



## BLOCK 1 QUESTIONS

- A 39-year-old black woman with a long history of progressive burning epigastric pain 2 hours after meals, often nocturnal and relieved by food, presents for evaluation. She states that her symptoms improve when she takes calcium carbonate (Tums®). She believes that she has peptic ulcer disease and brings you an article about this condition. Physical examination reveals a palpable thyroid gland without masses. Cardiac examination reveals no evidence of rubs, murmurs, or gallops. Pulmonary auscultation reveals no evidence of wheeze or rhonchi. Gastrointestinal examination reveals mild tenderness in the mid-epigastric region without focal peritoneal signs. Rectal examination reveals small internal nonprolapsing hemorrhoids, guaiac negative with stool in the vault. Modern views on the etiology of this condition relate to which of the following factors in the pathogenesis?

  - Helicobacter pylori*
  - Impaired gastric blood flow
  - Impaired gastric epithelial turnover
  - Prostaglandin inhibition
  - Thinning of mucous layer
- A 28-year-old man presents to the ambulatory care clinic complaining of fever and a productive cough. He states that he has always been sick, particularly with fevers with productive coughs. He does not appear to be in any acute distress. Head and neck examination is remarkable for mild erythema of the pharynx. Cardiac examination yields a regular rate and rhythm without murmurs, rubs, or gallops. Pulmonary examination reveals bilateral rales more prominent on the left side. Chest x-ray demonstrates bilateral cystic lesions with fluid levels in middle and lower lung zones. What is the most appropriate treatment for this patient?

  - Antibiotics and drainage
  - Bronchoscopy
  - Lung transplantation
  - Respiratory isolation
  - Surgical resection
- A 29-year-old G5P2 woman is 20 weeks pregnant. She has a long history of intermittent bloody and watery diarrhea. Her symptoms have remained stable during the current pregnancy. Cardiac examination reveals a regular rate and rhythm. Pulmonary evaluation reveals clear lungs bilaterally without rales or rhonchi. Abdominal examination reveals normoactive bowel sounds with a fundal height 22 cm from the pubis. Anorectal evaluation reveals evidence of a healed left and right lateral anal fissure. What is the most likely diagnosis?

  - Appendicitis
  - Gastroesophageal reflux
  - Hepatitis
  - Hyperemesis gravidarum
  - Inflammatory bowel disease
- You are paged to evaluate a male neonate who was born 26 hours ago. The nurse explains to you that he has been doing well, but has not passed any meconium. The neonate has stable vital signs, with clear lungs and no murmur on auscultation. On palpation of the abdomen, you discover a mass and order an abdominal x-ray. The film shows a "ground-glass" appearance within the bowel, and you order a Gastrografin enema, which removes the meconium. What is the next most appropriate step in the evaluation of this neonate?

  - No further evaluation is necessary
  - Perform a transrectal biopsy
  - Perform genetic analysis
  - Repeat abdominal radiography
  - Perform exploratory laparotomy
- A 27-year-old man complains of a painless lump in his right groin. He has a prior surgical history of right orchiopexy at age 4. He has no other medical conditions and takes no medications. Cardiac examination reveals a regular rate and rhythm. Pulmonary auscultation reveals no rales, rhonchi, or wheezing. Gastrointestinal examination reveals normoactive bowel sounds. The right testis has a 1.5-cm area of induration on the posterior surface. The right epididymis and vas deferens are palpable. The left testis has no areas of induration. The left epididymis and vas deferens are palpable. Chest x-ray reveals no evidence of effusions, masses, or infiltrates. Results of laboratory studies are shown below:

**Blood, plasma, serum**

Alanine aminotransferase (ALT)	10 U/L
Alpha-fetoprotein	5 ng/mL
Amylase, serum	50 U/L
Aspartate aminotransferase (AST)	10 U/L
Calcium, serum	9 mg/dL
Glucose, serum	100 mg/dL
Hematocrit	33%
Human chorionic gonadotropin	Normal
Urea nitrogen, serum (BUN)	10 mg/dL

**Urinalysis**

Urine pH	6.0
RBC count	2/HPF
WBC count	2/HPF
Nitrates	Negative
Bacteria	Negative

Which of the following is the most likely diagnosis?

