

PA Practice Test

1. A 45-year-old male comes to the emergency room after being involved in a head-on motor vehicle accident earlier in the day. The patient notes that he struck his head, but he did not experience any loss of consciousness. His blood pressure is 190/110, his respirations are irregular, and his electrocardiogram (ECG) shows sinus bradycardia with a heart rate of 42 beats per minute. The patient's symptoms are part of which clinical triad?

- a. Beck's triad
- b. Charcot's triad
- c. Cushing's triad
- d. Bergman's triad

2. All of the following are minor manifestations of acute rheumatic fever as described by the modified Jones criteria EXCEPT

- a. Erythema marginatum
- b. Leukocytosis
- c. Elevated erythrocyte sedimentation rate (ESR)
- d. Arthralgia

3. A 19-year-old woman comes to the office complaining of a painful rash on her elbows and knees. The rash appears as raised erythematous areas topped with silvery, scaling skin. She reports, "The rash is very itchy." She had similar symptoms several weeks before, but they spontaneously resolved without treatment. Which of the following is most likely to be the diagnosis?

- a. Impetigo
- b. Tinea corporis
- c. Rosacea
- d. Psoriasis

4. During a colonoscopy, the gastroenterologist notices that the patient's colon wall has a "cobblestone" appearance. Which of the following is the most likely diagnosis?

- a. Celiac sprue
- b. Crohn disease
- c. Ulcerative colitis
- d. Whipple's disease

5. You are evaluating an obese 37-year-old female in the ER. She has been complaining of right-sided abdominal pain and excessive flatulence. She normally has the pain after eating, but it usually resolves on its own. This episode has persisted for several hours. On physical examination, you palpate her right-upper quadrant while she takes a deep inspiration. Discomfort during this maneuver is referred to as a positive:

- a. Brudzinski's sign
- b. Psoas sign
- c. Murphy's sign
- d. Levine's sign

6. You are acting as the first assist in the operating room, and the surgeon asks you to close an abdominal incision with an absorbable suture material. Based on the following choices, which suture would be your pick?

- a. Dermabond
- b. Vicryl
- c. Silk
- d. Nylon

7. All of the following are symptoms of esophageal achalasia EXCEPT

- a. Acid reflux
- b. Dysphagia
- c. Hematochezia
- d. Chest pain

8. Which of the following is NOT part of CREST syndrome?

- a. Calcinosis
- b. Sclerodactyly
- c. Solar urticaria
- d. Esophageal dysmotility

9. A 20-year-old female recently diagnosed with chlamydia comes to your office for swelling and pain in her knees bilaterally. The most likely diagnosis for this woman's complaints is

- a. Sjögren syndrome
- b. Reiter's syndrome
- c. Turner syndrome
- d. Down syndrome

10. A 26-year-old female comes to the ER with complaints of white vaginal discharge and pelvic pain. She admits to having unprotected sex. On physical examination, she has an inflamed cervix and cervical motion tenderness. Which one of the following two-medication pairs should she receive prior to leaving the ER?

- a. Ceftriaxone 250 mg IM and clindamycin 300 mg PO
- b. Clindamycin 300 mg PO and azithromycin 1 gm PO
- c. Cefoxitin 2 gm IV and azithromycin 1 gm PO
- d. Ceftriaxone 250 mg IM and azithromycin 1 gm PO

11. A 19-year-old male patient is brought to the ER by his mother for altered mental status. She notes that he "hasn't been acting normally" since the morning. He has a known history of depression and anxiety for which he does not take medication and chronic back pain for which he takes codeine. On physical examination, his pupils are 2 mm bilaterally and he is lethargic, but he is able to be aroused. His heart rate is 44, his blood pressure is 78/44, and his respiratory rate is eight breaths per minute. Which of the following medications may reverse his symptoms and confirm your suspected diagnosis?

- a. Oxycodone
- b. Naloxone
- c. Prednisolone
- d. Buspirone

12. You diagnose an adult patient in your clinic with streptococcal pharyngitis. The patient has a known anaphylactic reaction to penicillin. Which of the following medications would be an acceptable substitute?

