

Practice Exam Questions and Answers
2021 October DWE
Adult Medicine

Instructions:

- This document contains the questions and answers from the DWE Adult Medicine Practice Exam
- The correct answer for each question is in **bold** type.

Question 1

A 25-year-old woman presents for investigation of infertility and a karyotype is reported as 45,XO (Turner syndrome).

Which of the following conditions is associated with Turner syndrome and warrants commencement of regular screening?

Answer options:

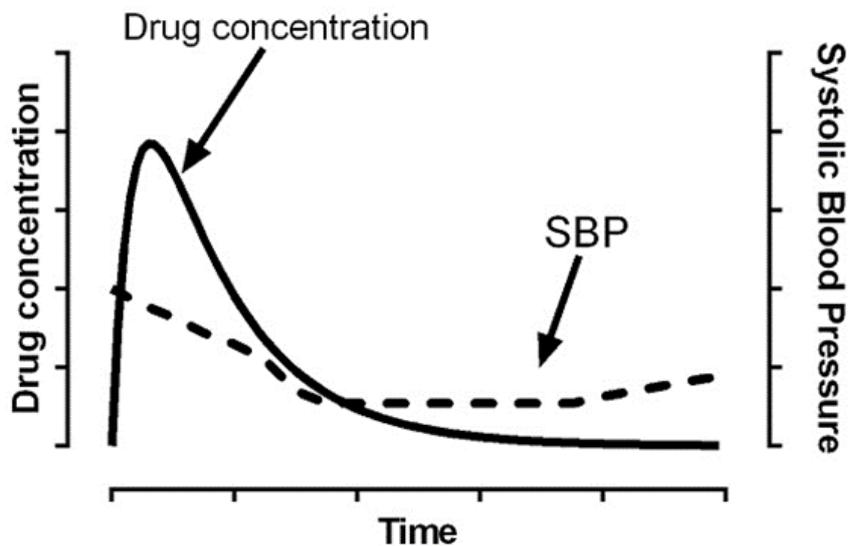
- A. Aortic aneurysm.**
- B. Breast cancer.
- C. Macular degeneration.
- D. Myelodysplasia.



Question 2

The graph presented shows changes in the drug plasma concentration and systolic blood pressure (SBP) over 24 hours following administration of a single dose.

Relationship between drug concentration and systolic blood pressure (SBP)



What is the best explanation for this pharmacokinetic–pharmacodynamic relationship?

Answer options:

- A. An active metabolite.
- B. Rapid absorption.
- C. Receptor upregulation.
- D. Short elimination half-life.



Question 3

A 19-year-old male is currently in hospital with his third episode of lobar pneumonia due to *Streptococcus pneumoniae* in the last 2 years. He reports a background of chronic sinus symptoms and frequent bronchitis, and takes 4–6 courses of antibiotics per year. He also reports intermittent non-bloody diarrhoea.

Preliminary screening for immunodeficiency shows the following:

Pneumococcal antibodies:

Total IgG	14 mg/L	> 16]
IgG2	2 mg/L	> 5]

Immunoglobulins:

IgG	2.6 g/L	[7–16]
IgA	< 0.07 g/L	[0.8–4.0]
IgM	2.5 g/L	[0.4–2.5]

Lymphocyte subsets:

CD4+	1023 cells/ μ L	[500–1650]
CD8+	477 cells/ μ L	[210–1200]
NK	135 cells/ μ L	[40–500]
CD19+	0 cells/ μ L	[80–600]

What is the most likely diagnosis?

Answer Options:

- A. Common variable immunodeficiency (CVID).
- B. IgA deficiency.
- C. Specific antibody deficiency.
- D. X-linked agammaglobulinaemia.**



Question 4

A 71-year-old woman with hypertension and a remote smoking history of 20 pack years is found to have abnormal kidney function on a routine blood test. Her current medications are enalapril 10 mg daily and amlodipine 10 mg daily, and her last blood pressure was 138/86 mmHg.

