

Sample Pediatrics Questions and Critiques

The sample NCCPA questions and critiques are provided to help PAs better understand how exam questions are developed and should be answered for NCCPA's Pediatrics CAQ exam.

Question #1

A 2-week-old male newborn is brought to the office by his mother for routine well-child examination. The patient is breast-fed, and his mother follows a vegan diet. The mother says she plans to breast-feed until the patient reaches six months of age, and then she will introduce him to solid foods that conform to her vegan diet. On the basis of this information, the patient is at greatest risk for deficiency of which of the following vitamins?

- (A) B1
- (B) B6
- (C) B12
- (D) C
- (E) K

Content Area: Health Maintenance (10%)

Critique

This question assesses the examinee's knowledge of vitamin sources for infants who are breast-fed. The correct answer is Option (C), B12. Because vitamin B12, or cyanocobalamin, is mainly found in animal products, individuals who follow a strict vegan diet commonly have deficiency of this nutrient. In breast-feeding mothers who follow a vegan diet, the breast milk supply is likely to reflect this deficiency. Because the patient described is breast-fed and his mother follows a vegan diet, he is at greatest risk for deficiency of vitamin B12.

Option (A), B1, or thiamine, is incorrect because this nutrient is readily available in many vegetables, cereals, and fruits that are included in a vegan diet. Option (B), B6, or pyridoxine, is incorrect because this vitamin is commonly found in cereals that would likely be consumed by vegans. Similarly, option (D), C, is incorrect because a vegan diet is rich in fruits and vegetables that contain vitamin C. Option (E), K, is incorrect because a vegan diet is rich in leafy greens, beans, and soybeans, all of which are good sources of vitamin K.

Question #2

A 4-year-old boy is brought to the clinic by his mother because he has an area of sores on his scalp that she noticed while cutting his hair. Weight is 19.1 kg (42 lb). Vital signs are within normal limits. Physical examination shows a grouping of pustules in the right parietal region. The area surrounding this grouping is boggy and very tender, and annular hair loss is noted in that region. The cervical lymph nodes are diffusely tender and enlarged. No other abnormalities are noted. Which of the following is the most likely diagnosis?

- (A) Alopecia areata
- (B) Atopic dermatitis
- (C) Herpes simplex virus
- (D) Kerion
- (E) Mastocytosis

Content Area: Infectious Diseases (12%)

Critique

This question assesses the examinee's ability to assess physical examination findings and formulate a diagnosis. The correct answer is Option (D), kerion, because the clinical presentation of inflammatory pustules with a surrounding area that is boggy and tender is most consistent with this condition.

Option (A), alopecia areata, is incorrect because although this condition does cause annular patches of hair loss, it does not cause the surrounding area to be boggy, tender, or inflamed. Option (B), atopic dermatitis, is incorrect because although this condition often develops on the scalp, it does not cause alopecia or tenderness. Option (C), herpes simplex virus, is incorrect because the lesions caused by this agent are vesicles, not pustules. Also, herpes simplex virus is not likely to cause localized alopecia, as noted in the patient described. Option (E), mastocytosis, is incorrect because mastocytomas are not pustules; they are firm, fixed, nodular lesions that may be blistering and vesicular. In addition, mastocytomas are often accompanied by pruritus but not tenderness.

Question #3

A 5-day-old neonate is brought to the emergency department by ambulance 20 minutes after he had sudden onset of irritability, diaphoresis, and profound dyspnea. The patient has not had fever or other symptoms of systemic illness. He was delivered vaginally at term without complications. Temperature is 37.0°C (98.6°F), pulse rate is 200/min, and respirations are 50/min. On physical examination, auscultation of the chest shows a grade 2/6 systolic ejection murmur that is heard best at the left upper sternal border and radiates to the left interscapular area. Palpation of the abdomen shows enlargement of the liver. Femoral pulses are absent bilaterally, and the lower extremities appear somewhat cyanotic compared with the upper extremities. No other abnormalities are noted. Which of the following is the most likely diagnosis?