  - Embryonal carcinoma
  - Endodermal sinus tumor
  - Seminoma
  - Teratocarcinoma
  - Teratoma

6. A 25-year-old woman presents for evaluation of a lobular, firm, well-circumscribed 2-cm breast mass in the left upper outer quadrant. Prior medical and surgical history are unremarkable. The patient does note that her mother had multiple bilateral breast cysts that were followed with annual mammographic studies. There is no known family history of breast cancer. Physical examination reveals no evidence of dimpling, skin retraction, or axillary adenopathy. Examination of the right breast reveals no evidence of dimpling, skin retraction, or axillary adenopathy. What is the most likely diagnosis?
- Fibroadenoma
  - Fibrocystic change
  - Fibrosarcoma
  - Infiltrating ductal cell carcinoma
  - Intraductal papilloma
7. A 29-year-old man presents to his primary care physician complaining of chronic back pain. He states that he fell off a ladder 3 years ago and broke his back. Since that time he has been unable to work and has only been able to function when taking a combination of pentazocine and meperidine. He walks slowly and carefully, and is unable to flex or extend his lumbar spine because of pain. He points to the L3 area as the point of maximum pain. He states that he does not like to take drugs but has to do so in order to function. What is the most likely diagnosis?
- Chronic lumbar pain syndrome
  - Deformity of the lumbar spine with fractures
  - Drug abuse
  - Prior lumbar spine fractures
  - Somatiform pain disorder
8. A 32-year-old man is hospitalized following a motor vehicle accident in which he suffered head trauma. He is currently tracheally intubated in the surgical intensive care unit (SICU). On day 8 of admission, he develops hemoptysis. Chest x-ray reveals poor inspiratory effort, is underpenetrated, and suggests a large lobar infiltrate. Gram stain reveals numerous white blood cells and gram-positive cocci in clusters. Results of laboratory studies are shown below:

Leukocyte count	14,000/mm <sup>3</sup>
Segmented neutrophils	75%
Bands	6%
Eosinophils	3%
Basophils	1%
Lymphocytes	24%
Monocytes	4%

What is the most likely explanation of these findings?

- Aspiration pneumonia
- Haemophilus influenzae* pneumonia
- Mycobacterium tuberculosis* pneumonia
- Staphylococcus aureus* pneumonia
- Streptococcus pneumoniae* pneumonia

#### Questions 9–11:

- Alport syndrome
- Autosomal-dominant polycystic kidney disease
- Focal segmental glomerulosclerosis
- Hemolytic-uremic syndrome
- IgA nephropathy
- Neonatal hydronephrosis
- Nephrotic syndrome
- Primary vesicoureteral reflux
- Posterior urethral valves
- Renal hypoplasia
- Sponge kidney (cystic collecting tubule dilation)

For each child with renal disease, select the most likely diagnosis.

