Q-1
A 27-yr-old office manager with a history of generalized anxiety has had multiple recent visits to the physician for a several month history of fatigue. Evaluation thus far has revealed a normal physical examination and laboratory studies that are within normal limits. The serum TSH level 2.4 microunits/ml. Inquiring about the specific symptoms of depression on the last visit yielding the diagnosis of depression and treatment options were discussed with her. On this visit she shows frustration that a medical etiology of her fatigue cannot be identified and she demands to see the clinical notes of her last several visits. Which of the following would be the most appropriate response the physician could make.

A. Agree to show her records only after she undergoes treatment for her depression.
B. Arrange to review her clinical records with her as soon as possible.
C. Discuss her case with the lawyer prior to showing her the medical records.
D. Explain her that physician patient confidentiality prohibits her from seeing the records.
E. Immediately make copies of her medical records to be reviewed by her at her convenience.

EXPLANATION
The correct answer is B. The patient’s medical record is technically their property, and, as such, they may ask to review it at any time. Much of the documentation in the chart may be unclear to patients, however, and may be potentially misconstrued. For this reason, it is always best to first offer to review the patient’s chart with them.

Whereas the patient’s judgement about the content of the medical record may be affected by her depression, there is no justification for waiting until she begins treatment to show her the record (choice A).

Lawyers may be helpful at times to manage risk in the clinical setting, but there is no indication in this case for consulting a lawyer (choice C). As stated above, it is the patient’s legal right to see her medical chart. Furthermore, telling the patient that she must await a lawyer’s consultation before seeing the record may injure an already tenuous relationship.

Physician-patient confidentiality laws (choice D) protect the patient from third parties having access to their record and do not limit the patient’s access to their own record.

Making copies of the medical record without offering to review it with her is (choice E) a suboptimal choice because of the lost chance to fully explain the clinical reasoning and the potential to worry the patient or cause her undue emotional stress.
Q-2
A 30-hour infant has not passed meconium since birth. He was full-term with a birth weight of 3856 gm (8 lb 8 ounce). The pregnancy was uncomplicated. The baby appears well without respiratory distress. Slight abdominal distention is noted. Rectal examination reveals slightly tight rectum and results in a greenish gush of stool. Which of the following tests will confirm the likely diagnosis.

A. Stool culture.
B. Rectal biopsy.
C. Barium enema.
D. Alpha-1 anti-trypsin level.
E. Serum TSH level.

EXPLANATION
The correct answer is B. Hirschsprung disease or congenital aganglionic megacolon is caused by a congenital absence of the ganglion cells of both the Meissner and Auerbach plexuses. It is the most common cause of lower intestinal obstruction in the neonatal period. In early childhood it may present as chronic constipation with intermittent fecal soiling. It occurs predominantly in males and there is an increased family incidence. Surgical treatment is indicated, but the diagnosis is confirmed by a suction biopsy that can be easily performed without general anesthesia. The biopsy would reveal an absence of ganglion cells in the submucosal and myenteric plexuses.

A stool culture (choice A) would be performed if one was entertaining a bacterial cause of gastroenteritis, especially in a hospitalized patient. However vomiting, diarrhea, and abdominal distention in a newborn are unlikely to be caused by gastroenteritis, especially in this case with a tight sphincter noted on rectal examination.

A barium enema (choice C) may be indicated in suspected cases of Hirschsprung disease, but it is the biopsy that makes the diagnosis. The barium enema in this case of Hirschsprung disease revealed a dilated proximal bowel with evidence of a contracted distal rectum.

An alpha1-antitrypsin level (choice D) would not be indicated in this case. It is obtained when one suspects an alpha1-antitrypsin deficiency. Affected infants would present with jaundice, acholic stools, and hepatomegaly.

A serum TSH (choice E) would be performed if a newborn infant were thought to have hypothyroidism. In the U.S., most states have mandatory newborn screening for thyroid disease. Frequently, congenital hypothyroidism is asymptomatic, but it may present with symptoms of constipation, lethargy, poor feeding, mottling, and prolonged jaundice. The typical features in this case are more suggestive of Hirschsprung disease.
A 17-yr-old adolescent is brought to the hospital by the police after being stopped for driving too slowly. He denies any use of alcohol but seems slow, he is laughing inappropriately and complaining of being hungry. He has a dry mouth, his gait is somewhat slow and co-ordination is impaired. There is significant conjunctival injection, which he tries to explain by saying "it is due to pollen allergy". Which of the following drug will most likely appear on a urine drug screen.

A. Amphetamines.
B. Benzodiazepines.
C. Cocaine.
D. Opiates.
E. Tetrahydrocannabinol.

EXPLANATION

The correct answer is E. Cannabis intoxication is usually characterized by sensitivity to external stimuli, subjective slowing down, impairment of motor skills (including problems with operation of motor vehicles), conjunctival injection, dry mouth, tachycardia, and increased appetite.

Amphetamine intoxication (choice A) produces maladaptive behavior, as well as two or more of the following: pupillary dilatation, weight loss, perspiration, changes in blood pressure, psychomotor changes, changes in heart rate, muscular weakness, seizures, and coma.

Benzodiazepine intoxication (choice B) usually results in behavioral disinhibition, euphoria, slurred speech, incoordination, nystagmus, memory impairment, and stupor or coma.

Cocaine intoxication (choice C) includes maladaptive behavior (euphoria, hypervigilance, anxiety, or anger), tachycardia, elevated blood pressure, nausea, weight loss, pupillary dilatation, psychomotor changes, seizure, confusion, muscular weakness, and coma.

Opiate intoxication (choice D) involves maladaptive behavior, pupillary constriction, slurred speech, impaired attention and memory, and drowsiness or coma.
A 31-yr-old woman smashes her car against a bridge abutment. She sustains multiple injuries including upper and lower extremity fractures. She is awake and alert and reports that she was not wearing a seatbelt and distinctly remembers hitting her abdomen against the steering wheel. Blood pressure is 135/75 and her pulse is 88. Physical examination shows that she has a rigid tender abdomen with guarding and rebound in all four quadrants and there is no bowel sounds. Which of the following is the most appropriate next step in evaluating potential intra-abdominal injuries.

A. Continued clinical observation.
B. CT-scan of the abdomen.
C. Sonogram of the abdomen.
D. Diagnostic peritoneal lavage.
E. Exploratory laparotomy.

EXPLANATION

The correct answer is E. The presence of an "acute abdomen," which this woman has, is an indication for exploratory surgery and prompt repair of the injuries (probably affecting hollow viscera) that have produced the signs of peritoneal irritation.

Continued clinical observation (choice A) would be irresponsible when it is clinically obvious that she already has an acute abdomen. What would one observe for? Development of septic shock? Death?

CT scan (choice B) is ideal when the issue is potential intraabdominal bleeding in a hemodynamically stable patient who can be safely sent to the radiology department. CT scan might even be a good idea if the picture of acute abdomen were equivocal. But it is not needed here.

Diagnostic peritoneal lavage (choice D) or sonogram done in the emergency department (choice C) are our options when we suspect intraabdominal bleeding and the patient is too unstable to be sent anywhere. As pointed out above, however, when an acute abdomen has clearly developed, it is time to operate.
Q-5

A 12-yr-old child is brought to his pediatrician for routine health maintenance visit. He has been well except for occasional attacks of asthma and has met all developmental milestones. His immunizations are up-to-date. He occasionally uses theophyline for his asthma. Physical examination is remarkable for a blood pressure of 150/90 in both arms. Which of the following is the most likely cause of his hypertension.

A. Chronic lung disease.
B. Coarctation of aorta.
C. Congenital heart disease.
D. Renal disease.
E. Theophyline toxicity.

EXPLANATION

The correct answer is D. Renovascular disease is the most frequent cause of hypertension in young children. Ailments such as polycystic kidney disease, congenital vascular disease, tumors and infections can all lead to hypertension, and a urologic evaluation is imperative.

Chronic lung disease (choice A) would not elevate the blood pressure. Associated symptoms would include dyspnea, cyanosis, and symptoms of right heart failure.

Coarctation of the aorta (choice B) can cause hypertension, but is a less common cause of the disease in this age group. Blood pressure measurement in all the extremities would be helpful in the diagnosis.

Congenital heart disease (choice C) such as an atrial septal defect or ventricular septal defect is rare, and would be associated with dyspnea, cyanosis, murmurs and general ill health.

Theophyline toxicity (choice E) would be associated with jitteriness, nausea or tachycardia.
Q-6
A 52-yr-old patient with a history of emphysema spends a two-week vacation on a cruise ship. Shortly after returning home he becomes lethargic, disoriented and has fever. His wife describes that he is short of breath and has been coughing since his return to home, she also describes that he vomited several times in the last 48-hours and has had diarrhea. On physical examination he appears lethargic but arousable, oriented to current date, he has loud ronchi in both lung fields. His abdominal examination reveals mild tenderness over the liver edge, there is no splenomegaly or ascites. His neurological examination is non-focal. Lab results are notable for AST 112 U/L and ALT 157 U/L. Which of the following is the most appropriate treatment for this patient.

A. IV ceftazidime.
B. IV erythromycin.
C. IV gentamycin.
D. IV nafcillin.
E. IV vancomycin.

EXPLANATION

The correct answer is B. This patient, who has just returned from a cruise, has developed symptoms of toxicity in association with confusion, pulmonary findings, gastrointestinal complaints, and liver function test abnormalities. This should suggest the diagnosis of Legionnaires pneumonia, which he acquired through the ventilation system on the ship. These patients may appear quite toxic, and immediate initiation of therapy is essential since diagnosis using direct fluorescent antibody assays may take several days. Sputum Gram’s stain in these patients is usually unrevealing of the Legionella pneumophila organism.

Ceftazidime (choice A) and gentamicin (choice C) are antibiotics effective against gram-negative organisms but are not used in treatment of Legionella.