- a. Cefepime
- b. Cephalexin
- c. Augmentin
- d. Clarithromycin

13. You are examining a five-year-old patient for a wellness examination. During the examination, you notice that the child has painful-looking, swollen joints and notching of the maxillary incisors. The child has a past medical history of being blind and deaf. Based on his past medical history and examination findings, the patient most likely has a history of

- a. Congenital syphilis
- b. Down syndrome
- c. Osgood-Schlatter disease
- d. Turner syndrome

14. A 45-year-old male presents to your clinic with a painful, erythematous bump on his right eyelid of three days' duration. The eyeball itself is unaffected. His vision is unaffected. He has no crusting on the eyelids or lashes. The most likely diagnosis is

- a. Xanthelasma
- b. Hordeolum
- c. Mongolian spots
- d. Felon

15. A 66-year-old male comes into the office complaining of painless, yellowish, raised patches on his eyelids bilaterally for the past several weeks. He has no other skin lesions and has had no history of these lesions before. He has a known history of hyperlipidemia for which he is noncompliant with medications. What is the most likely diagnosis?

- a. Dermoid cyst
- b. Impetigo
- c. Mongolian spots
- d. Xanthelasma

16. Parents of a five-year-old boy bring him to the ER, noting that he has had worsening ataxia, nausea, vomiting, and headaches. He has no significant medical history. His parents deny recent trauma or recent travel. A magnetic resonance imaging (MRI) scan of the brain shows a tumor in the middle of the cerebellum with mild hydrocephalus. The most likely diagnosis is

- a. Schistosomiasis
- b. Melanoma
- c. Medulloblastoma
- d. Hygroma

17. A patient in the ER is noted to have right-upper quadrant tenderness, a temperature of 102.1 °F, and jaundice. This patient most likely has which one of the following conditions?

- a. Acute cholangitis
- b. Acute appendicitis
- c. Choledocholithiasis
- d. Acute pyelonephritis

18. You have been evaluating a young woman in the office for amenorrhea of eight weeks' duration. Her urine pregnancy test is positive. During the pelvic examination, you notice a bluish discoloration on the vaginal mucosa. Based on her lab findings and physical examination, the name for this bluish discoloration is called

- a. Levine's sign
- b. Kernig's sign
- c. Chadwick's sign
- d. Obturator sign

19. A 58-year-old male comes to the ER with a painful, red, swollen big toe. He has a known history of gout. Based on his past medical history and your examination findings, your first-line treatment would be

- a. Colchicine
- b. Zylprim
- c. Tetracycline
- d. Amantadine

20. You suspect a patient has benign positional vertigo. Which of the following maneuvers may help aid in your diagnosis?

- a. Dix-Hallpike test
- b. Electroencephalogram (EEG)
- c. Transcranial Doppler ultrasound (TCD)
- d. Phalen's maneuver

21. A 10-year-old child is brought to your office. On physical examination, she is short in stature, has a short wide neck, broad forehead and tongue, and small ears. She has a medical history of mild cognitive and cardiac defects. Which of the following chromosomal defects is most likely the cause for her condition?

- a. 13
- b. 21
- c. 23
- d. 24

22. A patient comes to the ER complaining of pain with inspiration, fever, and palpitations. He recently underwent a coronary artery bypass graft two weeks prior. A cardiology consult is called. The cardiologist tells you he noted "electrical alternans" on your patient's electrocardiogram (ECG). Based on the medical history and ECG findings, you diagnose the patient with

- a. Pericardial tamponade
- b. Myocardial infarction
- c. Pneumothorax
- d. Heart murmur

23. A patient comes into the ER complaining of dull, constant, left-sided chest pain for the previous six hours. He is diagnosed with an inferior-wall myocardial infarction (MI). What do you expect the electrocardiogram (ECG) and troponin levels to show?

- a. ST depression in leads V1 through V6 and normal troponin
- b. ST elevation in leads I, aVL, V5, and V6 and elevated troponin
- c. ST elevation in leads II, III, and aVF and elevated troponin
- d. ST depression in leads V7, V8, and V9 and normal troponin

24. You are evaluating a 72-year-old man in the ER for dizziness and syncope. An electrocardiogram (ECG) shows an increasingly prolonged PR interval on consecutive beats followed by a dropped QRS complex. Based on the ECG findings, you are most likely to suspect what type of heart block?