9. A 2-year-old boy with a history of deafness presents to his pediatrician with gross hematuria. Physical examination findings of the heart, lungs, and abdomen are within normal limits. Serum creatinine is 1.9 mg/dL. Urine analysis reveals microscopic hematuria and proteinuria. Renal biopsy reveals abnormalities in the glomerular basement membrane.
10. A newborn male with prenatal hydronephrosis on screening fetal ultrasonography has a poor, intermittent, dribbling urinary stream. Physical examination of the heart and lungs is within normal limits. A palpable lower abdominal midline mass is noted. Voiding cystourethrography reveals elongation and dilation of the posterior urethra with a prominent bladder neck.
11. A 3-month-old boy is evaluated by his pediatrician for failure to thrive. He weighs 10 pounds. His mother reports that for the last 3 weeks he has had decreased urine output and she has changed his diapers an average of twice daily. The mother is of Scandinavian descent and has renal problems. Review of records from birth reveal that the placenta was enlarged. Physical examination findings of the heart, lungs, and abdomen is unremarkable. Serum creatinine is 1.5 mg/dL. Urine dipstick reveals +3 proteinuria.
12. A 22-year-old man presents to the emergency room complaining of progressive weakness in both of his lower extremities. He states that he first noticed an abnormality earlier in the week when he began experiencing abnormal sensations in both of his feet. Soon after, he noticed difficulty standing on his toes. Since that time, he states he has had trouble rising from a seated position. Now he claims that it is difficult for him to walk. He has also noticed a similar progressive weakness of his upper extremities. His past medical history is positive for an episode of gastroenteritis a few weeks ago. On review of systems, the patient revealed a recent onset of palpitations and unexplained periods of sweating. He has not had a bowel movement for the past 4 days, which is abnormal for him. Physical examination reveals increased respiratory effort and absent deep tendon reflexes in all four extremities. Muscle strength is decreased most prominently

in the distal musculature. The patient is admitted to the hospital. Nerve conduction testing shows marked slowing of motor and sensory conduction velocities. Cerebrospinal fluid analysis reveals a normal cell count and elevated protein. The patient is treated for an acute idiopathic polyneuropathy. Which of the following treatment options has been shown to decrease the likelihood of persistent neurologic deficits while enhancing the possibility of a faster recovery?

- A. Intravenous immunoglobulin
- B. Antibiotics for infection with *Clostridium jejuni*
- C. Fluids, pressors, and heparin
- D. Plasmapheresis
- E. No treatment has shown to influence the natural history of this disease

13. A 38-year-old man has a 1-year history of tenesmus, intermittent diarrhea, and constipation. He admits to tearing pain with defecation and bright red bleeding per rectum noted on the toilet tissue for the past 6 months. His prior medical history is notable for irritable bowel syndrome. Current medications include dicyclomine. Physical examination reveals descended testicles bilaterally without masses and palpable inguinal lymph nodes. Anoscopy reveals a split in the anoderm at the posterior midline. He also has evidence of a skin tag, chronic ulceration, and hypertrophied anal papillae. Which of the following is the most appropriate treatment?

- A. Ampicillin (intravenous)
- B. Metronidazole (oral)
- C. Rubber band ligation
- D. Sitz baths and dietary bulking agents containing psyllium
- E. Surgical excision and lateral anal sphincterotomy

14. An 82-year-old woman presents to her primary care physician with right wrist pain after falling 1 hour ago. She has a history of osteoporosis and coronary artery disease. Physical examination reveals point tenderness over the right distal radius and over the ulnar styloid. The right wrist is severely edematous, but the skin is intact. Anteroposterior and lateral radiographs of the right wrist are ordered and are presented below (Figure 14). What is the most likely diagnosis?

- A. Colles fracture
- B. Greenstick fracture
- C. Smith fracture
- D. Torus fracture
- E. Type IV fracture (Salter Harris) of the right distal radius

Figure 14



15. A study is performed to look at the number of false-positive results found in exercise stress tests. Two groups of people are included in the study. The control group consists of men in their thirties who do not smoke. The second group consists of men in their sixties who do not smoke. There will obviously be a higher prevalence of heart disease in the older group simply because of their age. What happens to the specificity and the positive predictive values (PPV) of a test such as an exercise stress test when the prevalence of a disease increases in the population you are looking at?

- A. Both stay the same
- B. Specificity increases, PPV decreases
- C. Specificity stays the same, PPV increases
- D. Both decrease
- E. Unable to determine with the information given

16. A 26-year-old postpartum woman presents to her primary care physician complaining of increase in redness and tenderness of her right breast. She states she is breast-feeding, but states her breast has felt different over the past few days. Physical examination reveals her temperature is 38.5°C. There is increased erythema and cracking of her right nipple when compared with the left. Results of laboratory studies are shown below:

#### Electrolytes, serum

Na, serum	143 mEq/L
Cl, serum	100 mEq/L
K, serum	3.7 mEq/L
Bicarbonate, serum	24 mEq/L
Magnesium, serum	2.0 mEq/L
Creatinine, serum	1.0 mg/dL

#### Leukocyte count and differential

Leukocyte count	12,000/mm <sup>3</sup>
Segmented neutrophils	75%
Bands	7%
Eosinophils	3%
Basophils	1%
Lymphocytes	27%
Monocytes	4%

What is the most appropriate treatment for this condition?