- (A) Coarctation of the aorta
- (B) Diaphragmatic hernia
- (C) Group B streptococcal sepsis
- (D) Patent ductus arteriosus
- (E) Tetralogy of Fallot

Content Area: Cardiovascular Disorders (6%)

Critique

This question tests the examinee's knowledge of conditions that may present during the immediate neonatal period. The correct answer is Option (A), coarctation of the aorta, because this condition is most likely to manifest as a murmur with diminished or absent femoral pulses, as noted in the patient described.

Option (B), diaphragmatic hernia, is incorrect because this congenital defect most commonly manifests as severe respiratory distress within the first 24 hours of life. Diaphragmatic hernia in neonates is often accompanied by scaphoid abdomen and possibly by signs of an associated pneumothorax, but heart murmur and localized perfusion abnormalities are unlikely. Option (C), group B streptococcal sepsis, is incorrect because this condition in neonates is characterized by generalized findings such as temperature instability, poor feeding, lethargy, mottled skin, or overall perfusion concerns. Localized perfusion issues and heart murmur or femoral pulse abnormalities are not associated with this condition. Option (D), patent ductus arteriosus, is not correct because the characteristic murmur of this condition is continuous and machinelike. If a patent ductus arteriosus does not close spontaneously within the first week, it might eventually present as slowly progressive heart failure, but it would not present as acute localized perfusion issues during the first five days of life. Option (E), tetralogy of

Fallot, is incorrect because this condition is most likely to present as severe immediate cyanosis after birth or as acute severesystemic cyanosis with closure of a patent ductus arteriosus within the first week. Localized perfusion issues and diminished femoral pulses are not characteristic of tetralogy of Fallot.

Question #4

A 16-year-old boy is brought to the office because he has had decreasing performance in school over the past six months. During this time, the patient has become more irritable and irresponsible, has changed his group of friends, and has had decreasing personal hygiene. He was previously a high-achieving student, but his grades have slipped to the extent that he is failing several courses. Which of the following disorders is the most likely cause of this patient's symptoms?

- (A) Bipolar
- (B) Conduct
- (C) Major depressive
- (D) Persistent depressive (dysthymic)
- (E) Substance use (substance abuse)

Content Area: Psychiatry and Behavioral Medicine (6%)

Critique

This question assesses the examinee's ability to assess history findings related to changes in an adolescent patient's behavior and formulate a diagnosis. The correct answer is Option (E), substance use (substance abuse), which is manifest by a change in personality traits, decreased school performance, neglected hygiene, and a change in peer group preferences.

Option (A), bipolar, is incorrect because the patient described has not experienced the periods of manic behavior that are characteristic of this disorder. Option (B), conduct, is incorrect because the patient described does not have persistent antisocial behaviors such as lying, stealing, fire-setting, truancy, cruelty to animals, and property destruction. Option (C), major depressive, is incorrect because although this disorder includes some of the signs and symptoms as in the clinical scenario, complete loss of interest in friends is more characteristic than a change in peer group. Option (D), persistent depressive (dysthymic), is incorrect because the criteria for this condition include a one-year history of poor appetite, sleep problems, decreased energy, and decreased self-esteem. An acute change or a change in peer groups is not characteristic of dysthymic disorder.

Question #5

A 12-year-old boy is brought to the office because he has had recurrent episodes of epistaxis during the past two months. The patient has no history of bruising or bleeding. While he is in the examination room, an episode of epistaxis occurs. On physical examination, anterior bleeding is visible within the Kiesselbachplexus. Which of the following is the most appropriate initial step in management?

- (A) Administration of clotting factors
- (B) Anterior nasal packing
- (C) Application of direct pressure
- (D) Cautery of the bleeding area
- (E) Referral of the patient to a pediatric otolaryngologist

Content Area: Eyes, Ears, Nose and Throat (7%)

Critique

This question assesses the examinee's ability to identify the most appropriate initial step in controlling acute epistaxis. The correct answer is Option (C), application of direct pressure, because this intervention facilitates hemostasis of the anterior nosebleed.