- a. First-degree heart block
- b. Second-degree heart block
- c. Third-degree heart block
- d. Asystole

25. Management of asymptomatic sinus bradycardia may include

- a. Continuous telemetry monitoring
- b. Atropine
- c. Epinephrine
- d. Transcutaneous pacing

26. Which of the following is NOT a characteristic of Beck's triad?

- a. Distended jugular veins
- b. Hypotension
- c. Muffled heart sounds
- d. Hypertension

27. All of the following may commonly trigger an asthma attack EXCEPT

- a. Sinusitis
- b. Allergies
- c. Warm air
- d. Smoke

28. Which of the following cells release insulin?

- a. Alpha cells
- b. Beta cells
- c. Gamma cells (PP cells)
- d. Delta cells

29. Which of the following is NOT a complication of diabetes mellitus?

- a. Atherosclerosis
- b. Renal insufficiency
- c. Neuropathy
- d. Hypotension

30. All of the following medications are used to treat *Helicobacter pylori* (*H. pylori*) infections EXCEPT

- a. Clarithromycin, metronidazole, esomeprazole
- b. Amoxicillin, omeprazole, clarithromycin
- c. Omeprazole, metronidazole, tetracycline, bismuth
- d. Pantoprazole, esomeprazole, clarithromycin

31. All of the following are true about peptic ulcers EXCEPT

- a. Obesity is a major risk factor
- b. It is commonly caused by *H. pylori*
- c. It can be diagnosed with a stool antigen test
- d. Symptoms are exacerbated by the use of nonsteroidal anti-inflammatory drugs (NSAIDs)

32. In Parkinson's disease, the deterioration of which neurotransmitter is primarily responsible for its symptoms?

- a. Norepinephrine
- b. Epinephrine
- c. Serotonin
- d. Dopamine

33. A person who is diagnosed with Parkinson's disease would have damaged neurons in what area of the brain?

- a. Hippocampus
- b. Pituitary
- c. Substantia nigra
- d. Medulla oblongata

34. Which of the following is most likely associated with left bundle branch block?

- a. Pulmonary embolus
- b. Mitral valve prolapse
- c. Severe aortic valve disease
- d. Pericardial tamponade

35. A 26-year-old female is hospitalized for sickle-cell crisis. Upon admission, she was also found to have a right-lower extremity deep venous thrombus. While examining the patient, you notice that her oxygen saturation on room air drops to 89%, her heart rate is 122, and her respirations are 35 breaths per minute. She is short of breath and complaining of chest pain. Her arterial blood gas (ABG) is normal, and her electrocardiogram (ECG) shows sinus tachycardia. After administering supplemental oxygen, what is your next course of action?

- a. Order a troponin level and wait for the results
- b. Order a computed tomography (CT) angiogram of the chest
- c. Order a CT of the chest without contrast
- d. Repeat the ABG in one hour

36. Which of the following is NOT part of the tetralogy of Fallot?

- a. Atrial septal defect
- b. Narrowing of the pulmonary outflow tract
- c. Right ventricular hypertrophy
- d. Overriding aorta

37. Which of the following is the most common congenital heart defect?

- a. Ventricular septal defect
- b. Tricuspid atresia
- c. Aortic stenosis
- d. Tetralogy of Fallot

38. What is the most common side effect seen with the use of angiotensin-converting enzyme (ACE) inhibitors?

- a. Liver failure
- b. Hypotension
- c. Erectile dysfunction
- d. Cough

39. Which of the following is a gram-positive cocci and is frequently the cause of common skin infections and abscesses?

- a. *Haemophilus influenzae*
- b. *Streptococcus pneumoniae*
- c. *Staphylococcus aureus*
- d. *Staphylococcus pseudintermedius*

40. Which of the following is a treatment for Addison disease?

- a. Insulin
- b. Somatropin
- c. Synthroid
- d. Cortisol

41. Which of the following is NOT a complication in patients who have chronic obstructive pulmonary disease (COPD)?

- a. Cor pulmonale
- b. Pneumothorax
- c. Hypotension
- d. Pneumonia

42. Parents bring their toddler into your office. They've noticed that their daughter has delayed growth, poor weight gain, clay-colored stools, and frequent episodes of pneumonia. You order a test. If the result is positive, what is the most likely diagnosis?

- a. Pneumonia
- b. Cystic fibrosis
- c. Bronchitis
- d. Respiratory syncytial virus

43. Which of the following is TRUE regarding sickle-cell anemia?

- a. It is an autosomal-dominant disease
- b. Heterozygotes are usually asymptomatic
- c. It is due to a defective chromosome 18
- d. It increases your risk of diabetes

Answer Key and Explanations

1. C: Cushing's triad is a clinical triad defined as hypertension, bradycardia, and irregular respirations. It suggests rising intracranial pressure due to intracranial pathology such as hemorrhage.