- A. Antibiotics and continue breast-feeding
- B. Antibiotics, ice, and stop breast-feeding
- C. Antibiotics, warm compresses, and stop breast-feeding
- D. Condition is self-limiting and requires observation
- E. Warm compresses, tight bra, oral analgesics, and stop breast-feeding

17. A 67-year-old man presents to his primary care physician complaining of a 6-month history of cough productive of sputum and pain on inspiration. He complains of rhinorrhea, occasional bloody nasal discharge, and sinus pain. He denies having a sore throat, hoarseness, nausea, vomiting, diarrhea, frequency, urgency or dysuria. Physical examination of the

eyes reveals mild injection bilaterally. Cardiac, abdominal, and neurologic examinations are unremarkable. Pulmonary auscultation reveals poor air movement consistent with pleuritic pain. Laboratory studies reveal a leukocyte count of 13,000/mm<sup>3</sup> with 70% segmented neutrophils, hemoglobin of 16 g/dL. Urinalysis reveals 25 RBCs per HPF and 3 WBC per HPF. What is the most likely diagnosis?

- A. Alveolar hemorrhage
- B. Anti-glomerular basement membrane disease
- C. Churg-Strauss syndrome
- D. Pulmonary abscess
- E. Wegener granulomatosis

18. A 19-year-old woman complains of a 12-hour history of intense rectal pain. The pain was precipitated by straining during a bowel movement, after which a small amount of bright red blood was noted on the toilet tissue. Her prior medical history is notable for seasonal allergic rhinitis and hyperthyroidism (currently on no medications). Physical examination reveals a regular rate and rhythm without rubs, murmurs, or gallops. Pulmonary auscultation reveals no rales, rhonchi, or wheezes. Abdominal examination reveals no evidence of peritoneal signs. Anoscopy reveals a small tear in the mucosa of the anorectum in the posterior midline approximately 1.5 cm from the anal verge. There is no evidence of hypertrophied anal papillae or skin tags. What is the most likely diagnosis?

- A. External hemorrhoids
- B. Fissure-in-ano
- C. Fistula-in-ano
- D. Internal hemorrhoids
- E. Proctitis

19. A 38-year-old obese woman presents to her primary care physician for a routine evaluation. She has no prior medical or surgical history. Physical examination of the heart, lungs, and abdomen are unremarkable. Results of laboratory studies are shown below:

Na, serum	123 mEq/L
Osmolarity, serum	305 mOsm/kg

What is the most likely explanation of these findings?

- A. Dehydration
- B. Hyperglycemia
- C. Hyperlipidemia
- D. Nephrotic syndrome
- E. Syndrome of inappropriate antidiuretic hormone secretion (SIADH)

20. A 9-month-old male infant is brought to the emergency department for evaluation of fever and many superficial bullae. Yesterday there were no lesions present, only areas of diffuse erythema. The bullae are rupturing shortly after they appear. Physical examination reveals that light rubbing leads to separation of the epidermis. What is the most likely explanation for these findings?



## BLOCK 1 ANSWERS

1. **A.** Modern views of the pathogenesis indicate that there is a major role for *Helicobacter pylori* in the pathophysiology of peptic ulcer disease. This urease-producing organism colonizes the gastric antral mucosa in 100% of patients with duodenal ulcer and 70% of patients with gastric ulcer. Eradication of this organism is that mainstay of therapy for ulcer disease.
 