Option (A), administration of clotting factors, is incorrect because this therapy is appropriate for a life-threatening bleed in a patient with hemophilia but not for acute epistaxis. Option (B), anterior nasal packing, is incorrect because although it is a subsequent intervention for hemostasis in any acute anterior nosebleed, it is not the initial step. Option (D), cautery of the bleeding area, is incorrect because this intervention is appropriate to prevent recurrence after acute bleeding is controlled; it is not an appropriate initial intervention for acute epistaxis. Option (E), referral of the patient to a pediatric otolaryngologist, is incorrect because it is an option for long-term management of epistaxis but not an appropriate initial intervention.

Question #6

A 4-year-old boy is brought to the office by his parents because he has had intermittent nonbloody diarrhea and constipation along with abdominal pain and bloating during the past three weeks. When the patient's symptoms first began, his stools were watery, but they are currently greasy and foul-smelling. He has not had fever or vomiting. The parents say that other children at the patient's day care have had similar symptoms. Vital signs are within normal limits. Physical examination shows vague tenderness to palpation of the abdomen without rebound or guarding. Which of the following studies is the most appropriate next step?

- (A) Air contrast enema
- (B) Colonoscopy
- (C) Enzyme immunoassay of stool
- (D) Esophagogastroduodenoscopy
- (E) Fecal leukocyte test

Content Area: Gastrointestinal/Nutrition Disorders (7%)

Critique

This question assesses the examinee's ability to recognize the signs and symptoms of giardiasis and determine the appropriate initial study to confirm the diagnosis. Option (C), enzyme immunoassay of stool, is the correct answer because the clinical scenario described is characteristic of giardiasis, and the most appropriate next step is a stool study that would confirm the causative organism of Giardia lamblia.

Option (A), air contrast enema, is incorrect because it is an appropriate diagnostic and therapeutic intervention for intussusception but is not effective in identifying Giardia lamblia. Option (B), colonoscopy, is incorrect because this study is used to identify disease states that are specific to the colon and is not the test of choice for infections of the digestive system such as giardiasis. Similarly, Option (D), esophagogastroduodenoscopy, is incorrect because it is indicated for clinical findings suggestive of upper gastrointestinal disease but is not appropriate to evaluate conditions such as giardiasis. Option (E), fecal leukocyte test, is incorrect because although it is useful in identifying disease states producing inflammation, it is not effective in correctly diagnosing giardiasis.

Question #7

A 6-year-old boy is brought to the office because he has had pain in his right knee for the past two days. The patient walks with a mild limp because of the pain. He has no history of trauma to the knee. He had cold symptoms one week ago but is otherwise healthy. Vital signs are within normal limits. Physical examination shows full range of motion of the right knee with limited internal rotation of the right hip. On laboratory studies, erythrocyte sedimentation rate is slightly elevated and white blood cell count is within normal limits. Anteroposterior and frog-leg x-ray studies of the right hip and knee show no abnormalities. Which of the following is the most likely cause of the pain in this patient's knee?

- (A) Developmental dysplasia of the hip
- (B) Legg-Calvé-Perthes disease
- (C) Septic joint
- (D) Slipped capital femoral epiphysis
- (E) Transient synovitis

Content Area: Musculoskeletal Disorders (4%)

Critique

This question assesses the examinee's ability to assess history and physical examination findings, interpret findings on laboratory and imaging studies, and formulate a diagnosis. The correct answer is Option (E), transient synovitis, because the clinical presentation of pain in the knee, mild limp, limited internal rotation of the hip, and slightly elevated sedimentation rate with normal white blood cell count is most consistent with this condition.

Option (A), developmental dysplasia of the hip, is incorrect because although the presentation of this condition is similar to the clinical scenario described, x-ray studies of the hip and knee in a patient with this condition would show either an abnormality of the femoral head or a chronic dislocation. Also, this is a diagnosis that is more likely to be made during infancy on well-child examination. Option (B), Legg-Calvé-Perthes disease, is incorrect because although the clinical presentation of this condition is the same as that described, results of laboratory studies would be within normal limits. Option (C), septic joint, is incorrect because patients with this condition typically have fever and rapid onset of symptoms as well as elevation of both erythrocyte sedimentation rate and white blood cell count. Option (D), slipped capital femoral epiphysis, is incorrect because this condition usually develops at an age older than the patient described and is characterized by the finding of a slip on x-ray studies of the hip.