Vancomycin (choice E) is used in patients with staphylococcal infections that are resistant to the nafcillin (choice D) family of antibiotics. These drugs have no role in the management of Legionnaires disease.
A malnourished, middle aged, homeless male is brought to the ER. He is disoriented to time, place and person and unable to walk without assistance. His temperature is 37 C (98.4 F), blood pressure is 134/80, pulse is 86 and respirations 18. Neurological examination reveals lateral nystagmus, evaluation of sensation and strength cannot be performed. Which of the following is the most appropriate next step in management.

A. Administration of IV diazepam.
B. IV administration of glucose.
C. IV infusion of thiamine.
D. Toxicologic studies.
E. Neuroimaging studies.

EXPLANATION

The correct answer is C. The clinical picture is consistent with Wernicke-Korsakoff syndrome. Wernicke encephalopathy is characterized by nystagmus progressing to ophthalmoplegia, truncal ataxia and confusion. Korsakoff syndrome refers to alcohol-related amnesia and confabulation. Wernicke-Korsakoff syndrome is due to vitamin B1 deficiency, which is often seen in chronic alcoholics. This deficiency results in degeneration of periaqueductal gray matter. An alcoholic patient presenting with these symptoms should be treated with parenteral thiamin, 50-100 mg/day for the first few days followed by oral thiamin. Therapeutic doses of other water-soluble vitamins should also be administered because of the frequent concomitance of multiple vitamin deficiencies.

Administration of diazepam (choice A) is useful for treatment of alcohol withdrawal, which manifests with agitation and seizures.

Intravenous glucose infusion (choice B) should be avoided. This may in fact precipitate or aggravate a clinical picture of Wernicke encephalopathy in patients with thiamin deficiency.

Toxicological screening (choice D) and neuroimaging studies (choice E) would be of no use in this clinical situation.
Q-8
Which of the following medical intervention is an example of primary prevention?

A. Isolation of disease contacts.
B. Mammography.
C. Immunization.
D. Screening for visual acuity.
E. Testing of stool for occult blood.

EXPLANATION

The correct answer is C. Primary prevention requires implementation of a procedure when the disease is not present even in a presymptomatic phase. Routine immunization of individuals at risk, whether children or adults, is primary prevention.

Isolation of disease contacts is tertiary prevention (choice A).

Mammography is a form of secondary prevention (choice B) where the early or presymptomatic recognition of disease is involved.

Visual screening is a screening test and a form of secondary prevention (choice D).

Occult blood testing in stool is a form of secondary prevention as well (choice E).
A 27-yr-old homeless man presents to the ER complaining of fever, rigors and a productive cough for the past 24-hours. He admits to have used IV heroine 24-hours earlier. He has ronchi in both lower lung fields posteriorly. Xray chest reveals bilateral lobar consolidation, with an air fluid level in the lower lobe. Sputum gram staining reveals gram-positive cocci in clusters and associated many polymorph leukocytes. Which of the following is the most appropriate next step in management.

A. Begin therapy with oral dicloxacillin.
B. Begin therapy with ampicillin 4-times daily.
C. Initiate therapy with oral erythromycin.
D. Initiate therapy with IV erythromycin.
E. Initiate therapy with IV nafcillin.

EXPLANATION

The correct answer is E. This IV drug user has a classic description of a Staphylococcus aureus pneumonia with cavitation and a diagnostic Gram’s stain. Appropriate therapy would be to admit the patient for IV nafcillin. His sputum should also be cultured to determine sensitivity. If the patient fails to improve with IV nafcillin, or his sputum culture demonstrates resistance to nafcillin, the appropriate next therapy would be IV vancomycin.

Oral antibiotics, such as dicloxacillin (choice A), ampicillin (choice B), and erythromycin (choice C) are not appropriate in this patient, who has a devastating, potentially fatal, pneumonia (with a 30% to 40% mortality rate) that is actively destroying his lungs.

Staphylococcus aureus is one of the notoriously drug-resistant organisms, and IV erythromycin (choice D) is not consistently active against this organism. If a penicillinase-resistant penicillin, such as nafcillin, cannot be used because of reason of patient allergy, suggested alternative drugs include a first or second (but not third) generation cephalosporin or clindamycin. Methicillin-resistant Staphylococcus aureus can be treated with IV vancomycin.
A 34-yr-old woman complains of difficulty swallowing both liquids and solids for the past 6-months. She has a history of hypertension and Raynaud’s phenomenon. Physical examination reveals tight skin on the face and on the dorsal surface of both hands. Which of the following manometric findings will most likely be found in this patient.

<table>
<thead>
<tr>
<th>PERSISTENCE OF PRESSURE IN BODY OF ESOPHAGUS</th>
<th>PRESSURE IN THE LES</th>
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<tbody>
<tr>
<td>A. Decreased</td>
<td>Normal</td>
</tr>
<tr>
<td>B. Decreased</td>
<td>Increased</td>
</tr>
<tr>
<td>C. Increased</td>
<td>Decreased</td>
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<tr>
<td>D. Decreased</td>
<td>Decreased</td>
</tr>
<tr>
<td>E. Increased</td>
<td>Increased</td>
</tr>
</tbody>
</table>

EXPLANATION

The correct answer is D. Scleroderma (progressive systemic sclerosis) is an important disease in which a variety of body tissues can undergo fibrosis. The most obvious of these is the skin, which produces the tight thick skin seen on this patient’s hands and face. Internally, the esophagus is particularly susceptible to this fibrotic process, which will destroy the ability of the esophagus to undergo peristalsis, because of both the loss of muscle and the stiffening by fibrosis. Typical manometric findings in these patients are diminished or absent peristalsis in the body of the esophagus with a greatly reduced resting lower esophageal sphincter (LES) pressure. Scleroderma patients are at significant risk for severe gastroesophageal reflux disease (GERD) and its complications.

Choices A and C are not typical of any condition you need to remember.

Associate the findings illustrated in Choice B with achalasia.

Associate the findings illustrated in Choice E with symptomatic diffuse esophageal spasm.
Q-11
A 14-yr-old boy is evaluated for short stature. He has no significant past medical history and is considered healthy otherwise by his parents. He eats a normal diet and takes regular meals. His height and weight have been consistently below the fifth percentile since childhood. His physical examination is normal with genitilia at tanner stage 3. Which of the following is most likely abnormal laboratory finding for this boy.

A. Bone age that is equivalent to chronologic age.
B. Decreased complement C3 levels.
C. Decreased serum albumin concentration.
D. Decreased TSH concentration.
E. Decreased serum creatinine concentration.

EXPLANATION
The correct answer is A. This boy most likely has familial short stature (FSS). Children with FSS usually have a normal birth weight and length. At the age of 2-3 years, however, their growth begins to decelerate and drops to around the 5th percentile. The onset and progression of puberty in children with FSS are normal. Bone age is typically consistent with the chronologic age.

A decreased complement C3 level (choice B) may suggest chronic inflammatory disorders. But, the lack of any signs or symptoms makes any chronic inflammatory disorder unlikely.

A decreased serum albumin concentration (choice C) can be secondary to a variety of conditions, such as nephrotic syndrome and malnutrition. But, the lack of supportive history and physical examination data makes these conditions unlikely.

Decreased thyroid stimulating hormone (choice D) suggests hyperthyroidism as the etiology of the boy’s short stature, but it is highly unlikely in this case.

An increased serum creatinine level (choice E) indicates renal failure, but this is inconsistent with the child’s history and physical examination.
Q-12
A 36-yr-old woman with a history of alcoholism presents to the ER intoxicated. On physical examination she is confused, disoriented, has ataxia, dysarthria and oculomotor paralysis. Which of the IV substances should be administered first.

A. Glucose.
B. Haloperidol.
C. Lorazepam.
D. Thiamine.
E. Valproic acid.

EXPLANATION
The correct answer is D. This patient appears to have Wernicke encephalopathy, which is due to a deficiency of thiamine that is quite common in chronic alcoholics. Symptoms of Wernicke encephalopathy include oculomotor disturbances, cerebellar ataxia, and mental confusion. Treatment consists of giving thiamine, 100 mg IV or IM, along with magnesium sulfate given before loading with glucose. Treating with glucose (choice A) before giving thiamine has the potential to exacerbate Wernicke encephalopathy because of the metabolism of glucose in the brain.

Haloperidol (choice B) is an antipsychotic medication that is not generally indicated for use in nonpsychotic alcoholics.

Lorazepam (choice C) is a benzodiazepine that is of use in preventing the withdrawal symptoms of delirium tremens, but treating the patient’s encephalopathy is of greater priority.

Valproic acid (choice E) is an anticonvulsant used to control seizures. It is not indicated for use in an alcoholic patient whose pregnancy status is unknown and whose history of seizures from delirium tremens is unknown.
A 6-month old infant presents to the ER with a new onset of weak cry, decreased activity and poor feeding. The mother also states that the infant has been constipated for the past two days. On physical examination the infant has a very weak cry, poor muscle tone and absent deep tendon reflexes. Which of the following is the most likely diagnosis.