**B.** Classic teaching regarding the pathogenesis of peptic ulcer disease considers impaired blood flow as a key contributor to this condition. Modern views of peptic ulcer disease dispute this finding.

**C.** Impaired gastric epithelial cell turnover is not felt to contribute to the current pathogenesis of ulcer disease.

**D.** Prostaglandin inhibition, while accounting for salicylate and nonsteroidal antiinflammatory agent ulcer disease, actually contributes to less than 30% of cases of gastric ulcer.

**E.** Thinning of the mucous layer may occur as a result of toxic effects of *H. pylori* on the duodenal mucosa; however, on its own it is a small contributor to the pathophysiology of peptic ulcer disease.
2. **A.** In addition to antibiotics and drainage, improving the clearance of secretions by using bronchodilators and chest physiotherapy may be beneficial.
 

**B.** Bronchoscopy and any surgery are inappropriate at this stage.

**C.** Lung transplantation is not appropriate at this stage.

**D.** Respiratory isolation is unlikely to be of benefit for this patient.

**E.** Surgical resection is not indicated at this stage.
3. **E.** This patient has symptoms of ulcerative colitis. Typical symptoms include bloody and watery diarrhea. Pregnancy does not exacerbate this disease. Inflammatory bowel disease can be associated with anal fissure disease. The fissures are typically lateral in location, in contrast to idiopathic anal fissures, which are in the midline. Severe disease is associated with an increased risk for spontaneous abortion and premature labor. Treatment consists of a low-residue diet, antidiarrheals, and sulfasalazine.
 

**A.** Appendicitis is typically associated with the acute onset of periumbilical pain, nausea, and vomiting.

**B.** Gastroesophageal reflux occurs postprandially and is associated with midepigastic pain.

**C.** Hepatitis is associated with right upper quadrant pain and elevation of liver function tests (transaminases).

**D.** Hyperemesis gravidarum is associated with protracted nausea and vomiting with pregnancy.
4. **C.** The patient described has meconium ileus and must be evaluated for cystic fibrosis. Either a sweat chloride level should be determined or the patient can undergo genetic testing for diagnosis.
 

**A.** A child that has not passed meconium within the first 24 hours needs further evaluation.

**B.** Transrectal biopsy is indicated if there is evidence of Hirschsprung disease, which would present similarly but with a dilated proximal bowel on abdominal radiograph.

**D.** A repeat abdominal radiograph is unlikely to reveal any new information. This procedure is not indicated.

**E.** This neonate is stable and does not require laparotomy. This procedure is not indicated.
5. **C.** This patient likely has testicular carcinoma. The peak incidence is between the ages of 20 and 40 years. Cryptorchid testes are at increased risk. Early orchiopexy may protect against testis cancer but not always. Seminoma accounts for 50% of cases and is the most common pathology seen. Seminoma often presents with painless enlargement of the testis. It is radiosensitive and has a high cure rate.
 

**A.** Embryonal cell carcinoma (20%) is a nonseminomatous germ cell tumor of the testis. Such tumors often present with pain in the testis or metastasis. Serum human chorionic gonadotropin levels are often increased in these individuals.

**B.** Endodermal sinus tumor (5%) is a common testis tumor in newborn males. It is extremely rare in adults.

**D.** Teratocarcinoma (20%) is a nonseminomatous germ cell tumor of the testis. It is a combination of teratoma and embryonal carcinoma.

**E.** Teratoma (15%) is a malignant nonseminomatous germ cell tumor of the testis.
6. **A.** Fibroadenoma is a lobular, firm, well-circumscribed solitary mass that is common in young females. Surgical excision is the treatment of choice in women over the age of 25. Younger patients may be treated with needle cytology and surveillance.
 

**B.** Fibrocystic change is associated with breast tenderness and swelling premenstrually. Patients with severe atypia or hyperplasia on biopsy are at risk for breast carcinoma.

**C.** Sarcoma of the breast represents a small percentage of breast cancers and is more common in women over the age of 40.