Her results are as follows:

Serum creatinine	168 $\mu\text{mol/L}$	[49–90]
Estimated glomerular filtration rate (eGFR)	31 mL/min/1.73 m ²	[90–130]
Sodium (Na)	138 mmol/L	[134–145]
Potassium (K)	4.7 mmol/L	[3.5–5.0]
Haemoglobin (Hb)	116 g/L	[120–160]
Calcium (Ca)	2.45 mmol/L	[2.20–2.55]
Phosphate (PO ₄)	1.3 mmol/L	[0.78–1.43]
Urine albumin:creatinine ratio (ACR)	11 mg/g	[< 3.5]

In addition to monitoring kidney function, what additional strategy should be the focus of her management?

Answer options:

- A. Dietary potassium restriction.
- B. Modification of cardiovascular risk.**
- C. Planning for dialysis access.
- D. Reduction of proteinuria.

Question 5

A few hours after completing the Auckland marathon, a 24-year-old is taken to the emergency department by her concerned partner on account of increasing confusion. On assessment she is found to be disoriented in time and place, but has no focal neurological deficit. Other than mild tachypnoea and myalgia in her legs, the remainder of a full clinical examination reveals no abnormal findings.

The following biochemistry is obtained:

Sodium (Na)	122 mmol/L	[135–145]
Plasma osmolality	256 mOsm/L	[285–295]
Potassium (K)	3.6 mmol/L	[3.5–5.5]
Urine osmolality	432 mOsm/L	[300–900]
Creatinine	79 μ mol/L	[45–90]
Glucose	4.8 mmol/L	[4.0–5.5]

What is the most appropriate way to correct her hyponatraemia?

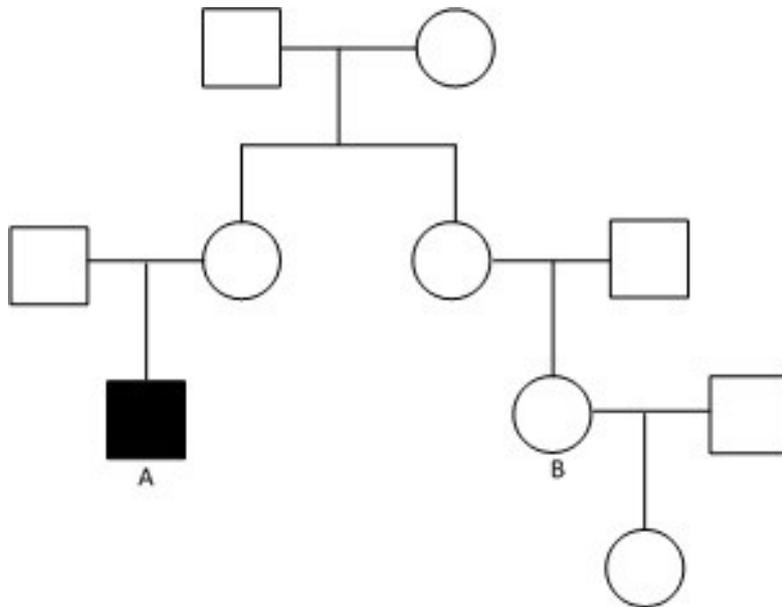
Answer options:

- A. Fluid restriction.
- B. IV hypertonic saline.**
- C. IV normal saline.
- D. Oral demeclocycline.

Question 6

A 25-year-old man, 'A', underwent a general anaesthetic for an open reduction and fixation of a fractured femur. Following induction of anaesthesia with propofol and suxamethonium he developed tachycardia, tachypnoea, muscle rigidity and fever to 41 °C. He was treated with dantrolene for this episode of malignant hyperthermia and recovered.

This is an autosomal dominant disease.



What is the chance that this man's relative, 'B', is at risk of an episode of malignant hyperthermia?

Answer options:

- A. 6.25%.
- B. 12.5%.**
- C. 25%.
- D. 50%



Question 7

Which investigation is most specific for confirming a diagnosis of complement-mediated haemolysis?

Answer options:

- A. Direct antiglobulin (Coombs).
- B. Free haemoglobin.**
- C. Haptoglobin.
- D. Lactate dehydrogenase.

Question 8

In a randomised controlled trial, the time from recruitment to the first cardiovascular event is measured.

What is the best term to express the result?

Answer options:

- A. Hazard ratio.**
- B. Incidence rate.
- C. Odds ratio.
- D. Relative risk.