A. Congenital hypothyroidism.
B. Guillian-Barre syndrome.
C. Infant botulism.
D. Myasthenia gravis.
E. Vaccine associated poliomyelitis

EXPLANATION

The correct answer is C. Infant botulism results from the production of toxin after colonization of the gastrointestinal tract by Clostridium botulinum in young children aged 1-9 months. The most common source of the organism is the soil or, less frequently, honey. Nearly all cases are due to types A or B. The incubation period is usually between 18 and 36 hours. Short incubation periods are associated with more severe disease. The disease spectrum varies considerably, but the most commonly recognized form is the "floppy baby syndrome." Initial symptoms are lethargy, diminished suck, constipation, weakness, feeble cry, and diminished spontaneous activity with loss of head control. These symptoms are followed by extensive flaccid paralysis. The case fatality rate is only 1%. The bulbar musculature is usually affected first. In older children, it results in diplopia, dysarthria, and dysphagia. Involvement of the cholinergic autonomic nervous system may result in decreased salivation, with dry mouth and sore throat, ileus, or urinary retention. Neurologic evaluation often shows bilateral paresis of the 6th cranial nerves, ptosis, dilated pupils with sluggish reaction, decreased gag reflex, or medial rectus paresis. These symptoms are followed by descending involvement of motor neurons to peripheral muscles, including the muscles of respiration. Patients are usually afebrile with clear mentation. The most common cause of death is respiratory failure. The spectrum of disease is quite variable; some patients have mild disease, whereas others have severe paralysis requiring mechanical ventilation. Respiratory failure is the major risk, and patients must be monitored carefully with liberal use of ventilatory support. Toxins can be removed from the gastrointestinal tract by gastric lavage, cathartics, and enemas early in the course of disease. The trivalent antitoxin or type-specific antitoxin for types A, B, and E is usually given only to adults. Infants with botulism should not receive either antibiotics directed against C. botulinum or antitoxin, because most do extremely well with supportive care alone and it has been suggested that antibiotics may cause toxin release. Honey has been implicated as a vehicle for spores and should not be fed to infants younger than 1 year.
Congenital hypothyroidism (choice A), or cretinism, manifests as impaired development of the skeletal system and CNS. It is associated with severe mental retardation, short stature, coarse facial features, a protruding tongue, and umbilical hernia.

Guillain-Barré syndrome (choice B) presents with weakness that develops symmetrically over several days. The weakness typically occurs first in the legs and ascends with time to involve the muscles of the trunk, intercostals, upper extremity, and neck. Muscles innervated by cranial nerves are also involved. Respiratory paralysis can lead to death within hours to days.

Myasthenia gravis (choice D) is a disorder of the neuromuscular junction resulting in a pure motor syndrome characterized by weakness and fatigue, particularly of the extraocular, pharyngeal, facial, cervical, proximal limb, and respiratory musculature. Fifteen percent of infants born to myasthenic mothers have neonatal myasthenia gravis because of the transplacental passage of acetylcholine receptor antibodies. The condition completely resolves in weeks to months.

Vaccine-associated poliomyelitis (choice E) is exceedingly rare; only eight or nine cases are reported yearly. Most symptomatic cases have nonspecific manifestations of infection. Illness is biphasic, and paralysis occurs in the second phase. Paralytic disease occurs with rapid onset, involving the cranial nerves, arms, and legs.
Q-14
A 48-yr-old woman with a long history of hepatitis C is admitted for hematemesis (vomiting blood). She is stabilized in the ER and endoscopy reveals a bleeding esophageal varices. On examination she also has moderate amount of ascites. Which of the following is the most appropriate next step in the management of her bleeding.

A. Alpha-interferon.
B. Vasopressin.
C. Endoscopic variceal banding.
D. TIPS (transjugular intrahepatic porto-systemic shunt).
E. Liver transplant.

EXPLANATION

The correct answer is C. When varices are seen, the immediate appropriate management is banding of these varices, which will usually immediately lead to cessation of bleeding. Esophageal sclerotherapy is also effective but is associated with a higher instance of post-procedure complications, such as esophageal ulceration, stricture, and bacteremia.

Preoperative interferon (choice A) is not effective at all in the management of variceal bleeding. It is a component of therapy for hepatitis B and hepatitis C.

Vasopressin (choice B) is a vasoconstrictor that reduces portal pressures, but it is not the first-line of therapy in control of variceal bleeding.

TIPS (transjugular intrahepatic portosystemic shunt) (choice D) is used as an intrahepatic shunt to divert blood flow from the portal venous system to the systemic venous system.

Liver transplantation (choice E) is used only in patients with variceal bleeding who cannot be controlled by any other means.
Q-15
A 39-yr-old man comes to the medical attention because of a one-year history of personality changes, abnormal involuntary movements, and memory dysfunction. His father and grand father died in their fifties because of progressive mental deterioration accompanied by movement abnormalities. Patient is married but has no children. Neurological examination and psychometric testing reveals difficulty in concentration, mild depression, and marked restlessness. During the examination grimacing of the face and intermittent shrugging of the shoulders is noted. MRI examination of the brain shows hyperintensity in the region of caudate on T2-weighted image. Which of the following is the most likely diagnosis:

A. Creutzfeldt-Jacob disease.
B. Gilles de la tourette syndrome.
C. Huntington disease.
D. Sydenham chorea.
E. Tardive dyskinesia.

EXPLANATION
The correct answer is C. The clinical manifestations and family history are consistent with Huntington disease. This autosomal dominant condition is caused by an unstable expansion of a CAG trinucleotide repeat in a gene encoding a novel protein named huntingtin. The age of clinical onset is commonly between 30 and 50 years, but may be as early as 5 years. Behavioral abnormalities and personality changes often precede the characteristic choreiform movements. Irritability, restlessness, and difficulty in concentration are among the most frequent early clinical manifestations. The pathologic substrate of this condition is degeneration of the striatal neurons, especially those in the caudate nucleus. Caudate nucleus changes may be appreciated on MRI examination or PET scans.

Creutzfeldt-Jacob disease (choice A) is characterized by rapidly progressive dementia associated with myoclonic movements. The disorder is familial in 10% to 15% of cases. It is probably caused by spontaneous mutations of the gene coding for prion protein.

The onset of Gilles de la Tourette syndrome (choice B) is usually between 2 and 15 years of age. Motor or phonic tics are the principal manifestations, including sniffing, blinking, spitting, grunts, coughs, and coprolalia.

Sydenham chorea (choice D) is one of the major Jones criteria for the diagnosis of rheumatic disease.

Tardive dyskinesia (choice E) is a late complication of antipsychotic drugs that block dopamine D2 receptors. It most commonly manifests with persistent chewing movements and intermittent protrusion of the tongue.
Q-16
A 51-yr-old man presents to his physician for evaluation of risk for heart disease. Patient is very concerned about his chance of a heart attack because his father died at age 53 from massive infarction. The patient reports that he eats well and exercise regularly and has been told by his workplace screening program that he has a normal cholesterol level. On questioning he tells that he has previously smoked one pack for about 20-years but quit two years ago. How many years this patient must have stopped smoking before his tobacco use no longer counts as a risk factor.

A. 1 year.
B. 5 Years.
C. 10 Years.
D. 15 Years.
E. 20 Years.

EXPLANATION

The correct answer is D. The major cardiac risk factors are family history, age, tobacco use, hypertension, diabetes, and low HDL. Tobacco use counts, even if it is no longer current, for 15 years.
Q-17
A 24-yr-old student presents to the university health clinic because of intermittent non-productive cough and wheezing. She usually have these complains around the time of menses and has no other pulmonary symptoms. The episode usually last 3-4 days and resolve spontaneously. She has no significant past medical history and smokes only at dinner parties usually at every few months. She uses no medication except for iboprufen for severe menstrual cramping. On physical examination she appears well but mildly tachypneic. On lung examination there are high pitched expiratory wheezes in both lung fields and moderately impaired air movements, the flow measured at 90 L/min (normal >250 L/min). Chest x-ray film is normal. Which of the following best explains the patients bronchospasm.

A. Decreased leukotriene production.
B. Increased cyclooxygenase production.
C. Increased leukotriene production.
D. Increased production of prostaglandins.
E. Increased prostacyclin production

EXPLANATION

The correct answer is C. The only risk factor for reversible bronchospasm described in this patient is the use of a nonsteroidal anti-inflammatory drug (NSAID) for premenstrual cramps. In fact, her symptoms do occur at the time of her period, relating it temporally to the use of NSAIDs. Aspirin or NSAIDs can provoke bronchospasm by inhibiting cyclooxygenase expression, which results in greater shunting of arachidonic acid metabolism through the lipoxygenase pathway. This results in the production of leukotrienes, which are potent bronchoconstrictors. The inhibition of cyclooxygenase leads to reduced production of prostaglandins and prostacyclins.

Choice A is wrong because the leukotriene production would be increased.
Choice B is wrong because cyclooxygenase expression is decreased.
Choice D is wrong because the prostaglandin synthesis would be decreased.
Choice E is wrong because the prostacyclin production would be decreased.
Q-18
A 31-yr-old woman with known HIV presents to her physician with a 3-month history of watery diarrhea, severe weakness and 22 lbs weight loss. Multiple stool tests for bacteria, parasites and ova are repeatedly negative. Colonoscopy is normal as are the biopsies of the colon. Which of the following is the most likely explanation for her diarrhea.

A. Cryptosporidiosis.
B. Cytomegalovirus infection.
C. Entamoeba histolytica.
D. Enterotoxigenic E.coli.
E. Shigella dysenteriae.

EXPLANATION
The correct answer is A. This patient has a typical small bowel-type diarrhea, seen in HIV with watery diarrhea, weakness, and weight loss. The most common etiology for this syndrome is cryptosporidiosis infection of the small intestine, where the spores can be seen on the tips of the villi on biopsy. This organism can be demonstrated with special culture media. Other organisms in the same family, such as microsporidia and Isospora belli, produce identical syndromes.

Cytomegalovirus (choice B) can cause gastrointestinal disease in AIDS patients, but is more likely to involve the esophagus, stomach, or colon. Symptoms of CMV involvement of the gastrointestinal tract in these patients include epigastric pain, nausea and recurrent vomiting, diarrhea, and upper and lower gastrointestinal bleeding.

Entamoeba histolytica(choice C) does not produce a small intestinal diarrheal syndrome, as in this patient. It more typically causes an ulcerative ileocolitis. It can also cause hepatic abscesses. There is no history in this patient to suggest an amebic infection, such as travel to endemic areas.