Beck's triad is the combination of distended jugular veins, hypotension, and muffled heart sounds. It occurs as a result of pericardial effusion.

Charcot's triad is the combination of jaundice, fever, and right-upper quadrant abdominal pain. It occurs as a result of ascending cholangitis.

Bergman's triad is the combination of dyspnea, petechiae, and mental status changes. It occurs when a patient has a fat embolism.

2. A: *Major manifestations of acute rheumatic fever* include the following:

- Erythema marginatum: raised, nonpruritic, pink rings on the trunk and inner surfaces of the limbs
- Carditis: inflammation of the heart muscle
- Chorea: rapid, uncontrolled body movements
- Subcutaneous nodules: painless, firm collections of collagen fibers over bones or tendons
- Polyarthritis: temporary migrating inflammation of the large joints

Minor manifestations of acute rheumatic fever include the following:

- Fever (101 °F to 102 °F)
- Arthralgia: joint pain without swelling
- Elevated erythrocyte sedimentation rate (ESR) or C-reactive protein (CRP)
- Leukocytosis
- Prior episode of rheumatic heart disease or rheumatic fever
- Heart block seen on an electrocardiogram (ECG)

3. D: Psoriasis causes cells to build up rapidly on the surface of the skin, forming itchy, dry, red, raised patches covered with grayish silvery lesions that are easily friable. Psoriasis is sometimes painful. Plaques frequently occur on the skin of the elbows and knees, but they can affect any area. This is a chronic condition.

Impetigo is a bacterial infection that is most commonly caused by *Staphylococcus aureus* or *Streptococcus pyogenes*. It causes lesions that can occur anywhere on the body. They are small, red, and pus-filled and can crack open and form a yellow or honey-colored, thick crust. They occur most commonly in young children.

Tinea corporis, also known as "ringworm," is a fungal infection that develops on the superficial layer of the skin, occurring anywhere on the body. It is characterized by an itchy, red, circular rash with a central clearing.

Rosacea is a chronic inflammatory skin condition characterized by redness of the face, most commonly on the cheeks, nose, forehead, and chin.

4. B: In Crohn disease, the colon wall may have a “cobblestone” appearance due to the intermittent pattern of affected and nonaffected colonic tissue.

Celiac sprue is an immune reaction that damages the lining of the small intestine and prevents it from absorbing important nutrients. A diagnosis can be made by an upper endoscopy with biopsy.

Ulcerative colitis usually affects continuous stretches of the colon and rectum.

Whipple’s disease is rare chronic disease caused by a bacterial infection (*Tropheryma whipplei*). The affected bowel is usually swollen with raised, yellowish patches.

5. C: A positive Murphy’s sign aids in the diagnosis of acute cholecystitis.

The Brudzinski sign is positive when flexion of the neck usually causes flexion of the hip and knee. This maneuver is used to help diagnose meningitis.

The psoas sign is positive when a patient experiences abdominal pain when he or she actively flexes the leg at the hip and knee. This maneuver is used to help diagnose appendicitis.

The Levine sign is positive when a patient is holding a clenched fist over his or her chest to describe dull, pressing chest pain consistent with the discomfort of angina pectoris.

6. B: Vicryl sutures are absorbable. They take anywhere from 42 to 70 days to completely absorb. Other examples of absorbable sutures include Monocryl, PDS, and chromic gut.

Prolene, silk, and nylon sutures are all nonabsorbable sutures. Other examples of nonabsorbable suture materials include polyester sutures and stainless-steel sutures.

Dermabond is a type of skin adhesive meant for superficial skin lacerations; it should never be used on any other surface besides the skin.

7. C: Esophageal achalasia is a dysmotility issue involving the lower esophageal sphincter not relaxing properly. This impairs the smooth passage of food and liquids from the lower esophagus into the stomach. Acid reflux, dysphagia, and chest pain are symptoms of esophageal achalasia. Hematochezia is when a person has bright-red blood coming from the rectum. This occurrence is commonly associated with gastrointestinal (GI) bleeding.

