

## Sample PANCE Questions

### **Question 1**

For the past three weeks, a 47-year-old man has had the feeling of heaviness in his chest while pushing his lawn mower. He says he has never been treated for similar symptoms and has no symptoms now. He smoked one pack of cigarettes daily for 20 years but quit smoking seven years ago. Findings on physical examination are normal. Electrocardiography shows no abnormalities. Which of the following is the most appropriate initial diagnostic study?

- A. Coronary arteriography
- B. Echocardiography
- C. Exercise stress test
- D. 24-Hour ambulatory cardiac monitoring
- E. Myocardial perfusion scan

*Medical Content Category:* Cardiovascular System

*Critique:*

This question tests the examinee's ability to identify the most appropriate initial diagnostic study in a patient with possible coronary artery disease.

Option (C), exercise stress test, is correct because it is the most appropriate initial step in the workup of a patient with recent chest pain because the test is noninvasive, inexpensive, convenient, and sensitive in this type of patient.

The most definitive diagnostic test for a patient with coronary artery disease is Option (A), coronary arteriography, but this test is not the most appropriate initial test in an asymptomatic patient with no abnormal findings on electrocardiography. Option (B), echocardiography, is a valuable tool for examining valvular structures, cardiac size, ejection fraction, as well as other anatomic features. However, echocardiography is not routinely indicated for evaluating ischemia resulting from coronary artery disease and is, therefore, incorrect. Option (D), 24-hour ambulatory cardiac monitoring, is also incorrect. Twenty-four-hour ambulatory cardiac monitoring is used primarily for evaluating disturbances of rate and rhythm and it is able to detect ST-segment depression, but it is less effective than exercise stress testing in confirming a diagnosis of coronary artery disease in the initial workup of a patient. This patient's electrocardiogram shows no abnormalities, and therefore, Option (E), myocardial perfusion scan, is incorrect. This option would only be correct if the results of resting electrocardiography were abnormal, making it difficult to interpret an exercise stress test.

## **Question 2**

A 32-year-old woman has had a rash on her legs for the past three weeks. There are no known infectious contacts. One month ago, she had a bladder infection and was treated with trimethoprim-sulfamethoxazole. Physical examination shows a diffuse rash on the shins, the left medial ankle, and the right medial calf. The rash is tender, diffuse, and recurs in the same areas. A few of the lesions have the appearance of bruising. Which of the following is the most likely diagnosis?

- A. Erythema multiforme
- B. Erythema nodosum
- C. Lichen planus
- D. Lichen simplex
- E. Nummular eczema

*Medical Content Category:* Dermatologic System

*Critique:*

This question tests the examinee's ability to diagnose a rash based on the patient's history and the description of the rash. The examinee must first consider that the rash could be an allergic reaction to the sulfa antibiotic.

The correct answer is Option (B), erythema nodosum, because this type of rash may be antibiotic-related, occurs on the lower extremities below the knees, and has the appearance of bruising. All of these symptoms are present in this clinical scenario.

Options (A), erythema multiforme, and (C), lichen planus, can also result from an allergic reaction to a sulfa antibiotic, but the presentation of this patient's rash is not consistent with either of these conditions. Options (D), lichen simplex, and (E), nummular eczema, are chronic conditions that result in scaling. Therefore, given the time frame and the presentation of this patient's rash, these two options are incorrect.

### **Question 3**

A 41-year-old woman has a nine-month history of nausea, constipation, dyspepsia, general fatigue, arthralgia, and increasing memory loss. She has no history of illness other than her present complaints, and her menses have been regular. Physical examination shows no abnormalities. Laboratory findings include the following levels:

Serum	
Albumin	4.9 g/dL
Calcium	13.0 mg/dL
Chloride	111 mEq/L
Creatinine	1.0 mg/dL
Phosphate	0.3 mg/dL
Blood urea nitrogen	17 mg/dL

Which of the following is the most likely diagnosis?

- A. Cushing syndrome
- B. Hyperparathyroidism
- C. Hypopituitarism
- D. Malabsorption
- E. Multiple myeloma

*Medical Content Category:* Endocrine System

*Critique:*

This question tests the examinee's ability to review a detailed clinical scenario, including laboratory values, to establish the cause of the patient's condition.

Option (B), hyperparathyroidism, is the correct answer. The patient has the classic signs of this condition, which include gastrointestinal, musculoskeletal, and neurologic abnormalities. Additionally, the laboratory values clearly show hypercalcemia and hypophosphatemia, both of which indicate hyperparathyroidism.