Enterotoxigenic Escherichia coli(choice D) produces a watery illness in patients with a history of recent travel. It is usually short-lived and infrequently requires antibiotics.

Shigella dysenteriae(choice E) produces a colitis-type diarrhea, with bloody stools in association with lower abdominal cramping and tenesmus.
Q-19
A one-day-old infant appears dusky in the newborn nursery during feeding. Oxygen is immediately administered by nasal cannula. Shortly afterwards she developed tachypnea. On physical examination her blood pressure from right upper arm is 50/30, her pulse is 180 and her respirations are 60. An echocardiogram is consistent with hypoplastic left heart syndrome. Which of the following will most likely be found on auscultation.

A. Continuous ductal murmur, bounding pulses.
B. Continuous ductal murmur, poor peripheral pulses.
C. Holosystolic murmur, Poor peripheral pulses, quite second heart sound.
D. No murmur, pericardial hyperactivity, loud second heart sound.
E. No murmur, pericardial hyperactivity, quite second heart sound.

EXPLANATION
The correct answer is D. Hypoplastic left heart (HLH) syndrome is a group of closely related cardiac anomalies characterized by underdevelopment of the left cardiac chambers, atresia or stenosis of the aortic and/or the mitral orifices, and hypoplasia of the aorta. These anomalies are an especially common cause of heart failure in the 1st week of life. The left atrium and ventricle often exhibit endocardial fibroelastosis. Pulmonary venous blood traverses a patent foramen ovale, and a dilated and hypertrophied right ventricle acts as the systemic, as well as pulmonary, ventricle; the systemic circulation receives blood by way of a patent ductus arteriosus. Infants who have HLH syndrome develop poor perfusion, and metabolic acidosis when systemic blood flow decreases. When the ductus closes, inadequate blood flow to the body occurs because the ductus is the only path for blood to flow from the right ventricle to the body. Even if the ductus remains open, when the infant is given oxygen, the oxygen will dilate the vasculature of the pulmonary circulation, and blood will preferentially flow to the lower pressure pulmonary system, depriving the systemic circulation of adequate perfusion.

ECG usually shows right axis deviation, right atrial and ventricular enlargement, and nonspecific ST and T-wave abnormalities in the left precordial leads. Chest radiography may show only slight enlargement shortly after birth, but with clinical deterioration there is marked cardiomegaly with increased pulmonary vascular markings. Echocardiography is diagnostic and will show a diminutive aortic root and left ventricular cavity and absence or poor visualization of aortic and mitral valves.
An infant with HLH syndrome has a hyperdynamic precordium because the enlarged right ventricle is contracting against systemic pressure. The infant also has a loud, or even palpable, second heart sound (S2) because the pulmonary artery acts as the aorta by pumping blood to the systemic circulation through the ductus arteriosus. The high end-systolic pressure markedly enhances S2. The flow from the right ventricle to the pulmonary artery is not turbulent; therefore, there is usually no significant murmur heard on auscultation. When the ductus closes, or when the pulmonary vasculature resistance falls, the flow to the systemic circulation will decrease, causing greatly diminished peripheral pulses.

Management includes infusion of prostaglandin E1 and administration of room air while on a ventilator. Prostaglandin E1 may open the ductus arteriosus and restore systemic blood flow. Administration of room air or even hypobaric oxygen (FiO2 less than 21%) and the use of muscle relaxants can prevent hyperventilation and subsequent pulmonary vasodilation, thus reversing systemic hypoperfusion and metabolic acidosis.
A 69-yr-old patient is admitted to the neurology service following a stroke. During the next few days the staff observes that the patient develops the clinical picture of mania. Which area of the brain is most likely been affected by the stroke.

A. Left hemispheric region including the Broca's area.
B. Left prefrontal cortex.
C. Midbrain.
D. Right frontal lobe.
E. Thalamus.

EXPLANATION

The correct answer is D. Post-stroke mania is a rare phenomenon usually seen in infarctions of right frontal lobe and sometimes other parts of the right hemisphere.

Left hemispheric lesions including Broca's area (choice A), are sometimes associated with the development of catastrophic reactions that include restlessness, hyperemotionality, irritability, and sudden outbursts of emotion.

Stroke in the left prefrontal cortex (choice B) is associated with the development of depression in more than 20% of stroke victims within the first 6 months.

Midbrain lesions (choice C) are associated with dreamlike hallucinations called peduncular hallucinosis.

Thalamic strokes (choice E) are associated with pain syndromes and an altered level of consciousness.
Q-21
A 37-yr-old man with chronic paranoid schizophrenia is being interviewed by a fourth year medical student. In the middle of describing how he feels that other people are out to kill him, patient suddenly stops talking and begins staring in space. Approximately 20-seconds later he start talking about how his mother was not a very good parent and was excessive in her discipline in his childhood. Which of the following terms best describes this behavior.

A. Echolalia.
B. Echopraxia.
C. Mutism.
D. Satyriasis.
E. Thought blocking.

EXPLANATION

The correct answer is E. Thought blocking is the sudden repression of anxiety-provoking thoughts in mid-sentence. It is a common finding in many individuals with schizophrenia. Often, when the patient begins speaking again, it is concerning something unrelated to the topic before the pause in conversation and thought.

Echolalia (choice A) is the psychopathologic repetition of words or phrases of one person by another, and tends to be repetitive and persistent.

Echopraxia (choice B) is the pathologic imitation of movements of one person by another.

Mutism (choice C) is psychopathologic voicelessness of a patient over an extended period of time, in the absence of phonetic structural abnormalities.

Satyriasis (choice D) is the excessive and compulsive need for coitus in a man. Its corollary in a female is termed nymphomania.
Q-22
A 32-yr-old woman has a 15-year history of heart burn. Over the past 4-months she has difficulty in swallowing large bites of solid food. She has no difficulty with soft food and liquids and she has not lost weight. Which of the following is the most likely explanation for her symptoms.

A. Adenocarcinoma of the lower third of the esophagus.
B. Barret's esophagus of the distal esophagus.
C. Fibrosis and narrowing of the distal esophagus.
D. Schatzki's ring in the distal esophagus.
E. Squamous carcinoma of the middle third of the esophagus.

EXPLANATION

The correct answer is C. This patient has classic symptoms of mechanical dysphagia, as she has difficulty with large solid food but not softer foods or liquids. Mechanical dysphagia frequently follows many years of heartburn and is often indicative of a peptic stricture that has developed as a result of fibrosis after a long period of chronic inflammation due to gastroesophageal reflux disease (GERD). These benign strictures can usually be dilated endoscopically. An intensive regimen of proton-pump inhibitors should then be instituted to reduce the frequency of recurrence.

Although chronic acid reflux can predispose for Barret’s esophagus (choice B) and then subsequently adenocarcinoma (choice A), Barret’s esophagus is a mucosal change only that would not cause lumenal narrowing. Furthermore, adenocarcinoma would be very unusual in a patient this young.

Schatzki ring (choice D) is unlikely, since it typically produces episodic mechanical dysphagia rather than the progressive mechanical dysphagia described in this question.

Squamous carcinoma (choice E) in the mid-third of the esophagus can produce mechanical dysphagia. However, this patient is far younger than the usual patient with squamous carcinoma, and she has no risk factors, such as smoking, drinking, lye ingestion, or upper esophageal web (Plummer-Vinson syndrome).
Q-23
A 49-yr-old woman who is being treated with chemotherapy after surgery for breast cancer presents to the ER of the local hospital. She has just started taking prochlorperazine for nausea the day before. Her husband brings her in because she is acting bizarrely over the past 24-hours with waxy flexibility and mutism. She has no previous psychiatric history. Her physical examination, lab studies and vitals are all within normal limits. Which of the following is the most appropriate pharmacotherapy.

A. Alprazolam.
B. Benztropine.
C. Haloperidol.
D. Methylphenidate.
E. Valproic acid.

EXPLANATION
The correct answer is B. Prochlorperazine (Compazine) is frequently used to treat nausea and emesis in some patients. Side effects of this medication, including extrapyramidal reactions (e.g., catatonia), are treated best by antiparkinsonian medications such as benztropine.

Alprazolam (choice A) is a benzodiazepine used to treat anxiety and withdrawal symptoms.

Haloperidol (choice C) is an antipsychotic medication, which, if given to this patient, would probably exacerbate her current symptoms.

Methylphenidate (choice D) is a stimulant used to treat attention deficit/hyperactivity disorder (ADHD).

Valproic acid (choice E) is an anticonvulsant used as a mood stabilizer in psychiatry.
Q-24
A 41-yr-old man presents with a two-week history of anorexia, fever and weight loss. He is otherwise healthy and has not seen a physician lately but recently has his cleaned. He is on no medications and has no allergies and drinks alcohol only occasionally and denies IV drug use. On physical examination he appears ill with a temperature of 38.9 °C (102 F) and a few petechiae in both eyes. There is a 3/6 systolic ejection murmur consistent with mitral regurgitation and a pericardial rub. Blood is drawn and sent to the laboratory for culture. Which of the following is most likely to confirm the diagnosis.

A. ECG.
B. Transthoracic echocardiogram.
C. Stress test.
D. Transesophageal echocardiogram.
E. Cardiac catheterization.

EXPLANATION

The correct answer is D. The patient’s history and physical examination are consistent with subacute bacterial endocarditis. The most effective diagnostic modality would be a transesophageal echocardiogram (TEE) in order to determine whether this patient has a valvular vegetation.

An ECG (choice A) will be useful to follow this patient for any evolving cardiac conduction delay. In the initial evaluation, it will help assess extent of conduction damage from the infection but will be of little help in the original diagnosis.

A transthoracic echocardiogram (TTE) (choice B) would be appropriate if a TEE were not possible. However, a TTE is much less sensitive than a TEE.

A stress test (choice C) would be useful for risk-stratifying a patient with chest pain and coronary artery disease. If this patient was not febrile and was complaining of stable chest pain, a stress test could be conducted to assess the risk of a cardiac event.