8. C: CREST syndrome includes five main features: **C**alcinosis, **R**aynaud phenomenon, **E**sophageal dysmotility, **S**clerodactyly, and **T**elangiectasia. The CREST syndrome is part of the autoimmune disorder systemic sclerosis (scleroderma). This immune disorder causes skin and body tissues to improperly tighten.

Solar urticaria is the development of hives when the skin is exposed to sunlight; it is not related to CREST syndrome.

9. B: Reiter's syndrome causes inflammation of the urinary tract, eyes, skin, mucous membranes, and joints. Chlamydia is the most common cause of Reiter's syndrome.

Sjögren syndrome is a disorder of the immune system that causes a decrease in the production of mucus and moisture.

Turner syndrome is a genetic condition in which females are missing all or part of an X chromosome. Some of the symptoms may include infertility, amenorrhea, short stature, and webbed neck.

Down syndrome is a genetic condition in which there is a chromosomal abnormality on chromosome 21 (trisomy 21). Some signs of Down syndrome may include broad forehead and tongue, slanted eyes, small ears, and cognitive and cardiac defects.

10. D: Ceftriaxone 250 mg IM injection in a single dose PLUS azithromycin 1 gm PO in a single dose or in the place of azithromycin, doxycycline 100 mg PO BID for seven days is the recommended regimen for treating gonorrhea (GC)/chlamydia infections. Clindamycin and Maxipime are not given as treatment for either gonorrhea or chlamydia. The patient should be treated in the ER for suspected GC/chlamydia infection to prevent the patient from potentially spreading the disease.

11. B: Naloxone (Narcan) is an opiate antidote to treat potential or confirmed narcotic overdoses.

Oxycodone is an opiate.

Prednisolone is a corticosteroid drug. It is useful for the treatment of a wide range of inflammatory and autoimmune conditions.

Buspirone is an anxiolytic used for short-term relief of anxiety symptoms. Although this may be useful as an occasional maintenance drug for the patient's history of anxiety, he is not anxious during the examination.

12. D: Augmentin is a penicillin, and cefepime and cephalexin are cephalosporins. Approximately 10% of patients with a penicillin reaction may also have an allergy to the cephalosporins. In patients with a documented allergy to penicillins, the use of cephalosporins is contraindicated. Clarithromycin is a macrolide and may be safely administered to a patient with a penicillin allergy.

13. A: Pegged teeth, also known as Hutchinson teeth, swollen joints, gummatous ulcers, deafness, and blindness are characteristic of congenital syphilis.

Down syndrome patients have a myriad of physical signs such as broad forehead and tongue, eyelid creases, small ears, short stature, and a flat head. They do not have pegged teeth and generally have unusually flexible joints.

Osgood-Schlatter disease is characterized by chronic knee pain in young children and adolescents.

Turner syndrome is a genetic condition in which females are missing all or part of an X chromosome. Some of the symptoms may include infertility, amenorrhea, short stature, and a webbed neck.

14. B: A hordeolum or styne appears as a red, swollen, tender pimple on the edge of the eyelid. It is caused by an infected eyelash follicle.

Xanthelasma are raised, yellow patches on the eyelids. The incidence of occurrence increases with age; they are common in patients with hyperlipidemia and are not painful.

Mongolian spots are a non-raised, grayish-blue skin lesion most commonly seen on the sacrum or buttocks.

A felon is an infection/abscess inside the fingertip that can expand and affect adjacent tissues if left untreated.

15. D: Xanthelasma are raised yellow patches on the eyelids. The incidence of occurrence increases with age. They are common in patients with hyperlipidemia.

Dermoid cysts are growths or outpouchings that may contain miscellaneous structures such as skin, hair, or teeth. They are not lesions that begin later in life; they are slow-growing/present at birth.

Impetigo is a bacterial infection that is most commonly caused by *Staphylococcus aureus* or *Streptococcus pyogenes*. It causes lesions that can occur anywhere on the body. They are small, red, and pus-filled and can crack open and form a yellow or honey-colored, thick crust. They occur most commonly in young children.

Mongolian spots are flat, blue, or blue-gray skin markings near the buttocks that commonly appear at birth or shortly thereafter.

16. C: Medulloblastomas are the most common malignant brain tumor and are significantly more common in children than in adults. They usually occur in the cerebellum.

A hygroma is a collection of cerebrospinal fluid in the subdural space. Acute hygromas are usually caused by head trauma or a recent neurosurgical procedure.