Question #8

Which of the following is the most appropriate advice for coaches of high school sports teams to prevent heat exhaustion and heat stroke in their players during summer practice sessions?

- (A) Give the players salt tablets when the heat index is higher than 40.6°C (105.0°F)
- (B) Have the players drink electrolyte replacement solutions when practice lasts longer than one hour
- (C) Instruct the players to wear lightweight long-sleeved shirts during practice for insulation from sun and heat
- (D) Lengthen practices progressively during the middle of the day to gradually acclimate the players to high temperatures
- (E) Schedule breaks every 60 minutes during practice

Content Area: Sports Medicine (3%)

Critique

This question assesses the examinee's ability to provide appropriate advice regarding prevention of heat exhaustion and heat stroke. The correct answer is Option (B), have the players drink electrolyte replacement solutions when practice lasts longer than one hour, because this is the safest and most effective method to prevent dehydration and promote evaporation as the body's heat-shedding mechanism.

Option (A), give the players salt tablets when the heat index is higher than 40.6°C (105.0°F), is incorrect because this is a potentially dangerous practice that might lead to ingestion of excessive amounts of salt with subsequent water retention and possible hypertension. Option (C), instruct the players to wear lightweight long-sleeved shirts during practice for insulation from sun and heat, is incorrect because this does not prevent heat stroke and might, in fact, decrease evaporative cooling and increase core temperature. Option (D), lengthen practices progressively during the middle of the day to gradually acclimate the players to high temperatures, is incorrect because although it may decrease the players' threshold to sweat, conducting athletic practices during the hottest period of the day is inadvisable. Option (E), schedule breaks every 60 minutes during practice, is incorrect because this break interval is too long.

Question #9

A 14-year-old girl is brought to the office for follow-up regarding recently diagnosed polycystic ovarian syndrome. The patient was initially examined because of hirsutism, amenorrhea, and virilization. These findings are most likely due to the effect of which of the following agents?

- (A) Estrogen
- (B) Follicle-stimulating hormone
- (C) Luteinizing hormone
- (D) Testosterone
- (E) Thyroid-stimulating hormone

Content Area: Genitourinary/Reproductive Disorders (3%)

Critique

This question tests the examinee's knowledge of the basic scientific concept of excess testosterone production in patients with polycystic ovarian syndrome. The correct answer is Option (D), testosterone, because this is the agent that causes the hirsutism, amenorrhea, and virilization that are characteristic of polycystic ovarian syndrome.

Option (A), estrogen, is incorrect because an increase in this hormone causes breast tenderness, irregular menstrual bleeding, and water retention, whereas a decrease causes hot flashes and menopausal symptoms but not increase virilization. Option (B), follicle-stimulating hormone, is incorrect because this agent causes stimulation of ovarian follicles but not the effects described in the clinical scenario. Option (C), luteinizing hormone, is incorrect because this agent controls ovulation in women and does not cause the changes described in the clinical scenario. Option (E), thyroid-stimulating hormone, is incorrect because although hypothyroidism can lead to menstrual irregularities, it does not regulate processes that lead to virilization.

Question #10

A 3-year-old boy is brought to the office by his parents as a new patient for well-child examination. Height is in the third percentile, and weight is in the first percentile. During the interview, the parents say that the patient has been treated multiple times since infancy because of sinus infections and pneumonia. They also note that his stools are generally loose, greasy, and mucousy. During physical examination, the patient coughs frequently. No other abnormalities are noted. Which of the following studies is most effective to determine the diagnosis in this patient?