- D.** Infiltrating ductal cell carcinoma is the most common form of breast cancer. Lesions are typically hard, scirrhous, and infiltrating.
- E.** Intraductal papilloma is the most common cause of bloody nipple discharge (90% of the time) and is a benign condition. The papilloma arises from an isolated mammary duct, which should be excised.
7. **C.** This patient is likely a drug abuser. Such patients often complain of chronic pain, often related to previous trauma. Chronic back pain or other orthopedic pain related to an old injury and chronic headache are the two most common complaints. This patient only has pain relief to his analgesics of choice (pentazocine and meperidine).
- A.** This patient does not display features of chronic lumbar pain syndrome.
- B.** Physical examination reveals no evidence of deformity of the lumbar spine.
- D.** There is no history of or physical examination findings of prior lumbar spine fractures.
- E.** This patient does not have a somatiform pain disorder.
8. **D.** *Staphylococcus aureus* respiratory infections are characterized by chest pain, systemic toxicity, and dyspnea. It is typical in tracheally intubated hospitalized patients. A lobar infiltrate and gram-positive cocci in clusters is found on imaging and sputum studies, respectively.
- A.** Aspiration pneumonia is usually anaerobic, more common in alcoholics, and shows organisms with mixed morphology on Gram stain.
- B.** *Haemophilus influenzae* is common within the first 5 days of hospitalization. This organism is more common in smokers and those with chronic obstructive pulmonary disorder. Typically a lobar pneumonia will result, and pleomorphic gram-negative rods can be seen on Gram stain.
- C.** *Mycobacterium tuberculosis* infection will show white blood cells but no organisms on Gram stain.
- E.** *Streptococcus pneumoniae* will also cause a lobar pneumonia. Gram stain shows gram-positive diplococci. It is more likely to present within the first 5 days of hospitalization.
9. **A.** Alport syndrome is an X-linked-dominant condition with associated abnormalities of the basement membrane of the eye, cochlea, and glomerulus. Affected individuals have nephritis and high-frequency sensorineural hearing loss. Progression to end-stage renal disease occurs after childhood.
10. **I.** This newborn has evidence of posterior urethral valves. This is the most common obstructive urethral lesion in newborns and is found at the distal prostatic urethra. Treatment consists of valve ablation.
11. **G.** This newborn has congenital nephrotic syndrome. This condition appears within the first 6 months of life and is common in persons of Scandinavian descent. Placentomegaly is common. Proteinuria and elevated serum creatinine are typical. Unfortunately, most children die due to infection or renal failure by age 5.
12. **D.** The clinical scenario reveals a history of a patient presumably with Guillain-Barré syndrome. Even though the natural history of the disease is self-limiting in nature, plasmapheresis is the only treatment shown to both decrease the likelihood of persistent neurologic deficits and hasten recovery in the acute setting. Albumin-cytologic dissociation is the classic finding from cerebrospinal fluid analysis.
- A.** Although intravenous immunoglobulin is sometimes substituted for plasmapheresis, specifically in children and adults with cardiovascular problems, this treatment has been shown to be associated with higher rates of recurrence.
- B.** Although this disease is associated with antecedent infection with *Clostridium jejuni*, it is believed to be immunologic in nature and not associated with active infection.
- C.** Although fluids, pressors, and heparin may be needed in the acute setting, they do not affect the course of future neurologic deficits. Intravenous immunoglobulin can decrease the duration of the acute phase.
- E.** This patient would benefit most from plasmapheresis.
13. **E.** Anal fissure is a split in the midline of the posterior anoderm 90% of the time. This is the most common location of anal fissures. Symptoms of acute fissures include tearing pain on defecation and blood in the stool or on the toilet paper. Surgical therapy is reserved for chronic, non-healing fissures, and the procedure of choice is lateral sphincterotomy.
- A.** There is no role for intravenous antibiotic therapy in the management of acute anal fissures.
- B.** There is no role for oral antibiotic therapy in the management of acute anal fissures.
- C.** Rubber band ligation is an appropriate treatment for hemorrhoids.
- D.** Treatment of choice for acute fissures includes stool softeners, sitz baths, and dietary bulking agents.
14. **A.** The natural response to a fall is to extend a hand in order to decrease the impact to the rest of the body. When the outstretched limb strikes the ground, however, the distal radius is commonly fractured. This is called a Colles fracture. Radiographic assessment of this type of fracture commonly shows fracture of the distal radius with or without a fracture line and dorsal angulation.