Schistosomiasis is a chronic parasitic infection due to eating improperly cooked pork. On a magnetic resonance imaging (MRI) scan of the brain, it can appear as multiple enhancing nodules occurring on bilateral cerebral hemispheres.

Melanoma is a malignant skin cancer.

17. A: Charcot's triad is the combination of jaundice, fever, and right-upper quadrant abdominal pain. It occurs as a result of acute cholangitis, previously called ascending cholangitis, which involves bile duct obstruction and infection (usually due to bacteria ascending the GI tract).

Acute appendicitis usually presents as periumbilical, epigastric, or right-lower quadrant abdominal pain, fever, nausea, vomiting, and extreme sensitivity to movement called the jar sign.

Cholelithiasis is the presence of stones within the common bile duct but without infection. The pain is colicky, but patients do not always display symptoms.

Acute pyelonephritis usually presents as fever, shaking chills, costovertebral angle pain, nausea, vomiting, and urinary tract infection (UTI) symptoms.

18. C: In early pregnancy, high levels of estrogen cause increased venous pressure, causing the mucosal surfaces of the genitals to turn a purplish or bluish color (Chadwick's sign).

The obturator sign is positive when abdominal pain is elicited with the internal rotation of the flexed right leg. This maneuver helps diagnose appendicitis.

The Levine sign is positive when a patient is holding a clenched fist over his or her chest to describe pressing or squeezing chest pain consistent with the discomfort of angina/ischemia chest pain.

Kernig's sign is positive when a patient is unable to extend his or her leg when the hip is flexed. This maneuver helps diagnose meningitis.

19. A: Colchicine is used only in acute gout attacks.

Allopurinol (Zyloprim) is used for the treatment of chronic gout and is used to prevent rather than treat gout attacks. Other treatments for gout include nonsteroidal anti-inflammatory drugs (NSAIDs) and steroids.

Tetracycline is an antibiotic and is not used to treat gout.

Amantadine has been used in the treatment of the influenza virus and for Parkinson's disease.

20. A: The Dix-Hallpike test or maneuver checks for positional vertigo (BPPV) and involves a patient sitting upright with his or her head laterally rotated to one side. The patient is helped to lie down quickly with his or her head slightly extended beyond the end of the table. The test is considered positive if this maneuver reproduces symptoms of vertigo or nystagmus.

An electroencephalogram (EEG) helps diagnose seizures or abnormal brain activity.

The transcranial Doppler ultrasound (TCD) measures the presence of vasospasm in the brain's blood vessels.

Phalen's maneuver is a diagnostic tool used to help diagnose carpal tunnel syndrome by flexing the wrist for 30 seconds which reproduces symptoms.

21. B: This child has Down syndrome, which is caused by an extra chromosome 21 (trisomy 21).

Chromosome 23 is the sex chromosome.

Patients with abnormalities on chromosome 13 (also known as Patau's syndrome) usually have serious brain, pulmonary, and circulatory defects that are often fatal. Few patients survive infancy. Those that survive have severe intellectual and physical disabilities.

Turner syndrome is a genetic condition in which females are missing all or part of an X chromosome. Some symptoms may include infertility, amenorrhea, short stature, and webbed neck.

Klinefelter's syndrome patients have an extra Y chromosome, leading to poor muscle strength, decreased fertility or infertility, gynecomastia, and low testosterone levels.

There is no chromosome 24. All humans have 23 chromosomal pairs, totaling 46 chromosomes.

22. A: Electrical alternans is the alternation of the amplitude or axis of the QRS complex between beats, most commonly seen with pericardial tamponade or severe pericardial effusion. Given the patient's history of recent surgery and his diagnosis of pericardial tamponade, this patient most likely has Dressler's syndrome. This can occur days to months after a cardiac injury when the body mistakenly attacks healthy heart tissue.

23. C: Severe ischemia can result in electrocardiogram (ECG) changes within minutes of the occurrence. Other helpful diagnostic aids would include troponin level, creatine phosphokinase-MB (CPK-MB) level, and a two-dimensional echocardiogram (2D echo). These aids can be more diagnostic than an ECG, but an ECG result is obtained much quicker than blood work or a 2D echo. It takes a minimum of three hours for a cardiac insult to be reflected in blood tests.

Choice A would show an anterior myocardial infarction (MI).

Choice B would show a lateral-wall MI.

Choice D would show a posterior-wall MI.