Question 9

BCL-2 inhibitors have recently been shown to have therapeutic efficacy in blood cancers.

What is the function of BCL-2 protein?

Answer options:

- A. Activates cell death receptors.
- B. Activates cell survival proteins.
- C. Activates effector caspases.
- D. Inhibits cell apoptotic proteins.**



Question 10

Molecular mimicry may account for the development of carditis in acute rheumatic fever.

The streptococcal M protein and *N*-acetyl-beta-D-glucosamine share epitopes with which component of cardiac tissue?

Answer options:

- A. Actin.
- B. Desmosomes.
- C. Myosin.**
- D. T-tubules.

Question 11

Febuxostat is a newer urate-lowering therapy than allopurinol.

Based on randomised controlled trial data in chronic gout, what is the main benefit of febuxostat 80 mg daily over allopurinol 300 mg daily?

Answer options:

- A. Faster resolution of tophi.
- B. Fewer cardiovascular events.
- C. Fewer flares of acute gout.
- D. Lower serum uric acid.**



Question 12

A 40-year-old female with a history of gastro-oesophageal reflux managed with high-dose pantoprazole is admitted with severe hypertension and acute kidney injury (creatinine 315 $\mu\text{mol/L}$ [49–90]). She has a history of Raynaud's and you note peripheral telangiectasia and grade III fundal hypertensive changes. Urinalysis is bland and the full blood count shows normochromic normocytic anaemia with a platelet count of $115 \times 10^9/\text{L}$ [150–400]. The renal ultrasound is normal.

What is the most likely cause of her hypertension and AKI?

Answer options:

- A. Acute interstitial nephritis.
- B. Conn syndrome.
- C. Pheochromocytoma.
- D. Systemic sclerosis.**

Question 13

A 71-year-old male with hypertension, chronic obstructive pulmonary disease from cigarette smoking and previous coronary artery bypass grafting presents with a 3-day history of anuria and dyspnoea. He is taking ramipril, atorvastatin, amlodipine, clopidogrel and aspirin, amoxicillin, pantoprazole and inhaled corticosteroids. Blood pressure is 200/105 mmHg and an ECG shows previous anterior myocardial infarction. A renal ultrasound shows a 6 cm right kidney and an 11 cm left kidney. No urine is noted in the bladder. The creatinine is 900 $\mu\text{mol/L}$ and the patient requires urgent haemodialysis for acute pulmonary oedema.

What is the most likely diagnosis?

Answer options:

- A. Acute interstitial nephritis.
- B. Aortic dissection.
- C. Pyelonephritis.
- D. Renal thromboembolism.**



Question 14

A 75-year-old man presents to his local doctor with abrupt onset of painless visual blurring affecting the left eye only, and lasting 20 minutes. On reflection, he recalls a similar episode 1 week earlier while driving, but he was able to complete his journey because vision in the right eye was unaffected. Currently, the neurological examination is normal.

Which artery stenosis would be expected to cause this presentation?

Answer options:

- A. Basilar.
- B. Left carotid.**
- C. Left vertebral.
- D. Right carotid.

Question 15

Pizotifen is a medication used in migraine prophylaxis.

Apart from drowsiness, what is the most common adverse effect of pizotifen?

Answer options:

- A. Hepatitis.
- B. Rash.
- C. Rebound headache.
- D. Weight gain.**



Question 16

A 28-year-old otherwise healthy woman who is 36/40 pregnant presents with dyspnoea for 1 week and left lower limb swelling for 2 days. Her temperature is 37.4 °C, blood pressure is 136/86 mmHg, heart rate is 98 beats per minute and oxygen saturations are 98% on room air. Her left calf diameter measures 2 cm greater than the right. An ECG and chest radiograph are normal.

Which is the next most appropriate investigation?

Answer options:

- A. CT pulmonary angiogram.
- B. D-dimer.
- C. Echocardiogram.
- D. Lower limb Doppler ultrasound.**

Question 17

You are trying to decide whether to institute a screening program for type 2 diabetes. You find data indicating that a HbA_{1c} of 6.4% (46 mmol/mol) or greater has a sensitivity of 40% and a specificity of 80%. You estimate that the prevalence of undiagnosed type 2 diabetes in your community is 20%.

What will be the ratio of true positives to false positives if you institute a screening program?

