

01	A	B	C	D	E
02	A	B	C	D	E
03	A	B	C	D	E
04	A	B	C	D	E
05	A	B	C	D	E
06	A	B	C	D	E
07	A	B	C	D	E
08	A	B	C	D	E
09	A	B	C	D	E
10	A	B	C	D	E
11	A	B	C	D	E
12	A	B	C	D	E
13	A	B	C	D	E

14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E
19	A	B	C	D	E
20	A	B	C	D	E
21	A	B	C	D	E
22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E
25	A	B	C	D	E
26	A	B	C	D	E

27	A	B	C	D	E
28	A	B	C	D	E
29	A	B	C	D	E
30	A	B	C	D	E
31	A	B	C	D	E
32	A	B	C	D	E
33	A	B	C	D	E
34	A	B	C	D	E
35	A	B	C	D	E
36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

Kaplan Medical In-Center Simulated Exam

K4PU1

Kaplan Step 1 Simulated Exam (2X Time / 2 Day) - In Center

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Kaplan Medical In-Center Simulated Exam **K4PU1**, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **K4PU1**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

SINGLE CHOICE

A 42-year-old man comes to the clinic for a health maintenance examination. He has a 20-pack-year smoking history and continues to smoke one pack per day. He tried to quit once about 5 years ago using nicotine patches but relapsed after 2 months. He drinks 3 to 4 beers most weekend evenings and does not exercise. He works as a long-distance truck driver and eats most meals at truck stops. Which of the following is the most appropriate next step in management?

- ☐ A Order a chest CT to screen for lung cancer
- ☒ B Counsel the patient on smoking cessation and offer pharmacotherapy
- ☐ C Refer the patient to a substance use treatment program for alcohol use disorder
- ☐ D Order a lipid panel and initiate statin therapy

ANSWER B

WHY The leading cause of preventable death in the United States is tobacco use. The U.S. Preventive Services Task Force (USPSTF) recommends that clinicians ask all adults about tobacco use and provide behavioral interventions and FDA-approved pharmacotherapy for cessation. While this patient has multiple modifiable risk factors (smoking, alcohol, diet, inactivity), smoking is the single highest-yield intervention and the most appropriate next step. Lung cancer screening with low-dose CT is recommended only for adults aged 50–80 years with a 20-pack-year history who currently smoke or have quit within the past 15 years, so the patient could also be a screening candidate, but smoking cessation counseling takes priority. He does not meet criteria for alcohol use disorder (drinks below at-risk thresholds), and statin therapy is not indicated without a lipid panel and ASCVD risk assessment first.

QUESTION 2

SINGLE CHOICE

A 28-year-old woman is brought to the emergency department because of fever, chills, and a severe headache for the past 24 hours. On examination, her temperature is 39.4°C (103.0°F), heart rate is 118/min, and blood pressure is 92/58 mm Hg. Nuchal rigidity is present, and a petechial rash is noted on her lower extremities. Lumbar puncture shows cloudy cerebrospinal fluid with a neutrophil-predominant pleocytosis, low glucose, and elevated protein. Empiric therapy is initiated with vancomycin and ceftriaxone. Which of the following adjunctive therapies is most appropriate to reduce mortality and neurologic complications?

- ☐ A Acyclovir
- ☒ B Dexamethasone
- ☐ C Hydrocortisone
- ☐ D Mannitol

ANSWER B

WHY The clinical picture (fever, nuchal rigidity, petechial rash, hypotension, neutrophilic CSF pleocytosis with low glucose) is consistent with bacterial meningitis, likely due to *Neisseria meningitidis* given the petechial rash. In adults with suspected bacterial meningitis, adjunctive dexamethasone administered before or with the first dose of antibiotics has been shown to reduce mortality, hearing loss, and neurologic sequelae, particularly when the etiology is *Streptococcus pneumoniae*. Dexamethasone reduces inflammation and neurologic damage caused by bacterial lysis products. Acyclovir would be added if viral (HSV) meningitis/encephalitis were suspected. Hydrocortisone is used in septic shock refractory to fluids/vasopressors, not as adjunctive therapy in meningitis. Mannitol is not standard therapy in bacterial meningitis and is reserved for elevated intracranial pressure with herniation risk.

QUESTION 3

MULTIPLE CHOICE

A 65-year-old man with a history of poorly controlled hypertension and hyperlipidemia dies of an acute myocardial infarction. Autopsy findings of the left ventricle are likely to demonstrate which of the following? (Choose two.)