- (A) Bronchoscopy
- (B) CT scan of the sinuses
- (C) Culture of aspirate from the trachea
- (D) Measurement of serum immunoglobulin levels
- (E) Sweat chloride test

Content Area: Congenital Anomalies and Genetic Disorders (2%)

Critique

This question assesses the examinee's ability to recognize history and physical examination findings that are consistent with cystic fibrosis and identify the most appropriate laboratory study to determine the diagnosis. The clinical scenario described includes characteristic symptoms of cystic fibrosis, including growth delay, multiple upper and lower respiratory tract infections, and malabsorption. The correct answer is Option (E), sweat chloride test, because it is the most effective study to confirm the presence of cystic fibrosis.

*Option (A), bronchoscopy, is incorrect because although this study might identify *Pseudomonas aeruginosa* lavage in a patient with cystic fibrosis, it is not diagnostic for the condition. Option (B), CT scan of the sinuses, is incorrect because although sinus disease may be present in the patient described, this imaging study is not effective to provide a definitive diagnosis. Option (C), culture of aspirate from the trachea, is incorrect because although it does identify pathogens, it does not identify the underlying condition. Option (D), measurement of serum immunoglobulin levels, is incorrect because these levels might be elevated in patients with cystic fibrosis, but these findings do not provide a definitive diagnosis.*

Question #11

A 2-year-old girl is brought to the office by her parents after blood was noticed in her urine. The parents say the patient has had intermittent abdominal pain during the past two months but has been otherwise well. On physical examination, the abdomen is slightly distended and a mass is palpated in the right upper quadrant. Results of urinalysis are positive for blood and protein. Which of the following is the most likely diagnosis?

- (A) Cystic nephroma
- (B) Cystitis
- (C) Mesoblastic nephroma
- (D) Neuroblastoma
- (E) Wilms tumor

Content Area: Hematology/Oncology (4%)

Critique

This question assesses the examinee's ability to assess history and physical examination findings, interpret results of urinalysis, and formulate a diagnosis. The correct answer is Option (E), Wilms tumor, because the clinical presentation of hematuria, abdominal pain of two months' duration, and a palpable mass in the right upper quadrant of the abdomen is characteristic of this tumor.

Option (A), cystic nephroma, is incorrect because this tumor typically presents as an asymptomatic benign mass in the kidney that is found incidentally. Option (B), cystitis, is incorrect because this condition does not include a retroperitoneal mass. Option (C), mesoblastic nephroma, is incorrect because this condition is exceedingly rare; in more than 90% of cases, it presents before 1 year of age. Option (D), neuroblastoma, is incorrect because although it can present with intra-abdominal mass, proteinuria and hematuria are rarely associated with this condition. In addition, neuroblastomas also present more often in children younger than 1 year of age, making this diagnosis less likely in the patient described.

Question #12

A 4-year-old girl is brought to the office by her parents for well-child examination. The parents say the patient has been healthy, but they have noticed that she tires more quickly than her peers when they are playing. She is in the 10th percentile for height and the 40th percentile for weight. Blood pressure is 132/82 mmHg in the left arm and 128/80 mmHg in the right arm. Repeat measurements are in the same range. Which of the following is the most appropriate next step?

- (A) Counsel the parents regarding diet and exercise
- (B) Measure blood pressure in the lower extremities
- (C) Order urinalysis
- (D) Recheck blood pressure in two weeks
- (E) Refer the patient to a nephrologist

Content Area: Cardiovascular Disorders (6%)

Critique

This question tests the examinee's ability to differentiate primary and secondary hypertension in a pediatric patient with increased blood pressure. Because the patient described is young, does not have increased body mass index, and is symptomatic (she tires more easily than her peers), exclusion of secondary hypertension is needed. Therefore, the correct answer is Option (B), measure blood pressure in the lower extremities. This component of physical examination excludes coarctation of the aorta as a cause of secondary hypertension.

Option (A), counsel the parents regarding diet and exercise, is incorrect because although it is appropriate in the setting of primary hypertension, it does not exclude secondary hypertension and is not the appropriate next step in the scenario described. Option (C), order urinalysis, is incorrect because this study is appropriate in evaluation of secondary hypertension but is not part of the thorough initial physical examination. Option (D), recheck blood pressure in two weeks, is incorrect because this is the appropriate next step for a patient who is not experiencing symptoms. Option (E), refer the patient to a nephrologist, is incorrect because the hypertension described has not been determined to be renally mediated.