Figure 14



**B.** Like a torus fracture, a greenstick fracture is found in children and also is an incomplete break. In this case, the long bone resembles an immature branch that has been broken and is subsequently bowed. One surface will have displacement while the other will have a curved appearance.

**C.** A Smith fracture is also a fracture of the distal radius but with volar angulation of the distal fragment. This fracture also occurs after a fall onto an outstretched hand.

**D.** A torus fracture can be easily differentiated from other fractures of the distal radius. You will find a curve in the straight edge of the distal radius as you trace its edge. Indeed, this curved disruption is the buckle that results from a bending force. In the upper extremity, this can result from a fall on an outstretched hand; in the lower extremity, this can result from jumping or falling from greater than 6 feet above the ground. These fractures are frequently found in children.

**E.** The Salter-Harris Classification defines five types of epiphyseal fractures. Salter-Harris type IV is an epiphyseal break in which the fracture line runs from the joint surface through the epiphyseal plate, epiphysis, and metaphysis. There is no involvement of the epiphysis in our patient's radiograph.

15. **C.** Sensitivity and specificity of a test do not change. They are fixed regardless of the population's disease status. This makes them much less useful clinically because they assume you already know whether the patient has the disease. Positive and negative predictive values are much more useful clinically because they change according to the prevalence of disease in a population. A good clinician uses this to his or her advantage. For example, it is not a good idea to get a stress test on someone in their twenties or thirties without many risk factors because the number of false positives in this age group is high due to the low prevalence of disease.

**A.** Sensitivity stays the same.

**B.** Positive predictive value increases.

**D.** Sensitivity stays the same and positive predictive value increases.

**E.** Sensitivity stays the same and positive predictive value increases.

16. **A.** Mastitis can be treated with oral antibiotics, commonly dicloxacillin; patients should continue to breast-feed to prevent intraductal accumulation of infected material. The condition is generally unilateral. The usual cause is *Staphylococcus aureus*. There are two forms: sporadic and epidemic.

**B** and **C.** Patients are encouraged to continue breast-feeding.

**D.** Antibiotics are the treatment of choice for mastitis.

**E.** Antibiotics are warranted for mastitis as well as the continuance of breast-feeding.

17. **E.** Wegener granulomatosis is a systemic vasculitis that involves the upper and lower respiratory tracts and kidneys. A presentation dominated by pulmonary findings is not unusual. Some patients are asymptomatic. Other typical symptoms include polyarthralgias or myalgias, oral or nasal ulcerations, and palpable purpura or petechiae.

**A.** Alveolar hemorrhage often presents acutely with significant hemoptysis.

**B.** Anti-glomerular basement membrane disease is found in younger male patients and is a rapidly progressive glomerulonephritis.

**C.** The significant morbidity of Churg-Strauss syndrome is caused by coronary arteritis and myocarditis. Other associations include eosinophilia and asthma.

**D.** Pulmonary abscess typically presents with fever and night sweats. Associated abnormalities on chest x-ray range from lobular consolidation with air bronchograms to diffuse patchy interstitial infiltrates.

- 18. B.** Acute onset of perirectal pain associated with straining and blood on the toilet tissue suggests the diagnosis of fissure-in-ano. Risk factors for the development of this condition include straining during bowel movements, constipation, and anal intercourse. Ninety percent of cases occur in the posterior midline, while the remainder occur in the anterior midline. Medical treatment includes stool softeners, dietary bulk, and sitz baths. Surgical treatment is reserved for chronic, nonhealing fissures.