24. B: There are two types of second-degree heart block. (1) Mobitz type I (Wenckebach block) is characterized by progressive prolongation of the PR interval on beats followed by a blocked P wave/dropped QRS complex. The PR interval resets, and the cycle repeats.

(2) Mobitz type II heart block is characterized by intermittently nonconducting P waves. The PR interval remains unchanged.

In first-degree heart block, there is a prolonged PR interval that regularly precedes a QRS complex.

In third-degree heart block (complete heart block), there is no apparent relationship between P waves and QRS complexes.

Asystole is a state of no cardiac electrical activity.

25. A: The other modalities would be used if the patient had symptomatic bradycardia. Choice A may be a part of the workup, although an ECG is usually all that is necessary. Symptoms of bradycardia may include pallor, weakness, dizziness, altered mental status, fatigue, and shortness of breath. If the patient had been symptomatic, atropine is the first-line agent used. In the event that atropine is ineffective, epinephrine and dopamine may be used. If the patient continues to display signs of poor perfusion, he or she may be a candidate for transcutaneous pacing.

26. D: Hypertension is not a factor in Beck's triad. Beck's triad is the combination of distended jugular veins due to increased venous pressure, hypotension due to low arterial pressure, and muffled heart sounds due to excessive fluid around the heart. It occurs as a result of pericardial effusion. Aside from physical examination findings, an electrocardiogram (ECG) and/or a two-dimensional echocardiogram may help diagnose this condition.

27. C: Warm air does not commonly cause an asthma exacerbation, although extreme heat or humidity may cause an asthma attack. Cold air usually triggers an asthma attack because it can irritate the airways.

Sinusitis or any upper respiratory infection that affects breathing can cause irritation and induce an asthma attack.

Allergens such as dust and pollen can aggravate the airways, which can induce an asthma attack.

Cigarette smoke is a common trigger that can cause irritation and inflammation in the airways, which can aggravate asthma. Patients who live around tobacco smokers are predisposed to developing asthma.

28. B: All the choices are a part of the islets of Langerhans which are responsible for the endocrine function of the pancreas. Beta cells secrete insulin which stimulates the cells to use and store glucose, lowering the blood sugar levels.

Alpha cells produce glucagon which stimulates cells to break down their glucose reserves to raise the serum glucose level.

Gamma cells (or PP cells) of the pancreas secrete a specialized type of peptide, which is thought to reduce one's appetite.

Delta cells of the pancreas secrete somatostatin, which plays a role in food absorption by the small intestine.

29. D: Diabetics are at risk for hypertension, not hypotension. Diabetics have higher levels of blood sugar because the pancreas produces insufficient or no insulin. High levels of blood glucose stimulate systemic inflammation and atherosclerosis formation, causing a multitude of other pathologies.

Atherosclerotic plaques decrease the lumen of blood vessels, causing hypertension. Excessive deposits in the renal tubules can cause chronic renal insufficiency and potentially renal failure.

The systemic inflammation caused by diabetes can also lead to neuropathy.

30. D: The most effective treatment of *Helicobacter pylori* is the combination of two antibiotics (amoxicillin and clarithromycin, or metronidazole) PLUS a proton pump inhibitor. Two antibiotics are recommended due to potential antibiotic resistance. In areas with ↑ resistance (>15%) to clarithromycin, quadruple therapy is used (PPI PLUS bismuth, metronidazole, and tetracycline). It is recommended that the patient be treated for 10 to 14 days to increase the chances of complete recovery.

31. A: Obesity is not a major risk factor.

More than half of the diagnosed cases of peptic ulcers are caused by *Helicobacter pylori*. *H. pylori* may be diagnosed with a stool antigen test, a blood antibody test, and a carbon urea breath test, as well as other modalities.

Major risk factors include smoking, alcohol consumption, and nonsteroidal anti-inflammatory drug (NSAID) use.

32. D: Parkinson's disease destroys dopamine-producing neurons in the substantia nigra and causes motor symptoms (dyskinesia, tremor, rigidity) as well as cognitive symptoms. Approximately 80% of the substantia nigra is destroyed prior to the onset of symptoms.

Norepinephrine and epinephrine are major components in the body's fight-or-flight response.

Serotonin is involved with a multitude of functions including mood, cell growth, and hemostasis.

33. C: Parkinson's disease destroys dopamine-producing neurons in the substantia nigra and causes motor symptoms (dyskinesia, tremor, rigidity) as well as cognitive symptoms. Approximately 80% of the substantia nigra is destroyed prior to the onset of symptoms.

