

Pharmacology week 4 – Autonomic Pharmacology

Contributes to 'Nervous System' which makes up 14% of the pharmacology MCQ matrix.

Reference: Katzung's Basic and Clinical Pharmacology, 14th edition. Chapters 6-8



Pay attention to the figures e.g. figure 6-4 in Katzung. Finer detail such as NET and VMAT blockers can be asked in MCQs



This content will be revisited later - make good notes to save time!



The 'syndromes' make for easy examination topics (now and in fellowship)

Learning Outcomes LOA 1

- Drugs acting on the sympathetic nervous system
- Drugs acting on the parasympathetic nervous system

Learning Outcomes LOA 2

- Centrally acting sympathoplegics
- Neurotransmitters

Learning Outcomes LOA 3

- Adrenergic neuro-blocking agents

Questions to consider

- Outline the neurotransmitter chemistry of the autonomic nervous system (this needs to be in detail e.g Figure 6-3 and 6-4 in Katzung)
- Describe the autonomic and hormonal control of cardiovascular function (Figure 6-7 in Katzung)
- Which drugs affect the eye and how?
- What is the effect of botulism?
- What are the clinical uses of cholinomimetics?
- Describe the varying pharmacokinetics and pharmacodynamics of tertiary versus quaternary amines with regards to anticholinergics
- What are the clinical uses of anticholinergics?
- Describe the anticholinergic toxidrome using atropine as an example
- Describe the cholinomimetic toxidrome using organophosphates as an example
- What are the ganglion blockers?

Physiology week 4 – The Heart and Circulation

'Circulating Body Fluids' makes up 5% of the physiology MCQ matrix. This week also contributes to 'The Heart and The Circulation' which makes up 25% of the physiology MCQ matrix.

Reference: Ganong's review of medical physiology 25th edition. Chapters 30-31

Reference: Guyton's textbook of medical physiology 12th edition. Chapter 9



The list here is lengthy, but really focus on understanding cardiac output and events in the cardiac cycle - this is key



If you can draw and explain a concept (e.g. pressure volume loop of the LV) - then you probably understand the detail



Haemostasis is primarily covered in pathology, cover it briefly here

Learning Outcomes LOA 1

- Mechanical events of the cardiac cycle
- Cardiac output
- Cardiac function in health and disease
- Biophysics of circulating body fluids
- Blood circulation, vessels
- Interstitial fluid
- Bone marrow
- Blood cell types
- Haemoglobin
- Platelets
- Blood types
- Plasma
- Haemostasis

Learning Outcomes LOA 2

- Lymphatic circulation

Learning Outcomes LOA 3

- Lymph

Questions to consider

- What is the average value for cardiac output, how is it measured?
- What is the Fick principle?
- What factors affect afterload? What about contractility?
- How do the pressure-volume loop and Frank-Starling curve change in disease?
- Draw the cardiac cycle and explain its cardinal events
- What factors affect the ability of Hb to carry oxygen? What is the role of HbF?
- What methods are there to measure blood flow?
- What is the relevance of the Reynold's number?
- Describe the law of Laplace and it's clinical relevance
- What are the determinants of flow within a vessel? What is the Poiseuille-Hagen formula?
- What is the effect of gravity on arterial and venous pressure?
- Describe the changes in pressure and velocity of blood flow in the systemic circulation
- What are the causes of increased interstitial fluid volume?
- What are some causes of secondary hypertension?

Pathology week 4 – Tissue and Fluid

'Fluid and Haemodynamics' makes up 7% of the pathology MCQ matrix. This week also contributes to 'Tissue Response to Injury' which makes up 8% of the pathology MCQ matrix.

Reference: Robbins and Cotran Pathologic Basis of Disease, 9th edition. Chapters 3-4



The events in haemostasis and cutaneous wound healing are an examiners favourite



The pathological definitions of shock (and types) are a bit different to clinical.....



Thrombosis and embolism are very popular (both in exams and ED pathology) - make sure to cover them in detail

Learning Outcomes LOA 1

- Cutaneous wound healing
- Oedema
- Hyperaemia and congestion
- Haemorrhage
- Thrombosis and embolism
- Haemostasis
- Infarction
- Shock

Learning Outcomes LOA 2

- Normal tissue: principles of tissue renewal and repair
- Vascular responses to injury
- Repair by healing (non-cutaneous)
- Scar formation and fibrosis

Questions to consider

- What factors influence wound healing? What complications can occur?
- What growth factors and signalling mechanisms are involved in wound healing?
- What are the sequence of events in fibrosis?
- What is the timeline for events in wound healing by primary intention, what about in secondary intention wound healing?
- Tell me about scar formation
- Describes the features of congestion within the liver (or lung)
- What is an embolus and what types can occur?
- How is it that clotting is restricted to the site of an injury?
- What factors influence development of an infarct? What is a red infarct?
- What are the possible fates of the thrombus?
- Tell me about the pathogenesis of thrombosis, what is Virchow's triad?
- Describe the pathogenesis of DIC and its causes
- What are the stages of shock?

Anatomy weeks 3 & 4 – Upper Limb: Shoulder and Arm

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.

Reference: McMinn's Clinical atlas of human anatomy 9th edition. Chapter 4.



This is the second week of study allocated to anatomy of the shoulder and arm region. Check week 3 of the study guide for the LOA details



If you haven't already - cross reference your study with McMinn's and Anatomedia



There are some great free online resources if you want more visuals - check out www.instantanatomy.net and YouTube's 'Handwritten Tutorials'