**A.** External hemorrhoids are abnormally dilated anal veins below the dentate line. They may show a skin tag and occasionally erode through the skin.

**C.** Fistula-in-ano describes perianal pain and a mass in the perianal skin associated with discharge of liquid from the perianal area.

**D.** Internal hemorrhoids are veins with mucosa above the dentate line. They are prone to prolapse and bleeding.

**E.** Proctitis may be either inflammatory or caused by radiative exposure. Inflammatory diseases might include ulcerative colitis, whereas radiation proctitis is noted following radiotherapy. Treatment for both conditions might involve steroids and steroid enemas.

- 19. B.** Hyperglycemia will cause a hypertonic hyponatremia due to an excess of osmotically active particles in serum. When blood glucose becomes acutely elevated, water is drawn from the cells to the extracellular space, diluting the serum Na and increasing serum osmolality. Infusion of hypertonic solutions containing osmotically active osmoles (e.g., mannitol) may also cause this. This patient gives no history of taking any medicines, drugs, or radiocontrast agents, so the onset of diabetes mellitus with hyperglycemia.

**A.** Dehydration is a hypovolemic hypotonic hyponatremia. Urine Na will be less than 10mEq/L and the patient will show signs of fluid deprivation.

**C.** Hyperlipidemia (or hyperproteinemia) will cause an isotonic hyponatremia because plasma osmolality is unaffected by lipids or proteins. A decreased volume of water results, so that the Na concentration in total plasma volume is decreased. Because the Na concentration in the plasma water is actually normal, this situation is usually called a pseudohyponatremia.

**D.** Nephrotic syndrome is a hypervolemic hypotonic hyponatremia. The kidneys are working ineffectively and Na and water are retained, producing edema and a urine Na of less than 10mEq/L.

**E.** SIADH will cause a hypotonic hyponatremia. This is usually a euvolemia and in such a situation, determinations of urine osmolality and urine Na can be useful to help determine a diagnosis. SIADH is usually a disease of the CNS that results in increased production of ADH and resulting hyponatremia, decreased serum osmolality, inappropriately increased urine osmolality, and urine Na greater than 20mEq/L.

- 20. B.** The key to this scenario is bullae that rupture almost immediately after they appear. This is indicative of staphylococcal scalded skin caused by *Staphylococcus aureus*. This rash begins with diffuse erythema followed 12 to 24 hours later by bullae that enclose sterile fluid. After rupturing, the lesions leave a red, weeping surface. A positive Nikolsky sign (epidermal separation upon light rubbing) is also an associated feature. This microbe can also cause bullous impetigo, but this rash begins as macules that lead to bullae with an erythematous base. *Staphylococcus aureus* can be cultured from fluid within the lesions. Bullous impetigo can unfortunately be confused with child abuse because it may resemble cigarette burns.

**A.** This presentation is not typical for *Haemophilus influenzae*.

**C.** This presentation is not typical for beta-hemolytic streptococcus. This agent is a common cause of pharyngitis.

**D.** This presentation is not typical for *Sarcoptes*. Scabies is an infection of the skin by a contagious mite and results in pruritus.

**E.** This presentation is not typical for *Strongyloides*. These infections are uncommon in the United States.

- 21. B.** This patient has an imperforate hymen. She has never had a menarche/menses because the imperforate hymen has not allowed her menses to egress. She should have started menarche well within the past four years because thelarche occurred at age 9 (breast bud formation), and indeed she did, but her menses did not pass on account of the imperforate hymen blocking its path. This would be a case of primary amenorrhea. Hematocolpos is an accumulation of menstrual blood because of an obstruction of the introitus.

**A.** A Bartholin gland cyst would be on one side of the introitus and exquisitely painful.

**C.** Rectocele is unlikely because she is so young. This would be distention of the rectum through the vagina.

**D.** Child sexual abuse must always be suspected and is to be reported to the correct authorities when it is suspected. This is not the most likely choice from this history and presentation.

**E.** Uterine prolapse typically occurs after multiple child-births.