The medulla oblongata helps control the sympathetic and parasympathetic nervous systems, respirations, and basic reflexes.

The hippocampus plays a major role in storing old memories and the formation of new ones.

The pituitary gland controls major endocrine functions, pain relief, temperature regulation, and water balance. It is sometimes called the "master gland," because it is responsible for regulating so many important body functions.

34. C: Left bundle branch block acts as a red flag for four conditions: severe aortic valve disease, ischemic heart disease, chronic hypertension, and cardiomyopathy.

Pericardial tamponade generally has abnormalities with QRS complexes on the ECG.

Pulmonary emboli are generally diagnosed by ventilation-perfusion (VQ) scan or computed tomography (CT) angiogram of the chest. In some patients with a pulmonary embolus, the ECG may be normal. The most common ECG findings are T-wave abnormalities.

Mitral valve prolapse is generally not diagnosed on an ECG. It is usually diagnosed by the patient's history, auscultation with a stethoscope, and two-dimensional echocardiogram.

35. B: This patient may have a pulmonary embolus, which is best diagnosed with a computed tomography (CT) angiogram of the chest. Sickle-cell disease increases the risk of pulmonary embolus, stroke, heart attack, pulmonary hypertension, skin ulcers, priapism, as well as other health problems.

A CT scan of the chest without contrast would most likely be nondiagnostic. Waiting for a troponin level or an arterial blood gas (ABG) would increase the risk of mortality in this patient.

36. A: The classic four features of tetralogy of Fallot include ventricular septal defect, narrowing of the pulmonary outflow tract, right ventricular hypertrophy, and an overriding aorta. Tetralogy of Fallot is the most common cyanotic heart defect. The reason why cyanosis occurs is due to the mixing of oxygen-rich and oxygen-poor blood through the ventricular septal defect.

37. A: According to the AHA, the most common congenital heart defect is ventricular septal defect. The hole may be small and may spontaneously close on its own. If the hole is small but remains patent, the patient may be asymptomatic. If the hole is large enough to cause symptoms, it may warrant surgical intervention.

The occurrence of aortic stenosis increases with age, but it is not the most common heart defect.

Tricuspid atresia is one of the most uncommon cyanotic congenital heart defects.

Tetralogy of Fallot is the most common type of cyanotic congenital heart defect.

38. D: A persistent, dry cough is the most common side effect of taking angiotensin-converting enzyme (ACE) inhibitors. The development of a cough is not serious and does not have any long-term health complications. In the event that the cough persists, the patient should be placed on a different medication regimen. Switching to another ACE inhibitor would not be helpful because if one ACE inhibitor causes a cough, all medications of this class would likely cause the same symptom.

39. C: *Staphylococcus aureus* is a gram-positive coccus that is responsible for common skin infections as well as other illnesses.

Staphylococcus pseudintermedius is a gram-positive coccus. It is very common in animals, especially dogs, but it is rare in humans.

Haemophilus influenzae is a gram-negative coccobacillus. It is a main cause of pneumonia, meningitis, as well as other pathologies. It does not commonly cause skin infections.

Streptococcus pneumoniae is one of the main causative organisms in pneumonia, meningitis, as well as other pathologies. It is much less common in skin infections.

40. D: Addison disease is caused by a lack of cortisol. Giving cortisol exogenously helps alleviate the disease's symptoms which include hyperpigmentation and hypotension.

Diabetes is caused by insufficient or complete lack of insulin production. Many diabetic patients depend on insulin injections in order to help control their disease.

Patients with insufficient growth hormone depend on somatropin injections to help correct their symptoms.

Synthroid (levothyroxine) is a medication taken by patients with hypothyroidism.

41. C: Hypotension plays no role in the pathology of chronic obstructive pulmonary disease (COPD).

Because the lungs are chronically damaged, the patient is more predisposed to pulmonary infections such as pneumonia.

Cor pulmonale is right-sided heart failure caused by pulmonary hypertension. Because COPD is an obstructive disease that occurs in the lungs, it increases the right ventricle's afterload, which causes the ventricle to swell and become dilated. Perfusion becomes more strenuous, and the blood pressure increases to keep pace.

The risk of pneumothorax increases in the presence of COPD because COPD causes weakened and damaged lung parenchyma.