Cardiac catheterization (choice E) would show the vegetation but is too invasive. This option is usually reserved for patients with an acute coronary syndrome arising from occlusion of a coronary artery.
Q-25
A 79-yr-old man weighing 75 kg with emphysema is intubated in intensive care for respiratory failure after developing adult respiratory distress syndrome after an E.coli bacteremia which developed due to an untreated UTI. Ventilator is set to 20 breaths/min with a tidal volume of 750 ml/breath and a PO2 of 100%. If these settings are continued for the next 72-hours the patient have most increased risk of which of the following complications.

A. Congestive heart failure.
B. Jugular venous distention.
C. Pulmonary embolus.
D. Pulmonary fibrosis.
E. Tension pneumothorax.

EXPLANATION
The correct answer is D. High concentrations of inspired oxygen delivered through a ventilator may lead to pulmonary fibrosis, which becomes irreversible. In the setting of adult respiratory distress syndrome (ARDS), if the inspired fraction of oxygen cannot be lowered without producing hypoxia, the addition of positive-end expiratory pressure (PEEP) is indicated. Although PEEP does increase the risk of both barotrauma and hypotension by impairing right-sided heart filling, it is indicated to prevent the development of oxygen toxicity, which may result in irreversible pulmonary fibrosis.

Congestive heart failure (choice A) can occur as a complication of the patient’s longstanding underlying pulmonary disease, but the incidence would not likely be increased because of his ventilator settings.

Jugular venous distension (choice B) can be a marker for either right heart congestive failure (see choice A discussion) or tension pneumothorax (see choice E discussion), but would not be a likely complication of a high PO2.

Pulmonary embolus (choice C) would more likely be related to prolonged bed rest with resultant venous thrombosis.

Tension pneumothorax (choice E) would be more likely to occur if the tidal volume were significantly greater than 750 mL/breath (corresponding to the optimal flow rate of 10 mL/kg).
Q-26

Ocular examination is performed on a patient during routine medical checkup. Retinal examination demonstrates generalized retinal arteriolar constriction. The light reflex on arterioles is broad and dull, two areas of flame shaped hemorrhages and multiple cotton wool spots are also seen. These findings are most suggestive of which of the following.

A. Central retinal artery occlusion.
B. Central retinal vein occlusion.
C. Hypertensive retinopathy.
D. Non-proliferative diabetic retinopathy.
E. Proliferative diabetic retinopathy.

EXPLANATION

The correct answer is C. The changes illustrated are those of hypertensive retinopathy, and may additionally include yellow hard exudates (due to lipid deposition in the retina) and a congested and edematous optic disk. Basically, what happens is that the eye tries to protect itself from the hypertension first with arteriolar constriction, and then with time, thickening of the arteriolar walls (producing the broad light reflex). The cotton wool spots are actually small, superficial foci of retinal ischemia, which occur when the arterioles squeeze down too hard. The hemorrhage and deposits occur because of vessel damage with leakage of contents. Hypertensive retinopathy can be seen in chronic essential hypertension, malignant hypertension, and toxemia of pregnancy. Treatment of the retinopathy is with control of the hypertension. (Practically, progression can be stopped and the hemorrhages will resolve, but the vessel changes remain.)

Central retinal artery occlusion (choice A) usually presents with sudden, unilateral blindness and produces a pale opaque fundus with a red fovea.

Central retinal vein occlusion (choice B) can cause painless visual loss and produces a congested and edematous fundus with numerous hemorrhages. The arteriolar changes of hypertensive retinopathy are not present.

Nonproliferative diabetic retinopathy (choice D) also causes hemorrhage and exudates in the retina, but additionally has distinctive microaneurysms (visible as red dots).

Proliferative diabetic retinopathy (choice E) has the changes of nonproliferative diabetic retinopathy with the addition of neovascularization with vessel growth into the vitreous.
A 12-month old infant presents with bilious vomiting and abdominal distention for 10-hours. His mother states that the infant has been constipated since birth and failed to pass meconium during the first 48 hours of life. On physical examination the infant is very irritable, both his length and weight are below fifth percentile according to his age. His abdomen is moderately distended. After a digital rectal examination, a fair amount of stool ejects out from the anus. Which of the following is most likely diagnosis.

A. Duodenal atresia.
B. Intussusception.
C. Hirschsprung disease.
D. Malrotation.
E. Pyloric stenosis.

EXPLANATION

The correct answer is C. This infant has Hirschsprung disease, or congenital aganglionic bowel disease. It is five times more common in boys than in girls. It results from congenital absence of ganglion cells in either part of or the entire wall of the colon, resulting in a state of chronic contraction. In most cases, the aganglionic segment is limited to the rectosigmoid colon. In very rare cases, part of or the entire small bowel can be aganglionic as well. Biliious or feculent vomiting, abdominal distention, and constipation are the classic clinical signs. There might also be a history of failure to pass meconium in the first 48 hours of life. If only a short segment of the colon is involved, Hirschsprung disease might not be evident until in childhood or adolescence. Megacolon proximal to the aganglionic segment might be visible on barium enema. The diagnosis is confirmed with the demonstration of an aganglionic segment of the bowel on punch biopsy.
Duodenal atresia (choice A) usually presents with vomiting. A "double bubble" sign is seen on abdominal radiography. Thirty to forty percent of cases are associated with Down syndrome.

Intussusception (choice B) is certainly in the differential diagnosis of vomiting and abdominal distention. In this case, however, the history of failure to pass meconium in the newborn period and failure to thrive is much more suggestive of Hirschsprung disease. Intussusception occurs when one segment of the bowel telescopes into another segment just distal to it. The most common site of intussusception is the ileocolic junction.

Malrotation (choice D) is usually caused by the presence of a volvulus, which presents with sudden onset of bilious vomiting, abdominal distention, rectal hemorrhage, peritonitis, and shock. It is a surgical emergency.

Pyloric stenosis (choice E) usually presents with projectile vomiting in the first 2 or 3 weeks of life. On examination, an olive-shaped mass is usually palpable in the epigastric area. It is caused by hypertrophy and hyperplasia of the antrum of the stomach, resulting in obstruction. It occurs in 1 of 150 boys and in 1 of 750 girls.
Q-28

A 32-yr-old woman is brought to the ER by the police for psychiatric evaluation. The officers found her in the street naked and masturbating. She denies any recent drug use. She is however very irritable and pressured speech. When questioned further she states that she had sex with 10 different men in past three days because she felt that she is too beautiful to not share her sexuality. Which of the following is most likely disorder.

A. Dysthymic disorder.
B. Heroin abuse.
C. Mania.
D. Partial complex seizures.
E. Schizophrenia.

EXPLANATION

The correct answer is C. This patient has evidence of hypersexuality, which is one of the many symptoms of mania encountered in patients with bipolar disorder. Other symptoms of mania include grandiosity, impulsivity, irritability, insomnia, and elevated mood.

Dysthymic disorder (choice A) is characterized by depressed mood, more often than not, over the course of at least 2 years.

Heroin abuse (choice B) does not manifest with hypersexuality; rather, patients with heroin abuse tend to show signs of slowed activity because of opioid action, with a thin, gaunt appearance and associated lethargy and anorexia.

Partial complex seizures (choice D) can present with bizarre behaviors and symptoms, such as olfactory or gustatory hallucinations or brief psychosis, but hypersexuality is not typically one of the behaviors induced.

Schizophrenia (choice E) is a thought disorder. This diagnosis requires the presence of auditory hallucinations, flattening of affect, and social autism over the course of at least 6 months.
Q-29

A 26-yr-old man presents to his primary care physician complaining that he is more and more afraid to leave his house because he is having frequent anxiety attacks that occur without warning. He is worried that he will have attack at some time when he is in public. Which of the following is the most appropriate medication in the acute situation.

A. Buspirone.
B. Chlorpromazine.
C. Clonazepam.
D. Mitrazepine.
E. Trifluoperazine.

EXPLANATION

The correct answer is C. This patient’s symptoms suggest that he has panic disorder, which is most appropriately treated acutely with a benzodiazepine with a medium length half-life and duration of action, such as clonazepam.

Buspirone (choice A) is an antidepressant medication that has not been shown to be effective in the treatment of panic attack.

Chlorpromazine (choice B), mirtazapine (choice D), and trifluoperazine (choice E) are all antipsychotics that are not indicated for treatment of panic attacks.
A 34-yr-old international investment banker presents with a 3-month history of frequent stools preceded by left lower quadrant abdominal pain. For the past 6-weeks the stools have become increasingly bloody. On a number of occasions he has had a sensation of rectal fullness but unable to pass any fecal matter. He travels excessively and has been to Asia, India, Pakistan, Sweden and Germany in past year working on telecommunication infrastructure deals. On physical examination he has mild tenderness in left lower quadrant. Rectal examination reveals grossly bloody stools. Sigmoidoscopy reveals inflammation extending in symmetrical and circumferential manner from anal verge to the distal ascending colon. Stool tests are negative for bacteria and parasites. Which of the following is most likely cause of patient's symptoms.

A. Crohn's disease.
B. Cytomegalovirus infection.
C. Ischemic colitis.
D. Ulcerative colitis.
E. Yersinia enterocolitis.

EXPLANATION

The correct answer is D. This patient has the typical subacute or chronic history of bloody diarrhea in association with left lower quadrant cramping. He also describes sensations of tenesmus. Although he has traveled extensively, multiple stool tests are negative for infectious etiology. Pathologically, ulcerative colitis is characterized by inflammation and often superficial ulceration that occur without skip lesions, beginning at the anal verge and extending varying distances proximally.

Crohn disease (choice A) may produce a colitis but is more typically associated with right lower quadrant symptoms and ileitis.

