective Tissue

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SYTSTEMIC ARTERIES

- Aorta
  - Ascending Aorta
    - Left and Right Coronary Arteries
  - Aortic Arch
    - Brachicephalic Artery
      - Right Subclavian Artery
      - Right Common Carotid Artery
    - Left Common Carotid Artery
    - Left Subclavian Artery

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SYSTEMIC ARTERIES (cont'd)

- Thoracic Aorta
  - Esophagus
  - Intercostal Arteries
- Abdominal Aorta
  - Celiac Trunk
    - Left Gastric Artery
    - Splenic Artery
    - Hepatic Artery
  - Superior Mesenteric Artery
  - Inferior Mesenteric Artery

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SYSTEMIC ARTERIES (cont'd)

- Abdominal Aorta (cont'd)
  - Phrenic Arteries
  - Suprarenal Arteries
  - Renal Arteries
  - Ovarian Arteries / Testicular Arteries
  - Lumbar Arteries
- Descending Aorta

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SYSTEMIC ARTERIES (cont'd)

- Abdominal Aorta divides into:
  - Common Iliac Arteries
    - Internal Iliac Artery
      - Pelvic Organs
    - External Iliac Artery
      - Femoral Artery
      - Popliteal Artery
        - Tibial Arteries
        - Dorsalis Pedis

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SYSTEM ARTERIES (cont'd)

- Arteries that branch from the arm and head
  - External and Internal Carotid Artery
  - Subclavian Artery
  - Vertebral Artery
  - Axillary Artery
  - Brachial Artery
    - Radial Artery
    - Ulnar Artery

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ANASTOMOSES

- Communication between two blood vessels
- Circle of Willis
- Basilar Artery
- Superficial Palmar Arch
- Mesenteric Arches
- Arterial Arches

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SYSTEMIC VEINS

- Superficial Veins
  - Cephalic
  - Basilic
  - Median Cubital
  - Saphenous Veins
- Deep Veins
  - Femoral
  - Iliac
  - Brachial
  - Axillary
  - Subclavian
  - Jugular
  - Brachiocephalic

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VENAE CAVAE AND TRIBUTARIES

- Superior Vena Cava
- Azygos Vein
- Inferior Vena Cava
- Iliac Veins
- Lumbar Veins
- Testicular Veins / Ovarian Veins
- Renal and Suprarenal Veins
- Hepatic Veins
- Hepatic Portal Vein

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VENOUS SINUSES

- A large channel that drains deoxygenated blood
  - Coronary Sinus
  - Cranial Venous Sinuses
    - Cavernous Sinuses
    - Opthalmic Veins
    - Petrosal Sinuses
    - Superior Sagittal Sinus
    - Confluence of Sinuses
    - Transverse Sinuses (Lateral Sinuses)

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HEPATIC PORTAL SYSTEM

- A portal system that carries blood from the abdominal organs to the liver
- Superior Mesenteric Vein
- Splenic Vein
- Gastric, Pancreatic and Inferior Mesenteric Veins
- Sinusoids

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PHYSIOLOGY OF CIRCULATION

- Heart pumps the blood and the as blood flows thru capillaries it picks up oxygen and unloads carbon dioxide. The oxygenated blood is pumped to capillaries and unloads the oxygen and picks up carbon dioxide and other substances made by the cells

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PHYSIOLOGY OF CIRCULATION
(cont'd)

- Tissue Fluid / Intestinal Fluid
- Capillary Exchange
- Blood Flow
  - Vasodilation
  - Vasoconstriction
  - Vasomotor Center
  - Precapillary Sphincter

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RETURN OF BLOOD TO HEART

- Contraction of skeletal muscles
- Valves
- Breathing

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PULSE

- Waves of increased pressure in the vessels produced by contraction of the heart
- 70 to 80 beats a minute
- Factor that affect pulse rate
  - Size of the person
  - Gender
  - Newborn Infant
  - Muscular Activity
  - Temperature
  - Emotional Disturbances
  - Excessive amount of secretion from thyroid gland

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BLOOD PRESSURE

- The force exerted by the blood against the walls of the vessels
- Cardiac Output
  - Heart Rate
  - Stroke Volume
- Resistance to Blood Flow
  - Vasomotor Changes
  - Elasticity of Blood Vessels
  - Viscosity
  - Total Blood Volume

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DICROTIC NOTCH

- The sudden drop in pressure after systolic contraction.
- Not of any use to the polygraph examiner.

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MEASUREMENT OF BLOOD PRESSURE

- Arterial Pressure
- Sphygmomanometer
  - Systolic Pressure
  - Diastolic Pressure

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