- ☒ **A** Coagulative necrosis of cardiomyocytes with preserved tissue architecture
- ☐ **B** Liquefactive necrosis with abundant neutrophil infiltration
- ☒ **C** Reperfusion injury with contraction band formation in viable myocytes
- ☐ **D** Granulomatous inflammation with multinucleated giant cells

ANSWER A - C

WHY Myocardial infarction produces coagulative necrosis, the characteristic pattern of ischemic injury in solid organs except the brain. Tissue architecture is preserved for days, and the necrosis is followed by neutrophil infiltration, macrophage clearance, granulation tissue, and eventual fibrosis. If the patient receives reperfusion therapy (thrombolytics or PCI), contraction bands form in viable myocytes as a marker of reperfusion injury, caused by calcium influx and hypercontraction when blood flow is restored. Liquefactive necrosis is the pattern seen in brain infarcts and bacterial abscesses, not in the myocardium. Granulomatous inflammation is characteristic of conditions such as sarcoidosis or tuberculosis, not ischemic myocardial injury.

QUESTION 4

SINGLE CHOICE

A 4-month-old infant is brought to the clinic because of persistent vomiting after feeding, lethargy, and hepatomegaly. Laboratory studies show hypoglycemia, hyperammonemia, and elevated liver transaminases. A liver biopsy shows steatosis with PAS-positive, diastase-resistant cytoplasmic inclusions. A deficiency in which of the following enzymes is the most likely cause?

- ☐ A Hepatic phosphorylase
- ☐ B Galactose-1-phosphate uridylyltransferase
- ☐ C Branching enzyme (alpha-1,4-glucan branching enzyme)
- ☒ D Glucose-6-phosphatase

ANSWER D

WHY The combination of fasting hypoglycemia, hyperammonemia, lactic acidosis, hyperuricemia, hepatomegaly with steatosis, and glycogen-filled hepatocytes that are PAS-positive but diastase-resistant (because the abnormal glycogen cannot be broken down by alpha-amylase/diastase) is classic for von Gierke disease (glycogen storage disease type I), caused by glucose-6-phosphatase deficiency. The enzyme deficiency prevents the final step of gluconeogenesis and glycogenolysis, leading to inability to release free glucose from the liver. Cori disease (debranching enzyme) produces limit dextrin-like inclusions and a milder phenotype. Hepatic phosphorylase deficiency (Hers disease) causes mild hypoglycemia without significant hepatomegaly or metabolic derangements. Classic galactosemia presents soon after milk intake with jaundice, cataracts, and E. coli sepsis, not with this picture.

QUESTION 5

SINGLE CHOICE

A 7-year-old boy is brought to the clinic because of recurrent sinopulmonary infections, chronic diarrhea, and failure to thrive. His serum immunoglobulin levels are markedly decreased across all classes (IgG, IgA, IgM, IgE). Flow cytometry shows absent CD19+ B cells but normal numbers of CD3+ T cells. Genetic testing reveals a mutation in the BTK gene. Which of the following is the most appropriate definitive management for this patient?

- ☐ A Lifelong intravenous immunoglobulin (IVIG) replacement therapy
- ☒ B Hematopoietic stem cell transplantation
- ☐ C Prophylactic antibiotics only
- ☐ D Subcutaneous interferon gamma therapy

ANSWER B

WHY The clinical presentation (male child, recurrent sinopulmonary and gastrointestinal infections, failure to thrive) plus panhypogammaglobulinemia with absent B cells and normal T cell numbers, due to a BTK (Bruton tyrosine kinase) mutation, is diagnostic of X-linked agammaglobulinemia (Bruton agammaglobulinemia). While IVIG replacement reduces infections and is part of supportive care, the only curative therapy and the definitive management is hematopoietic stem cell transplantation, ideally performed early before end-organ damage and chronic infection-related sequelae develop. Prophylactic antibiotics alone are insufficient. Interferon gamma is used in chronic granulomatous disease, an innate immune defect of neutrophil oxidative burst, which is not this condition.

QUESTION 6

SINGLE CHOICE

An investigator measures cardiac output in a healthy 25-year-old volunteer at rest and during moderate exercise. During exercise, heart rate increases from 70/min to 140/min, and stroke volume increases modestly from 70 mL to 100 mL. Which of the following best accounts for the increase in stroke volume during exercise?

- ☐ A Decreased afterload due to decreased systemic vascular resistance
- ☒ B Increased contractility due to increased sympathetic activity
- ☐ C Increased end-diastolic volume due to increased venous return
- ☐ D Increased preload due to decreased ventricular compliance

ANSWER B

WHY Stroke volume is determined by preload, afterload, and contractility. During exercise, sympathetic nervous system activity increases dramatically, releasing norepinephrine that acts on β_1 -adrenergic receptors in the myocardium to increase contractility (positive inotropic effect). This allows the heart to eject a larger fraction of end-diastolic volume (increased ejection fraction). While systemic vascular resistance does fall during exercise (which would slightly decrease afterload and increase stroke volume), the dominant and most important contributor to the increase in stroke volume during dynamic exercise is increased contractility from sympathetic stimulation. End-diastolic volume does increase somewhat due to enhanced venous return from the muscle pump and respiratory pump, but the primary driver of increased stroke volume in exercise is contractility, not preload. Decreased ventricular compliance would actually reduce preload and stroke volume.