Question #13

A male neonate is delivered vaginally at term, and neonatal examination and testing confirms the diagnosis of sickle cell disease. On the basis of this finding, the most appropriate initial step is administration of which of the following?

- (A) Erythromycin
- (B) Hydroxyurea
- (C) Oxygen
- (D) Penicillin
- (E) Pneumococcal and meningococcal vaccines

Content Area: Hematology/Oncology (4%)

Critique

This question tests the examinee's ability to determine the appropriate initial step in management of sickle cell disease in neonates. The correct answer is Option (D), penicillin, because administration of this medication in children with sickle cell disease who are younger than 5 years of age decreases the risk of serious bacterial infections such as pneumonia.

Option (A), erythromycin, is incorrect because this medication is not a recommended prophylactic antibiotic for neonates. Option (B), hydroxyurea, is incorrect because although it is a medication used to treat sickle cell crisis, it is not indicated as an initial therapy in the patient described. Option (C), oxygen, is incorrect because the clinical scenario described includes no indications for administration of oxygen. Option (E), pneumococcal and meningococcal vaccines, is incorrect because immunization with these vaccines is not appropriate for the patient described until 2 and 9 months of age, respectively.

Question #14

A 5-day-old neonate is brought to the office by his mother for initial examination after uncomplicated pregnancy, delivery, and nursery stay. The mother has hypothyroidism that is well controlled with levothyroxine, and she is worried that the patient might have congenital hypothyroidism. If this condition is present in this patient, which of the following findings is most likely to be noted on physical examination?

- (A) Bradycardia
- (B) Enlarged fontanelle
- (C) Hypothermia
- (D) Umbilical hernia
- (E) No abnormalities

Content Area: Endocrine Disorders (5%)

Critique

This question tests the examinee's knowledge of signs of congenital hypothyroidism in a neonate. The correct answer is Option (E), no abnormalities, because congenital hypothyroidism is a condition that most commonly demonstrates no physical findings early in the course of the disease.

Options (A) bradycardia, (B) enlarged fontanelle, (C), hypothermia, and (D), umbilical hernia, are all incorrect because these physical findings are not signs of congenital hypothyroidism in neonates.

Question #15

A 12-year-old girl is brought to the office for well-child examination. During the past two months, the patient has had fatigue, occasional vague abdominal pain, and unintentional weight loss of 3.18 kg (7 lb). Results of lipid panel include the following:

Total cholesterol	215 mg/dL (N<170 mg/dL)
Low-density lipoprotein cholesterol	134 mg/dL (N<110 mg/dL)
High-density lipoprotein cholesterol	41 mg/dL (N>35 mg/dL)
Triglycerides	470 mg/dL (N=37-140 mg/dL)

Which of the following additional laboratory studies is the most appropriate next step?

- (A) Complete blood cell count with differential
- (B) Liver function studies
- (C) Measurement of serum amylase level
- (D) Measurement of serum glucose level
- (E) Thyroid function studies

Content Area: Endocrine Disorders (5%)

Critique

This question assesses the examinee's ability to recognize history, physical examination, and laboratory findings that are consistent with onset of type 1 diabetes mellitus and to identify the most appropriate additional laboratory study to confirm the diagnosis. The correct answer is Option (D), measurement of serum glucose level, because the clinical scenario describes classic signs and symptoms of onset of diabetes mellitus, which is confirmed through this laboratory study.

Option (A), complete blood cell count with differential, and Option (B), liver function studies, are incorrect because the results of these studies would be within normal limits in the patient described and would not be useful in confirming or ruling out the diagnosis of type 1 diabetes mellitus. Option (C), measurement of serum amylase level, is incorrect because although increased levels of triglycerides can lead to inflammation of the pancreas, that is not the cause of the presentation described. Option (E), thyroid function studies, is incorrect because although the patient has fatigue, which is consistent with possible hypothyroidism, these studies are not effective in determining the diagnosis of onset of type 1 diabetes mellitus.