Option (A), Cushing syndrome, is incorrect because the patient does not have the typical symptoms of Cushing syndrome, which include oligomenorrhea or amenorrhea and a host of changes to the body habitus. Option (C), hypopituitarism, is incorrect because the patient does not have severe metabolic, growth, and menstrual abnormalities as a result of a decrease in pituitary hormone levels. Option (D), malabsorption, is incorrect because there is no indication in the patient's history of weight loss, other illness, or abnormal menses. In addition, the laboratory values do not support a diagnosis of malabsorption. Option (E), multiple myeloma, is incorrect because the patient does not have anemia, bone pain, proteinuria, and renal failure, which are characteristic of this disease. Although the patient does have hypercalcemia, which is another characteristic of multiple myeloma, none of the other presenting symptoms support this diagnosis. In addition, multiple myeloma is most frequently diagnosed in individuals aged 65 to 74 years, and the patient described is significantly younger.

#### **Question 4**

A 40-year-old man is being examined because he feels weak and tired and has had symptoms of sexual dysfunction. His blood pressure is 100/60 mmHg. Physical examination shows decreased facial, axillary, and pubic hair. Laboratory studies show decreased serum levels of luteinizing and follicle-stimulating hormones, thyroxine, and testosterone; serum thyroid-stimulating hormone level is within normal limits. Which of the following is the most likely diagnosis?

- A. Diabetes insipidus
- B. Diabetes mellitus
- C. Hyperprolactinemia
- D. Hypopituitarism
- E. Hypothyroidism

*Medical Content Category:* Endocrine System

*Critique:*

This question tests the ability of the examinee to recognize the signs, symptoms, and common laboratory findings of an endocrine disorder.

The correct answer is Option (D), hypopituitarism, based on the common symptoms of gonadotropin deficiency, weakness, fatigue, and sexual dysfunction. The decreased levels of luteinizing and follicle-stimulating hormones indicate hypogonadism. These laboratory findings, in addition to the decreased levels of testosterone, indicate hypopituitarism.

Option (A), diabetes insipidus, is incorrect because the patient does not have urinary symptoms or signs of dehydration, and the laboratory findings are not consistent with this condition. Option (B), diabetes mellitus, is incorrect because diabetes mellitus is a metabolic disorder, specifically affecting carbohydrate metabolism. It is a disease characterized by persistent hyperglycemia. There is no mention of serum glucose findings in the history or laboratory studies of this patient. Option (C), hyperprolactinemia, is incorrect because there is no evidence of increased serum prolactin levels or galactorrhea in the patient. Option (E), hypothyroidism, is also incorrect. Weakness and fatigue are symptoms of hypothyroidism, but the normal thyroid-stimulating hormone level rules out a thyroid disorder in this patient.

### **Question 5**

A previously healthy 15-month-old boy becomes anxious and begins crying and drooling copiously. A few minutes earlier he had been calmly playing with his toys. Temperature is 36.7°C (98.1°F), pulse rate is 84/min, and respirations are 18/min. On physical examination, the posterior pharynx is mildly injected but otherwise clear. The lungs are clear to auscultation and percussion. Findings on chest x-ray study are normal. Within an hour he is calmer, but he continues to drool heavily. Which of the following is the most appropriate next step?

- A. Administration of syrup of ipecac
- B. Barium swallow x-ray study
- C. Chest physiotherapy
- D. Esophagogastroduodenoscopy
- E. Insertion of a nasogastric tube

*Medical Content Category:* Gastrointestinal System/Nutrition

#### *Critique:*

This question tests the examinee's ability to recognize foreign body ingestion and to determine the appropriate next step in management and evaluation.

The correct answer is Option (D), esophagogastroduodenoscopy, which is the appropriate step to confirm a diagnosis and provide therapeutic treatment.

Option (A), administration of syrup of ipecac, is incorrect and may be dangerous. It is not recommended that health care providers or parents attempt to dislodge a foreign body from a spontaneously breathing patient by administering syrup of ipecac. Option (B), barium swallow x-ray study, is incorrect because the barium may obscure the view of the foreign body. This intervention is also contraindicated if esophageal perforation cannot be ruled out as a possible diagnosis. Option (C), chest physiotherapy, is incorrect and not recommended as an intervention because it will most likely be ineffective or could potentially lead to aspiration of the foreign body. Option (E), insertion of a nasogastric tube, is also incorrect because this intervention does not have any diagnostic or therapeutic value in patients who ingest foreign bodies.