Cytomegalovirus (choice B) may cause a picture indistinguishable for ulcerative colitis but is usually seen only in immunocompromised patients, e.g., those with HIV who have low CD4 cell counts.

Ischemic colitis (choice C) is usually a segmental colitis and does not usually start at the anal verge. It is more commonly seen in elderly patients or in those with hypercoagulable disorders.

Yersinia enterocolitica(choice E) may produce diarrhea, infrequently bloody. However, Yersinia favors invasion of the terminal ileum and produces the acute onset of right lower quadrant symptoms.
Q-31

A 36-yr-old man with a history of alcoholism is admitted to the hospital with an overdose of acetaminophen. His wife found him unresponsive on the sofa and was brought to the ER and at that time he was found to have toxic levels of acetaminophen in his blood. Trachea was intubated at that time and he was admitted to the intensive care unit. Patient survived first 48-hours of hospitalization with supportive care and was successfully extubated. He is now awake and clinically much improved except for markedly elevated liver enzyme levels and a rising prothrombin time. Depletion in which of the metabolic substances is causing these new laboratory findings.

A. Alcohol dehydrogenase.
B. Catalase.
C. Glutathione.
D. Glycogen.
E. Vitamin K.

EXPLANATION

The correct answer is C. The patient most likely is experiencing the effects of acetaminophen overdose. After a large overdose of acetaminophen, the metabolism of the drug results in the formation of mercapturic acid, a metabolite that can be excreted safely if conjugated to glutathione. When glutathione levels are depleted, reactive metabolites are instead formed that bind covalently to hepatocytes and cause cell lysis, a process that may lead to fulminant hepatic failure.

Alcohol dehydrogenase (choice A), the enzyme responsible for the metabolism of alcohol, may in fact be elevated in this man, who has a known history of alcohol abuse.

Catalase (choice B) is an antioxidant that reacts with peroxide molecules and should not necessarily be affected in this case.

Glycogen (choice D) and vitamin K (choice E), although possibly depleted in this case, are not the proximate or ultimate cause of the elevated hepatic enzymes and rising prothrombin time.
Q-32
A 9-yr-old boy presents with a 3-month history of sudden awakenings at night. His mother states that when he wakes up suddenly he screams “go, get away, go” and does not respond to the parents, his eyes wide open and sweats heavily and looks scared. The parents have struggled to awaken him after the episode. He has no memory of what happened. Which of the following is most likely diagnosis.

A. Confusional arousals.
B. Night terrors.
C. Nightmares.
D. Obstructive sleep apnoea.
E. Panic disorder.

EXPLANATION

The correct answer is B. Night terrors are a form of parasomnias. Parasomnias refer to unusual behaviors that occur in the context of sleep, specific sleep stages, or in connection with arousal from sleep. Night terrors are most common in children aged 4-12 years and typically occur within the first several hours of sleep. They are characterized by the child suddenly crying out, sitting up in bed with a terrified look, crying inconsolably, perhaps thrashing about, and exhibiting evidence of increased autonomic arousal with enlarged pupils, tachycardia, rapid breathing, and sweating. These episodes typically last only a few minutes, and the child then returns to sleep, with no memory of the events the next morning. Night terrors are believed to be disorders of arousal from non-REM sleep (stage 3 and 4), in which motor behavior occurs, but conscious awareness and memory of the action are not present. They are more likely to take place during periods of illness, stress, or sleep deprivation, but they can happen without any obvious associated stress. Those subject to night terrors or somnambulistic events should avoid sleep deprivation, which can increase the likelihood of their occurrence. Most children with infrequent night terrors grow out of them with maturity and usually require no specific treatment. Clinicians should thoroughly explain the phenomenon to the parents and reassure them that the child is well. The expected eventual remission of the problem should be emphasized. Parents are encouraged not to awaken the child, but to allow the episode to run its course. If the child is not awakened, he or she will return to normal sleep at the end of the episode. If the child thrashes about wildly during the episode, the parents should provide protection from injury at that time.
Confusional arousals (choice A) start gradually (unlike a full sleep terror in older individuals, which begins precipitously), with moaning progressing to crying, sitting, and thrashing. The children are difficult to arouse and do not respond to comforting, but when allowed to return to sleep, they do not typically remember the event the next morning.

Nightmares (choice C) are frightening dreams that awaken the child from REM sleep. The child becomes fully awake and is scared. He or she usually can recall details of the dream.

Obstructive sleep apnea (choice D) manifests as apneic episodes during sleep in which the patient awakens suddenly. Affected patients usually are obese.

Panic disorder (choice E) is characterized by recurrent panic attacks, which initially may occur spontaneously and, over time, may develop in a number of agoraphobic situations. The patient may experience a sense of terror or fear associated with a panic attack, including concerns about dying, going crazy, or losing control.
Q-33

A 28-yr-old woman presents to the clinic for the first time with symptoms of major depressive disorder lasted for several weeks. She requested for medication because apart from feeling low and tired she feels distracted, forgetful and unable to focus on her work. She told that she has been diagnosed with attention deficit hyperactivity disorder and dyslexia as a child and has been given methylphenidate. Which of the following therapeutic agent would be most appropriate for the treatment.

A. Alprazolam.
B. Buproprion.
C. Lithium.
D. Olanzapine.
E. Paroxetine.

EXPLANATION

The correct answer is B. Buproprion is an antidepressant with both dopaminergic and noradrenergic properties that would essentially help this patient not only improve depression but also cognitive functioning related to her prior history of attention deficit/hyperactivity disorder.

Alprazolam (choice A) is a benzodiazepine with a rapid onset of action and a relatively short metabolite half-life. It has strong anxiolytic properties. Even though initially it was claimed to have antidepressant properties too, its highly addictive potential prevents it from wider and long-term use.

Lithium (choice C) is a mood stabilizer with potential use for treatment of aggression in attention deficit/hyperactivity disorder. Lithium appears to be effective only as an adjunct in the treatment of depressive disorder. Its long-term use may cause cognitive impairment.

Olanzapine (choice D) is an atypical antipsychotic with some mood stabilizing properties. It has not been used solely for treatment of depression.

Paroxetine (choice E) is a selective serotonin reuptake inhibitor (SSRI). Although it is effective in most patients, its anticholinergic properties might impair cognitive function more in this case.
Q 34
A 75-yr-old woman comes to the physician because of irregular vaginal bleeding. She has been post-menopausal for the past 25-years but has noted off and on spotting for the last 2-years and she finds it intolerable. She has a complicated past medical history and has hypertension, diabetes and COPD. Examination is unremarkable and endometrial biopsy is performed which demonstrates an endometrial polyp with cells that are difficult to grade. Which of the following is the most appropriate next step in management.

A. Hormone replacement therapy.
B. Oral contraceptive pills.
C. Hysteroscopy.
D. Laparoscopy.
E. Hysterectomy.

EXPLANATION
The correct answer is C. This patient is likely having irregular spotting secondary to the polyp. Endometrial polyps are projections of endometrial tissue that protrude into the endometrial cavity. They can be seen in women of any age, but are most commonly seen in perimenopausal women. This problem should be addressed for 2 reasons: 1. The bleeding per vagina is distressing to the patient. 2. There are some atypical cells from the biopsy that may represent cancer and polyps can contain malignant cells within them. Therefore, the polyp should be removed. The question then becomes how best to remove it. A hysteroscopy can be performed under monitored anesthesia care (MAC), an approach that provides adequate anesthesia without requiring the patient to have general anesthesia. It would be preferable to avoid general anesthesia in a patient with so many medical conditions. Hysteroscopy would allow visualization of the entire uterine cavity and removal of the polyp. A curettage should be performed afterward to fully sample the cavity.

Hormone replacement therapy (choice A) would not be the most appropriate next step. First, the polyp must be removed and histologic evaluation of the polyp and endometrial tissues performed to rule out malignancy prior to instituting hormone replacement therapy.

The oral contraceptive pill (choice B) would not be appropriate management for a 75-year-old woman, as the dose of hormones is higher than necessary.

Laparoscopy (choice D) would not be indicated. This patient is having spotting, which is an intrauterine process. Laparoscopy allows visualization of only the external, serosal uterine surface.

Hysterectomy (choice E) would not be the most appropriate management. Hysterectomy would take care of the patient’s spotting and would provide tissue for pathologic diagnosis. However, in this patient with multiple medical problems, the same goals can be achieved with the less invasive procedure of hysteroscopy.
Q-35
A 44-yr-old woman is recovering from mild episode of acute ascending cholangitis secondary to choledocolithiasis. When seen initially she had a spiking fever, leukocytosis and a very high alkaline phosphatase but all these findings subside rapidly after she was placed on IV antibiotics. A sonogram of upper right quadrant on the day of admission showed gallstones in the gall bladder but the diameter of the biliary duct was normal. It was assumed that she has passed a common duct stone and plans to do an endoscopic retrograde cholangiopancreatogram were cancelled. While awaiting for elective cholecystectomy she again developed fever, leukocytosis and her LFTs show minimal elevation of her bilirubin to 2.5 mg/dl and alkaline phosphatase to 115 U/l. Repeat sonogram show no changes in her biliary ducts but now there is a 6-cm abscess in right lobe of liver. Which of the following is the most appropriate treatment for this new development.

A. Metronidazole.
B. Long term IV antibiotics.
C. ERCP and biliary drainage.
D. Percutaneous drainage of liver abscess.
E. Open surgical resection of right lobe of liver.

EXPLANATION

The correct answer is D. Liver abscess complicating biliary tract disease is described as "pyogenic" abscess (to contrast it with amebic abscess), and it requires drainage like any abscess anywhere else in the body. The percutaneous route is favored.

Metronidazole (choice A) is the therapy of choice for amebic abscesses of the liver, and that condition represents the only exception to the rule that all abscesses have to be drained. However, this is not an amebic abscess. Amebic abscesses are seen in men (4 to 1 ratio compared with women) who come from Mexico, where the disease is very common.