Answer options:

- A. 1:1.
- B. 1:2.**
- C. 1:4.
- D. 2:1.

Question 18

A 52-year-old man with known diabetes mellitus and hypertension presents with sudden onset of painless monocular visual loss 24 hours ago. Examination findings are as follows: left optic disc swelling seen on fundoscopy; visual acuity 6/6 on the right, 6/24 on the left; colour desaturation on the left; left relative afferent pupillary defect.

What is the most likely diagnosis?

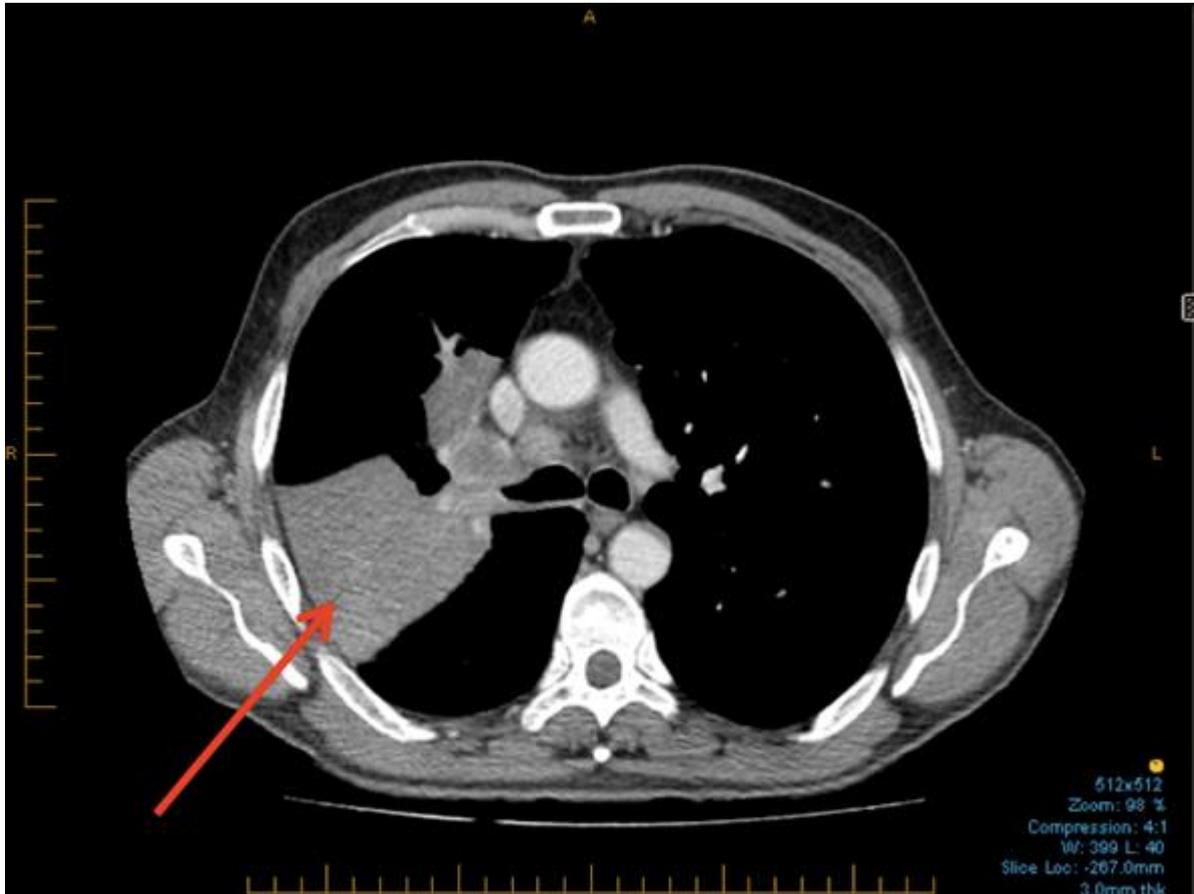
Answer options:

- A. Carotid artery stenosis.
- B. Central retinal artery occlusion.
- C. Ischaemic optic neuropathy.**
- D. Occipital stroke.