### **Question 6**

Six days ago, a 2-year-old boy had a temperature of 40.0°C (104.0°F). No specific cause was found. His fever has persisted, and he now has injected conjunctivae, strawberry tongue, dry fissured lips, erythema and desquamation of his hands and feet, and bilateral cervical adenopathy. Which of the following is the most likely complication of this condition?

- A. Chorea
- B. Heart failure
- C. Coronary artery aneurysm
- D. Mesenteric arteritis
- E. Valvular heart disease

*Medical Content Category:* Infectious Diseases

*Critique:*

This question requires the examinee to first identify the disorder, Kawasaki syndrome, and then determine the most likely complication associated with this disorder.

The correct answer is Option (C), coronary artery aneurysm. The clinical scenario described includes the characteristic presentation of Kawasaki syndrome: fever, age younger than 5 years, conjunctivitis, mucous membrane abnormalities, peripheral extremity abnormalities, polymorphous rash, and cervical lymphadenopathy. Coronary artery aneurysm is the most common complication of Kawasaki syndrome, occurring in about 25% of untreated patients.

Option (A), chorea, is incorrect because the patient does not present with dyskinesia, a characteristic of chorea. Option (B), heart failure, is incorrect. While many infectious agents may progress to myocarditis and heart failure, coronary artery aneurysm is a specific sequela and the most common complication of Kawasaki syndrome. Option (D), mesenteric arteritis, is also incorrect because arteritis from Kawasaki syndrome favors the coronary circulation. Option (E), valvular heart disease, is incorrect because this patient does not have characteristics of this disease, which include evidence of past infection with group A beta-hemolytic streptococcus resulting in rheumatic heart disease.

### **Question 7**

A 22-year-old woman is brought to the emergency department for evaluation three hours after falling backward out of a chair and striking her head on a carpeted floor. She has tenderness over the back of her head but does not report loss of consciousness. Physical examination, including neurologic and musculoskeletal evaluation, shows no abnormalities except a 2-cm area of swelling and minimal abrasion overlying the left occiput. Which of the following is the most appropriate next step?

- A. Anteroposterior and lateral x-ray studies of the skull
- B. CT scan
- C. Discharge and observation by family or friends
- D. Hospital admission for observation
- E. MRI

*Medical Content Category:* Neurologic System

#### *Critique:*

This question tests the examinee's ability to recognize a minor closed head injury and then determine the appropriate next step.

The correct answer is Option (C), discharge and observation by family or friends. Patients with minor head injuries can be discharged with observation instructions in the care of a reliable adult.

Option (A), anteroposterior and lateral x-ray studies of the skull, is incorrect. X-ray studies of the skull are not indicated unless the patient is younger than 1 year of age, has lost consciousness for three minutes or longer, or has one of the following findings on history, physical examination, or neurologic examination: preexistent shunt, skull penetration, scalp hematoma and/or depression, raccoon eyes, otorrhea and/or rhinorrhea, hemotympanum, Battle sign, altered mental status, or focal neurologic deficit. Option (B), CT scan, is incorrect because this patient does not meet the criteria for CT scan. These criteria include: instability after multiple traumas, unreliable history or examination because of possible alcohol use or drug ingestion, loss of consciousness for longer than five minutes, repeated vomiting or vomiting for more than eight hours after injury, post-traumatic seizures, progressive headache, physical signs of basilar skull fracture, or amnesia. Option (D), hospital admission for observation, is incorrect because this patient does not meet the criteria for hospitalization. These criteria include: coma, underlying pathology such as coagulopathy and/or hydrocephalus, unreliable history or examination because of possible alcohol use or drug ingestion, documented loss of consciousness for longer than five minutes, severe and persistent headache, protracted vomiting, suspected child abuse, unreliable caregiver, altered mental status or seizures, and focal neurologic deficit. Option (E), MRI, is also incorrect because this patient does not meet the criteria for MRI scan. These criteria are similar to the criteria for CT scan. In addition, MRI is not practical in emergency situations because the magnetic field of the scan precludes the use of monitors and life-support equipment needed in patients whose conditions are unstable.

### **Question 8**

A 46-year-old woman wanders into the clinic, rambling incoherently. When questioned, she has some difficulty remembering what she was asked. She exhibits some perceptual disturbances and is not oriented to time. Which of the following is the most likely diagnosis?

