

Pharmacology week 7 – Cardiovascular: Diuretics

Contributes to 'Cardiovascular System' which makes up 18% of the pharmacology MCQ matrix.

Reference: Katzung's Basic and Clinical Pharmacology, 14th edition. Chapter 15



Furosemide is the stereotypical loop diuretic. You need to know it in exceptional detail



Site of action of the diuretics (both receptor and location within the kidney) is a common exam topic



Comparative side-effects and target patient groups make for easy MCQs

Learning Outcomes LOA 1

- Loop diuretics

Learning Outcomes LOA 2

- Thiazide diuretics
- Potassium sparing diuretics
- Osmotic diuretics
- Carbonic anhydrase inhibitors

Questions to consider

- Review renal physiology and functions as it applies to receptor effect and pharmacological principles
- Review Figure 15-1 and Table 15-1 in Katzung
- How do diuretics work?
- What are the indications for carbonic anhydrase inhibitors and what are their mechanism of action?
- How are loop diuretics used in emergency medicine and what are some of their adverse effects?
- Why do patients with liver failure respond differently to loop diuretics versus aldosterone antagonists? Which has greater effect in these patients?
- Tell me about spironolactone
- Tell me about ADH agonists, antagonists and their clinical applications

Physiology week 7 – Respiratory: Ventilation and Perfusion

Contributes to 'Respiratory Physiology' which makes up 20% of the physiology MCQ matrix.

Reference: West's Respiratory Physiology, 10th edition. Chapters 1-5, 10

Reference: Ganong's Review of Medical Physiology, 26th edition. Chapters 34-35



Lung volumes and dead space are common exam topics, as is Fick's law



Ventilation and perfusion is expected core knowledge, make sure you understand the concepts and can explain the graphs in West's (sorry)



West's Respiratory Physiology is dense to read but it is an ESSENTIAL resource - ignore it at your peril

Learning Outcomes LOA 1

- Anatomy, structure and function
- Gas diffusion
- Pulmonary circulation
- Ventilation-perfusion relationships

Learning Outcomes LOA 2

- Forced expiration

Learning Outcomes LOA 3

- Tests of pulmonary function

Questions to consider

- What is the difference between type 1 and type 2 pneumocytes?
- Using a diagram describe the typical volumes within a lung during tidal and maximal respiration - which can be measured by spirometry?
- How is functional residual capacity measured?
- What is dead space? How is it measured?
- Describe Fick's law of diffusion? How is this different to the Fick principle?
- With the aid of a diagram and examples describe the differences between diffusion and perfusion limitation
- How does oxygen uptake along the pulmonary capillary differ in various conditions?
- How do the hydrostatic pressures between pulmonary and systemic capillaries differ? How is blood distributed within the lung?
- Describe what happens to ventilation and perfusion in the different zones of the lung?
- What is hypoxic pulmonary vasoconstriction? What are its advantages? Disadvantages?
- Describe the metabolic functions of the lung
- What are the four causes of hypoxaemia? How would you differentiate them?
- What is shunting? What is physiological shunting?
- Why does hyperventilation reduce your arterial CO₂ more than it increases your O₂?

Pathology week 7 – Haemopoietic System

'Haemopoietic System' makes up 5% of the pathology MCQ matrix.

Reference: Robbins and Cotran Pathologic Basis of Disease, 9th edition. Chapters 13-14
Reference: Guyton's textbook of medical physiology 12th edition. Chapter 31



There are a lot of conditions covered this week, let the LOA guide your depth of study



Guyton's physiology textbook is a good reference for blood groups and transfusions



The anaemias and thrombocytopenias make for easy MCQs

Learning Outcomes LOA 2

- Anaemias
- Bleeding disorders
- Blood groups
- Transfusions
- Leukopenia
- Inflammatory white cell proliferation

Learning Outcomes LOA 3

- Normal development of blood cells
- Polycythaemia
- Neoplastic white cell proliferation
- Splenomegaly

Questions to consider

- What is anaemia? What causes it? (try to group causes by their classification)
- What are the morphological features of spherocytosis? Sickle cell disease?
- What is thalassaemia? Describe the potential clinical manifestations
- Tell me about aplastic anaemia
- Outline the various causes of bleeding diatheses
- Contrast ITP and TTP
- What conditions can cause disseminated intravascular coagulation?
- Summarise the ABO system including agglutinins and agglutinates, which blood type is most/least common?
- Describe the pathogenesis of leukopenia, at what point is infection risk significantly increased?
- What causes polycythaemia? What are the clinical implications?
- By what mechanisms do circulating white cells increase?
- Contrast the pathogenesis, morphology and clinical presentation of Hodgkin's and non-Hodgkin's lymphoma
- Which viruses are thought to cause neoplastic white cell proliferation?
- What is myelofibrosis? Myelodysplasia?
- Describe the functions of the spleen
- Outline 3 causes of splenomegaly with a specific example for each
- Describe the role of the thymus gland and its relevant pathology

Anatomy weeks 7 & 8 – Upper Limb: Wrist and Hand

Contributes to 'Upper Limb' which makes up 25% of the anatomy MCQ matrix.

Reference: Moore and Dalley's Clinically Oriented Anatomy, 8th edition. Chapter 3



You need to study the carpal tunnel specifically, and in detail



This page lists the content that should be covered in weeks 7 & 8 of anatomy



Review McMinns or Anatomedia for superficial and deep dissection images of the wrist (e.g. flexor tendons, median nerve)

Learning Outcomes LOA 1

- Bones (landmarks, attachments, relations): carpus and bones of the hand
- Joints: wrist, intercarpal, carpometacarpal, intermetacarpal, metacarpophalangeal and interphalangeal
- Muscles of the hand
- Fascia and compartments of the palm
- Tendons and tendon sheaths in the hand
- Vascular supply to the hand
- Cutaneous and motor supply to the hand
- Surface anatomy of the hand

Questions to consider

- Identify this bone in its anatomical position and describe its bony features
- Describe the boundaries and contents of the carpal tunnel
- Describe the boundaries and contents of the anatomical snuffbox
- Describe the movements and stability of the joint
- Tell me about the extensor retinaculum
- Tell me about the flexor retinaculum (attachments, structures passing over/through it)
- Describe the contents of the web space
- Describe the muscle: its origin, insertion, action, innervation and blood supply
- What are the actions of the interossei and the lumbricals
- Describe the movements of the thumb including muscle action and nerve supply