QUESTION 7

SINGLE CHOICE

A 68-year-old woman comes to the office because of fatigue and exertional dyspnea for several months. Physical examination shows pallor and a palpable spleen tip below the left costal margin. Laboratory studies show hemoglobin of 9.2 g/dL, mean corpuscular volume of 110 fL, and a reticulocyte count of 2%. Peripheral smear shows hypersegmented neutrophils and oval macrocytes. Serum vitamin B12 and folate levels are within normal limits. Which of the following is the most likely underlying cause?

- ☒ **A** Myelodysplastic syndrome
- ☐ **B** Autoimmune hemolytic anemia
- ☐ **C** Iron deficiency anemia
- ☐ **D** Anemia of chronic kidney disease

ANSWER A

WHY The patient has a macrocytic, megaloblastic anemia (MCV 110, hypersegmented neutrophils, oval macrocytes) that is not due to B12 or folate deficiency. In an older adult with cytopenias, splenomegaly, and megaloblastic features without nutritional deficiency, the most likely cause is a myelodysplastic syndrome (MDS). MDS is a clonal stem cell disorder with ineffective hematopoiesis leading to macrocytosis, ringed sideroblasts, and risk of progression to acute myeloid leukemia. Autoimmune hemolytic anemia produces a normocytic anemia with spherocytes and a high reticulocyte count. Iron deficiency produces a microcytic anemia. Anemia of chronic kidney disease is normocytic with low reticulocyte count due to decreased erythropoietin. The combination of macrocytosis with hypersegmented neutrophils, normal B12/folate, and splenomegaly in an elderly patient strongly points to MDS.

QUESTION 8

SINGLE CHOICE

A 55-year-old man with a history of chronic obstructive pulmonary disease is brought to the emergency department because of worsening dyspnea and confusion. His oxygen saturation is 88% on room air. Arterial blood gas shows pH 7.30, PaCO₂ 60 mm Hg, and PaO₂ 55 mm Hg. Which of the following best describes this patient's acid-base status?

- ☐ A Acute respiratory acidosis without compensation
- ☒ B Chronic respiratory acidosis with metabolic compensation
- ☐ C Acute respiratory acidosis with metabolic compensation
- ☐ D Mixed metabolic and respiratory acidosis

ANSWER B

WHY The ABG shows a low pH (acidemia) with elevated PaCO₂ (respiratory acidosis). In a patient with chronic COPD and an acute exacerbation, the chronic CO₂ retention allows the kidneys to compensate by retaining bicarbonate. In chronic respiratory acidosis, the expected rise in HCO₃⁻ is approximately 3.5 mEq/L for every 10 mm Hg rise in PaCO₂. With a chronic elevation of PaCO₂, bicarbonate is increased and pH is closer to normal than would be expected in an acute rise. If the patient were acutely hypercapnic without time for renal compensation, the HCO₃⁻ would rise only about 1 mEq/L per 10 mm Hg increase in PaCO₂. The combination of an elevated HCO₃⁻ and a chronically elevated PaCO₂ with a near-normal pH indicates chronic respiratory acidosis with metabolic (renal) compensation, worsened acutely. There is no separate metabolic acidosis component, so this is not a mixed disorder.

QUESTION 9

SINGLE CHOICE

A 72-year-old man is brought to the clinic by his wife because of progressive memory loss over the past year. He frequently forgets recent conversations and appointments. He has difficulty finding the right words during conversation and has gotten lost while driving to familiar locations. He has no focal motor or sensory deficits, and his gait is normal. Which of the following is the most likely diagnosis?

- ☐ A Vascular dementia
- ☒ B Alzheimer disease
- ☐ C Lewy body dementia
- ☐ D Frontotemporal dementia

ANSWER B

WHY The patient has insidious onset and gradual progression of memory loss (anterograde amnesia for recent events), word-finding difficulty (semantic and language impairment), and visuospatial difficulties (getting lost), without focal deficits, parkinsonism, or behavioral disinhibition. This clinical picture is classic for Alzheimer disease, the most common cause of dementia in older adults. Pathologically, Alzheimer disease is characterized by extracellular β -amyloid plaques, intracellular neurofibrillary tangles (hyperphosphorylated tau), and cortical atrophy most prominent in the temporoparietal and frontal association cortex with sparing of primary motor and sensory cortices. Vascular dementia typically has stepwise progression with focal neurologic deficits. Lewy body dementia features parkinsonism, visual hallucinations, and fluctuating cognition. Frontotemporal dementia presents earlier (50s–60s) with personality changes, disinhibition, and language variants.