- A. Bipolar disorder
- B. Delirium
- C. Major neurocognitive disorder
- D. Paranoid personality disorder
- E. Schizophrenia

*Medical Content Category:* Psychiatry/Behavioral Science

*Critique:*

This question tests the examinee's ability to identify characteristic signs and symptoms of behavior disorders.

The correct answer is Option (B), delirium. This patient exhibits the classic signs of this disorder, which include an acute confusional state or an inability to concentrate or maintain attention. Orientation problems and a marked decrease in short-term memory and recall are also indicators of delirium.

Option (A), bipolar disorder, is incorrect because the patient does not exhibit characteristics of this disorder such as mania, major depressive disorder, or other mood shifts. Option (C), major neurocognitive disorder, is a plausible option but is incorrect because diagnostic criteria for this condition include evidence of cognitive decline, and no previous level of cognitive performance is known for the patient described. In addition, although major neurocognitive disorder can develop in middle age, it is primarily seen in elderly individuals. Also, the patient has some features of dementia but does not have common features such as agitation or withdrawal, hallucinations, or a loss of inhibitions. Option (D), paranoid personality disorder, is incorrect because the patient does not exhibit the signs of this disorder, which may include defensive, suspicious, secretive, or oversensitive behavior. Although the patient has some symptoms of Option (E), schizophrenia, she does not have core psychotic features such as delusions, hallucinations, disorders of language, or inappropriate affect. Therefore, Option (E) is incorrect.



### **Question 9**

A 31-year-old African American woman has had worsening malaise, dyspnea, and low-grade fever for the past four weeks. She was recently treated for iritis. On physical examination, red nodules over the anterior lower legs and mild hepatomegaly are noted. Chest x-ray study shows bilateral hilar adenopathy. Which of the following is the most likely diagnosis?

- A. Lymphoma
- B. Mesothelioma
- C. Sarcoidosis
- D. Tuberculosis
- E. Wegener granulomatosis

*Medical Content Category:* Pulmonary System

*Critique:*

This question tests the examinee's knowledge of common signs and symptoms of diseases.

The correct answer is Option (C), sarcoidosis. The age, gender, and race of the patient, in addition to the insidious onset of symptoms and x-ray study findings, are all characteristics of this disease.

Option (A), lymphoma, is a plausible option, because lymphoma and sarcoidosis share similar symptoms such as insidious onset, fever, malaise, dyspnea, visceral involvement, and a widened mediastinum. However, the history of iritis and presence of erythema nodosum in a young African American woman are more characteristic of sarcoidosis than lymphoma. Option (B), mesothelioma, is incorrect because the mean age of onset of this disease is approximately 60 years. Mesothelioma is also commonly found among workers exposed to asbestos. Option (D), tuberculosis, is incorrect because this patient does not have the classic characteristics of this disease, which include weight loss, night sweats, chronic productive cough, or apical lesions shown on chest x-ray study. Option (E), Wegener granulomatosis, is incorrect because the patient is not in her 40s or 50s, she did not have a prolonged onset of symptoms, and there are no upper and lower respiratory tract symptoms, including necrotizing granulomatous lesions, glomerulonephritis, and vasculitis. Also, the finding on x-ray study of hilar adenopathy is not consistent with Wegener granulomatosis.

**Question 10**

A 33-year-old woman at 35 weeks' gestation has constant pelvic pain. She says that she had a small amount of dark red vaginal bleeding after sexual intercourse. Her blood pressure is 80/50 mmHg, and she has tachycardia. The uterus is firm and tender to palpation. Which of the following is the most likely diagnosis?

- A. Abruptio placentae
- B. Cervical laceration
- C. Placenta previa
- D. Preterm labor
- E. Vasa previa

*Medical Content Category:* Reproductive System (Male and Female)

*Critique:*

This question tests the examinee's ability to determine an emergent situation by recognizing tachycardia and significant hypotension as abnormal in a patient at this stage of pregnancy.

The correct answer is Option (A), abruptio placentae. In addition to the tachycardia and severe hypotension, this patient has also had a small amount of dark red vaginal bleeding.

Option (C), placenta previa, is plausible but incorrect. This patient's vaginal bleeding is not significant nor is it bright red, which are characteristic of placenta previa. Option (B), cervical laceration, is incorrect because this patient is in the antepartum stage of pregnancy, and cervical laceration typically results from passage of the fetus through the birth canal. Option (D), preterm labor, is incorrect because there is no history of this patient having any uterine contractions, an obvious sign of preterm labor. Option (E), vasa previa, is incorrect. This is a condition whereby the umbilical vessels overlay the internal cervical os and may be a cause of third-trimester bleeding. However, this patient does not have copious vaginal bleeding of bright red blood.