Long-term antibiotics (choice B) will not reach and sterilize an abscess. Abscesses have to be drained.

Endoscopic retrograde cholangiopancreatogram (ERCP) (choice C) is often urgently needed to treat acute ascending cholangitis, but it will not do anything for a liver abscess.

Resection (choice E) is not needed for a liver abscess. Drainage is enough.
Q-36
A 25-yr-old of eastern Europe of Jewish descend is being evaluated for right hip fracture and splenomegaly. He reports recurrent attacks of acute bone pains for the last five years. Complete blood count shows erythrocyte count of $2 \times 10^6$ /mm$^3$, leukocyte count of $3,300$/mm$^3$, platelet count $70,000$/mm$^3$. X-ray film demonstrates multiple osteolytic lesions in the vertebral columns and femurs. Bone marrow aspirate reveals clusters of histiocytes showing fibrillary cytoplasm with a typical crumpled tissue paper appearance. The fibrillary material is cytoplasm is PAS positive. Which of the following is the most effective treatment for the following condition.

A. Administration of pyridoxine and folate.
B. Administration of hematin.
C. Allogenic bone marrow transplantation.
D. Cytotoxic drugs and hydroxyurea.
E. High carbohydrate diet.
F. Replacement therapy with ealglucerase.
G. Splenectomy.

EXPLANATION
The correct answer is F. Clinical manifestations and biopsy results are consistent with Gaucher disease, caused by deficiency of the enzyme glucocerebrosidase, which results in progressive accumulation of glucocerebroside within lysosomes of histiocytes. In the most common adult variant (type I), the most severely affected organs are the bone marrow, liver, and spleen. Bone marrow involvement accounts for progressive pancytopenia and bone fractures. Splenomegaly contributes to thrombocytopenia and anemia. The diagnosis is established by determination of glucocerebrosidase levels in circulating leukocytes. However, bone marrow biopsies are frequently performed to define the extent of marrow involvement. The most characteristic morphologic findings are Gaucher cells, large histiocytes with their cytoplasm engorged with glycolipid. In the US, the disease is most common among Ashkenazi Jews (of Eastern European origin). In the past, the treatment of this condition was limited to splenectomy (choice G), which ameliorates thrombocytopenia and anemia, but does not affect the other clinical manifestations, in particular bone fractures and hepatic dysfunction. A recent advance in therapy is a commercially available modified glucocerebrosidase named alglucerase. This agent is effective and safe, but extremely expensive. One-year therapy with alglucerase at the currently recommended regimen costs about $350,000. Recent studies indicate that lower dosages may be equally effective and lower the annual cost to $100,000.
Administration of pyridoxine and folate (choice A) is the most effective treatment to prevent mental retardation and recurrent thrombosis in those cases of homocystinuria that are due to deficiency of cystathionine β-synthase (approximately 50% of cases).

Administration of hematin (choice B) has been recently introduced in the treatment of acute intermittent porphyria, which manifests with recurrent attacks of abdominal pain and neuropsychiatric abnormalities. An effective and more practical therapeutic approach is a high-carbohydrate diet (choice E).

Allogeneic bone marrow transplantation (choice C) would not provide any benefit in Gaucher disease, since the underlying genetic defect is present in all cells of the organism.

Cytotoxic drugs such as hydroxyurea (choice D) are not useful for Gaucher disease. Hydroxyurea is frequently used in the therapy of chronic myelogenous leukemia, essential thrombocytosis, polycythemia vera, and sickle cell disease.
Q-37

A 35-yr-old man comes to the physician for health maintenance examination. He received blood transfusion for hypovolemic shock following a gunshot wound 10-years earlier. He is in good health and physical examination is unremarkable. A serum chemistry panel shows ALT 250 U/L, AST 140 U/L, alkaline phosphatase 70 U/L. Serologic evaluation against viral hepatitis shows positive antibodies to hepatitis C virus. A percutaneous liver biopsy shows marked portal inflammatory infiltrate disrupting the limiting plate of hepatic lobule. Which of the following is the incidence rate of this complication after Hepatitis C virus infection.

A. 5%
B. 10%
C. 20%
D. 40%
E. 80%

EXPLANATION

The correct answer is E. The acute infection due to hepatitis C virus (HCV) is most commonly asymptomatic, but 80% of these cases progress to chronic hepatitis. Of the 80%, 20% will eventually evolve to cirrhosis. The source of infection remains unknown in a substantial number of cases, but 50% are related to IV drug abuse and 4% are attributable to blood transfusion. HCV, on the other hand, is now the most common cause of transfusion-associated hepatitis. The mode of presentation of chronic hepatitis C is often insidious, and patients might well be in good health when elevated aminotransferases are discovered. This laboratory finding prompts additional investigations, usually including a percutaneous liver biopsy. This will demonstrate the typical histologic changes of chronic hepatitis, namely chronic portal inflammation eroding, to varying extents, into the hepatic lobule. The degree of lobular “invasion” by the portal inflammatory infiltrate is the main indicator of the propensity for evolution to cirrhosis. Male sex, infection after age 40, and alcohol consumption are risk factors for evolution of chronic hepatitis C to cirrhosis. Nowadays, HCV is considered the most common cause of chronic hepatitis and one of the most common causes of cirrhosis in industrialized countries.
Q-38
A 35-yr-old woman comes to the physician for a periodic health maintenance examination. She has no complains but she is concerned that she hardly ever feel happy, she says that she has been down for at least 3-years. She rarely goes out with friends and basically herself to her work. She says that her work performance has been stable. She usually feels tired and blah. Which of the following is the most likely diagnosis.

A. Antisocial personality disorder.
B. Cyclothymic disorder.
C. Depression.
D. Dysthymic disorder.
E. Schizoeffective disorder.

EXPLANATION

The correct answer is D. This patient has dysthymia, which is a milder, chronic form of depression. The diagnosis requires 2 years of a depressed mood. It may be associated with changes in appetite, sleep, and concentration, and with fatigue and hopelessness. Treatment is psychotherapy and antidepressant therapy.

Antisocial personality disorder (choice A) is a pattern of behavior that is characterized by a complete disregard of the rules of society. These individuals lie, steal, and endanger others. They rarely feel remorse and typically end up in prison.

Cyclothymic disorder (choice B) is characterized by recurrent and chronic episodes of hypomania and dysthymia. It is a less severe form of bipolar disease.

Depression (choice C) is characterized by a depressed mood, changes in sleep, energy, concentration, and appetite. Other findings are guilt, hopelessness, anhedonia, and psychomotor agitation or retardation. A major depressive episode requires five or more of these symptoms for at least 2 weeks. There is severe distress and functional impairment. It is more severe than dysthymia.

Patients with schizoaffective disorder (choice E) have psychotic episodes with a mood disturbance. This patient is not experiencing psychotic episodes.
Q-39
A 61-yr-old woman presents to her physician for her first physical examination in 10-yrs. She states that she has been in excellent health, does not drink or smoke and exercises by running three miles daily. She is a retired accountant and has three grown children. She has been taking estrogen replacement therapy since menopause and has been taking 81 mg daily after reading about it's cardioprotective effects in the newspaper. On physical examination she appears well, her blood pressure is 122/76, pulse is 70 and respirations are 14. She is afebrile, her head and neck examination is normal, there is no jugulovenous distension. Her lungs are clear. On cardiac examination she has a regular S1 and S2 and a I/IV crescendo blowing diastolic murmur is heard at the aortic area. Abdominal examination is normal. Rectal examination noted no masses and her stool examination is guaic-negative. Which of the following is most likely explanation of cardiac findings on physical examination.

A. Prior bacteroides infection.
B. Prior E.coli infection.
C. Prior gonococcal infection.
D. Prior hemophilis ducreyi infection.
E. Prior streptococcal infection.

EXPLANATION

The correct answer is E. This patient has findings of asymptomatic aortic insufficiency on physical examination. This lesion may result from a number of causes, several of which are infectious in etiology. Aortic insufficiency may result as a sequela of rheumatic heart disease, which occurs as an immunologic response to a streptococcal infection. Acute rheumatic fever is typically characterized by cardiac involvement that may cause pericarditis, myocarditis, or endocarditis. Often, the initial cardiac manifestations are asymptomatic and become apparent only years later with the development of cardiac valvular disease.

Bacteroides (choice A) is a gram-negative anaerobe of intestinal origin, which, likewise, does not cause cardiac disease.

Escherichia coli(choice B), an enteric gram-negative organism, very rarely causes any form of cardiac involvement.

Treponema pallidum, the etiology of syphilis, may cause aortic insufficiency in its tertiary stages. However, sexually transmitted diseases with this, Neisseria gonorrhoeae (choice C), and Haemophilus ducreyi(choice D) have no cardiac manifestations.
Q-40

A 19-yr-old woman consults an allergist about constant nasal stuffiness she experiences. She has a variety of pets in her house including fish, dogs and a cat. Blood screening demonstrates elevation of eosinophils and IgE. Patient undergoes extensive skin testing which demonstrates marked sensitivity to cat dandruff. Which of the following is the preferred treatment for her cat allergy.

A. Chlorpheniramine maleate.
B. Cromolyn nasal spray.
C. IM diphenhydramine HCL.
D. Allergen immunotherapy.
E. Get rid of the cat.

EXPLANATION

The correct answer is E. Unfortunately for many patients who are attached to their towns, houses, jobs, and pets, the preferred and most effective treatment for allergies is avoidance of the allergen. In the case of pet allergies, the most effective method of avoidance is to give the family pet away.

Chlorpheniramine maleate (choice A) is an alkylamine type H1 blocker that is commonly used for relief of allergy symptoms.

Cromolyn nasal spray (choice B) acts by inhibiting mast cell granule release and is used prophylactically for control of allergy symptoms.