Question 19

A 62-year-old man had a recent diagnosis of lung cancer. While waiting for his cancer treatment to commence, he presented to the hospital emergency with worsening dyspnoea and haemoptysis, and a CT scan of the chest was performed (shown).



What is the most likely cause of the opacity indicated by the arrow?

Answer options:

- A. Distal lung collapse.
- B. Lung cancer mass.
- C. Pneumonic consolidation.
- D. Pulmonary haemorrhage.

Question 20

N-methyl-D-aspartate (NMDA) receptors are activated by which one of the following?

Answer options:

- A. Dopamine.
- B. Glutamate.**
- C. Melatonin.
- D. Noradrenaline.

Question 21

In patients undergoing acute rejection of the renal allograft, biopsy specimens are likely to show predominant infiltration of the graft by which one of the following?

Answer options:

- A. B-cells.
- B. Dendritic cells.
- C. Macrophages.
- D. T-cells.**

Question 22

Neurofibrillary tangles are typically seen in what type of dementia?

Answer options:

- A. Alzheimer disease.**
- B. Dementia with Lewy bodies.
- C. Frontotemporal dementia.
- D. Parkinson disease dementia.



Question 23

Which antioxidant is required for the conversion of the paracetamol metabolite *N*-acetyl-*p*-benzoquinone imine (NAPQI) to non-toxic substances?

Answer options:

- A. Catalase.
- B. Catechol-*O*-methyltransferase.
- C. Glutathione.**
- D. Lipoic acid.

Question 24

By which mechanism does dobutamine predominantly increase cardiac output?

Answer options:

- A. Activation of cell surface dopamine receptors.
- B. Inhibition of alpha-adrenoceptors.
- C. Reduction in breakdown of cyclic AMP.
- D. Stimulation of beta-adrenoceptors.**

Question 25

Which of the following is a minor criterion for the diagnosis of acute rheumatic fever?

Answer options:

- A. Carditis.
- B. Polyarthrititis.
- C. Prolonged PR interval.**
- D. Proteinuria.

Question 26

At initial diagnosis, which factor is most predictive of reduced survival in patients with metastatic renal cell cancer?

Answer options:

- A. Age < 60.
- B. Chromophobe histology.
- C. Eastern Cooperative Oncology Group (ECOG) performance status of 3.**
- D. Lung metastases.



Question 27

Questions 27 and 28 are about hormones.

Which hormone released from intestinal L cells can lead to delayed gastric emptying, increased post-prandial insulin release and improved satiety?

Answer options:

- A. Cholecystokinin.
- B. Gastrin.
- C. Ghrelin.
- D. Glucagon.
- E. Glucagon-like peptide-1 (GLP-1).**
- F. Histamine.
- G. Peptide YY.
- H. Secretin.

Question 28

Questions 27 and 28 are about hormones.

Which hormone binds a plasma membrane-bound G-protein coupled receptor, leading to increased glycogenolysis?

Answer options:

- A. Cholecystokinin.
- B. Gastrin.
- C. Ghrelin.
- D. Glucagon.**
- E. Glucagon-like peptide-1 (GLP-1).
- F. Histamine.
- G. Peptide YY.
- H. Secretin.



Question 29

Questions 29 and 30 are about antibodies.

Which neurological autoantibody target is associated with myasthenia gravis?

Answer options:

- A. **Acetylcholine receptor (AChR).**
- B. Amphiphysin.
- C. Aquaporin 4 (AQP4).
- D. Ganglioside M1 (GM1).
- E. Glutamic acid decarboxylase (GAD).
- F. Leucine-rich, glioma-inactivated 1 (LGI1).
- G. Myelin-associated glycoprotein (MAG).
- H. *N*-methyl-D-aspartate receptor (NMDAR).

Question 30

Questions 29 and 30 are about antibodies.

Which neurological autoantibody target is associated with neuromyelitis optica?

Answer options:

- A. Acetylcholine receptor (AChR).
- B. Amphiphysin.
- C. **Aquaporin 4 (AQP4).**
- D. Ganglioside M1 (GM1).
- E. Glutamic acid decarboxylase (GAD).
- F. Leucine-rich, glioma-inactivated 1 (LGI1).
- G. Myelin-associated glycoprotein (MAG).
- H. *N*-methyl-D-aspartate receptor (NMDAR).