**Question 11**

In a randomized, double-blind, placebo-controlled clinical trial, which of the following assists the reader of the study in determining whether the results are statistically significant?

- A. Number of biases in the study
- B. Odds ratio
- C. P value
- D. Relative risk

*Medical Content Category:* Professional Practice

*Critique:*

The correct answer is Option (C), P value. P value is used to determine statistical significance by indicating the probability that an outcome occurred by chance if the null hypothesis were true. A low P value suggests that that the results are not likely due to random chance, indicating statistical significance.

Option (A), number of biases in the study, is incorrect because a randomized, double-blind, placebo-controlled clinical trial is designed to minimize biases in the study. Although biases can affect the final result, they do not directly determine statistical significance. Option (B), odds ratio, is incorrect because this is a statistical tool used in medicine to measure associations between a given condition and an exposure or to measure the association between an intervention and an outcome. This tool does not determine statistical significance. Option (D), relative risk, is incorrect because this is a statistical tool used in medicine to compare the risk of a disease in exposed individuals with the risk of disease in nonexposed individuals. This tool does not determine statistical significance.

**Question 12**

A 39-year-old woman has been undergoing in vitro fertilization treatments using her extracted eggs and sperm from her husband. The patient has a 15% chance of successful conception. While reviewing the patient's records, the physician assistant discovers that the patient was inadvertently implanted with a fertilized embryo from another couple 24 hours ago. Which of the following is the most appropriate course of action for the physician assistant?

- A. Administer emergency contraception
- B. Immediately inform the patient of the error
- C. Inform the donor of the error only if the patient becomes pregnant
- D. Inform the patient of the error only if she becomes pregnant

*Medical Content Category:* Professional Practice

*Critique:*

The correct answer is Option (B), immediately inform the patient of the error. It is the ethical responsibility of the physician assistant to immediately disclose serious medical errors, such as the one described in the scenario.

Option (A), administer emergency contraception, is incorrect because the patient described in the scenario must be informed of the error before any intervention is performed. Option (C), inform the donor of the error only if the patient becomes pregnant, is incorrect because, in the situation described in the scenario, it is the responsibility of the physician assistant to immediately inform the patient of the error. Although it may be appropriate to inform the donor of the error as well, this is not dependent on whether the patient becomes pregnant. Option (D), inform the patient of the error only if she becomes pregnant, is incorrect because it is the ethical responsibility of the physician assistant to disclose a serious mistake regarding patient care, regardless of the outcome of the error. This is especially relevant in cases such as the one described in the scenario, in which immediate interventions differ from treatment options available at a later date.

**Question 13**

The supervising physician examines a patient who had just been examined by the physician assistant because of pain in the knees. The physician instructs the physician assistant to add findings on McMurray test to the patient's chart, and the physician assistant realizes that this pertinent part of the physical examination had been missed. The patient has not yet left the examination room. Which of the following is the most appropriate next step by the physician assistant?

- A. Add the information to the patient's chart under the physician's name/login
- B. Add the information to the patient's chart according to the physician's instruction
- C. Complete the physical examination personally
- D. Refer the patient to an orthopedic specialist
- E. Suggest that the physician add the information to the patient's chart

*Medical Content Category:* Professional Practice

*Critique:*

The correct answer is Option (C), complete the physical examination personally. In the scenario, the supervising physician asks the physician assistant to document a test that had not been performed. Because the patient is still in the examination room and the test is a simple physical maneuver, the most appropriate next step by the physician assistant is to complete the physical examination by performing the test personally.

Option (A), add the information to the patient's chart under the physician's name/login, is incorrect because documentation of a physical examination maneuver that was not performed is considered malpractice. Furthermore, health care providers should not share their login information and should not sign in under another staff member's login. Option (B), add the information to the patient's chart according to the physician's instruction, is incorrect because documentation of a physical examination maneuver that was not performed is considered malpractice. Option (D), refer the patient to an orthopedic specialist, is incorrect because McMurray test is a simple test that can be easily performed in any setting. It is not appropriate to refer the patient to an orthopedic specialist for this reason. Option (E), suggest that the physician add the information to the patient's chart, is incorrect because in this scenario, McMurray test must be performed before the information is added to the patient's chart.