IM diphenhydramine HCL (choice C) is usually reserved for potential anaphylactic reactions, such as during a blood transfusion reaction.

Allergen immunotherapy (choice D), commonly called "allergy shots", is sometimes (but not always) helpful in desensitizing individuals to particular antigens.
Q-41
A 54-yr-old man presents to his physician with two days history of cough and fever. His past medical history is significant for mild asthma and peripheral vascular disease. He takes albuterol meter dose inhaler as needed and has never been intubated for his asthma. His PVD manifest as calf claudication and has been stable for the past few years. His other medications include atenolol, lisinopril and quinine. He has no drug allergies and denies any rigors, chills, nausea and vomiting and pleuritic chest pain. On physical examination he appears well with an occasional cough, temperature is 38°C (100.4°F), blood pressure is 158/84, pulse is 90 and regular, respirations are 22 and somewhat labored. His lungs have bibasilar crackles and a questionable area of increased dullness at the right base. Rest of the examination is unremarkable. Which of the following intervention at this time.

A. No intervention is needed.
B. Prescribe penicillin and send the patient home.
C. Obtain a chest radiograph.
D. Obtain arterial blood gas.
E. Refer the patient to the hospital for admission.

EXPLANATION

The correct answer is C. A patient such as this, who presents with signs and symptoms of a respiratory tract infection, requires only one major initial therapeutic decision: are antibiotics required? Antibiotics are indicated for cases of pneumonia. Many patients like this one actually have bronchitis. Therefore, to determine whether antibiotics are required, a chest radiograph is needed to detect any infiltrates.

Deciding that no intervention is indicated (choice A) is hasty since there are currently no data in his history and physical examination that allow a good decision to be made as to what this patient actually has.

Prescribing penicillin and sending the patient home (choice B) assumes that this patient has pneumonia. This has not yet been demonstrated.

An arterial blood gas (choice D) is not indicated for this patient. First, his physical examination does not suggest that severe respiratory compromise, and therefore a major acid-base abnormality, would be present. Second, this test in no way helps with management.

Referring the patient to the hospital for admission (choice E) is much too premature a decision. There is no indication that this patient fits the description for admission.
Q-42
A 71-yr-old man with a 70-pack/year smoking history presents after noticing that his right eye has a lagging lid. The physician has been seeing this patient for more than 10-years for management of his chronic obstructive pulmonary disease. On physical examination he has ptosis of right eye with a constricted right pupil. The remainder of his ophthalmologic examination is normal. Cranial nerve examination is normal. Which of the following is most likely be expected on a chest x-ray film.

A. A normal x-ray film.
B. An irregular mass at the apex of right lung.
C. A calcified granuloma in the left middle lung field.
D. A left sided pleural effusion.
E. A right sided pneumonia.

EXPLANATION

The correct answer is B. This patient has physical findings consistent with right-sided Horner syndrome, which consists of a triad of ptosis, miosis, and anhidrosis. This results from a lung cancer in this long-time smoker at the apex of the right lung, which causes compression of the cervical sympathetic plexus. These patients may also complain of scapular pain and a radiculopathy in the ulnar nerve distribution.

This man has serious disease, and would not be expected to have a normal chest x-ray film (choice A).

Choices C and D are not located at the lung apex and would not be expected to cause the appropriate nerve compression.

Although choice E is located at the right upper lobe, a pneumonia does not cause nerve compression.
Q-43

An infant is brought to the clinic for a routine health visit and vaccination. He is a product of an uncomplicated pregnancy and meeting developmental milestones. She is feeding well and her mother reports that her baby is growing well as well. On physical examination the infant is afebrile with stable vital signs. She can lift her head up to 90 degrees, her eyes follow past the midline, she laughs, regards her own hand and has slight awareness of her mother. Which of the following is most likely age of this patient.

A. 8-months.
B. 4-months.
C. 6-months.
D. 12-months.
E. 18-months.

EXPLANATION

The correct answer is B. The ability to lift the head to 90 degrees, eyes crossing the midline, laughing and slight awareness of the caregiver are characteristic childhood development landmarks of a 4 month old infant.

A 2 month old infant (choice A) can lift its head to 45 degrees, eyes follow to the midline, vocalizes, smiles and has a state of half-waking consciousness.

A 6-month old infant (choice C) can roll over, grasp a rattle, turn to voice, feed self and separate the world into a "parent" and "not parent" world.

A 12 month old child (choice D) can sit without support, pull to stand, use a pincer grasp, babble, indicate wants, and have stranger anxiety.

A 18 month child (choice E) can walk well, make a tower of 2 blocks, say three words, use a spoon and a cup, have temper tantrums, and bridge gaps by bringing objects to the caregiver.
Q-44
A 34-yr-old presents to his psychiatrist after missing his last appointment two-months ago. He has a history of bipolar I disorder for which he takes lithium carbonate. He has not taken his medications for the past two-months. On examination he is very loud, talkative with pressured speech and racing thoughts. He said that he has not slept for the past four days because he is working very hard to establish a catering service for which has bought many kitchen utensils and baking recipe books, he has also been sampling wines from around the world so that he can become a wine expert in his new business. In assessing patients affect and thoughts which of the mental state examination findings will most likely be present.

A. Blunted affect.
B. Inflated self-esteem and grandiosity.
C. Inappropriate and excessive guilt.
D. Nihilistic delusions.
E. Repetitive hand washing and counting.

EXPLANATION
The correct answer is B. This patient is most likely experiencing a manic episode. He has a history of bipolar I disorder, which is characterized by a single manic episode or recurrent manic episodes, often alternating with major depressive episodes. Symptoms of a manic episode, lasting for at least one week, include: persistently elevated, expansive, or irritable mood, inflated self-esteem or grandiosity, decreased need for sleep, hyperverbal and pressured speech, flight of ideas, distractibility, increase in goal-directed activity, and excessive involvement in pleasurable activities.

Blunted affect (choice A) describes a marked reduction in emotional expression, which would be unlikely in this patient.

Inappropriate and excessive guilt (choice C) is a symptom of a major depressive episode. Although patients with bipolar I disorder may experience mixed episodes (the full criteria for a major depressive episode and for a manic episode are met concurrently), we have no evidence of depressive symptoms in this patient.

Nihilistic delusions (choice D) are an example of mood-congruent psychotic features that may be associated with a major depressive episode. While patients experiencing a manic episode commonly have psychotic features, nihilistic delusions would be quite uncommon, unless other significant depressive features are present.

Repetitive hand-washing and counting (choice E) are symptoms characteristic of obsessive-compulsive disorder, in which either significant obsessions (pathological persistence of an irresistible thought or feeling that cannot be eliminated and which is associated with anxiety) or compulsions (pathological need to act on an impulse that, if resisted, produces anxiety, or a repetitive behavior in response to an obsession) are present.
Q-45
A 25-yr-old woman comes to the physician because of pain and burning sensation with urination. She states that symptoms have started two days ago and have worsened since. She has no fever and chills and has never had these symptoms before. She has hypothyroidism for which she takes thyroid hormone replacement. She has otherwise no medical problems. Her temperature is 37 C (98.6 F). Examination is unremarkable including a normal pelvic examination. KOH and normal saline wet preparation is performed on her vaginal discharge and is negative. Urinalysis show numerous white blood cells. Which of the following is most likely pathogen.

A. E.coli.
B. Neisseria gonnorhea.
C. Pseudomonas species.
D. Streptococcus seprophyticus.
E. Trichomonas vaginalis.

EXPLANATION

The correct answer is A. This patient has findings that are most consistent with a lower urinary tract infection. A lower urinary tract infection refers to infection of the bladder (cystitis) or urethra (urethritis). The principal complaints for women with lower urinary tract infections are dysuria, urgency, and frequency. Most often examination will be unremarkable. Occasionally, suprapubic tenderness may be present. A urinalysis will often reveal a positive leukocyte esterase or nitrite test. The microscopic analysis will show white blood cells. The most significant risk factors are related to sexual activity and hypoestrogenism. These factors lead to invasion by pathogenic organisms. E. coli is by far the most common causative organism in cases of acute uncomplicated cystitis. It is responsible for approximately 80% of these cases.

N. gonorrhoeae(choice B) is often associated with cervicitis and pelvic inflammatory disease. Yet, it can also cause urethritis. However, N. gonorrhoeae is a far less frequent cause of acute uncomplicated cystitis than E. coli.

Pseudomonas species (choice C) can cause urinary tract infections. It is often seen in patients with metabolic or anatomic abnormalities. In a routine case of UTI, however, it is not the most common pathogen.

Staphylococcus saprophyticus(choice D) is a somewhat common cause of acute, uncomplicated UTIs. It accounts for approximately 10% of cases.

Trichomonas vaginalis(choice E) is an organism that is most often associated with vaginitis, but can also cause a urethritis. This patient, however, has a negative normal saline "wet prep." Patients with trichomoniasis usually have visible organisms on the "wet prep." Also, while Trichomonas vaginalis can cause urethritis, it is not nearly as common a cause as is E. coli.
Q-46
While working at a book binding shop a young man suffers a traumatic amputation of his index finger. The finger was cleanly severed at it's base. The patient and the finger were brought to the first aid station from which both are to be transported to a highly specialized medical center for replantation to be done. Which of the following is the correct way to prepare and transport the severed finger.

A. Dry the finger off any traces of blood and place the finger in a cooler filled with crushed ice.
B. Freeze it as quickly as possible and transport it immersed in liquid nitrogen.
C. Immerse it in cold alcohol for the entire trip.
D. Paint it with anti-septic solution and place it on a bed of dry ice.
E. Wrap it in moist gauze place it in a plastic bag and place the bag on a bed of dry ice.

EXPLANATION
The correct answer is E. The digit must be kept from drying out, must not be injured with any chemical agents, and must not be placed in direct contact with ice or allowed to freeze.

Direct contact with ice (choice A) is one of the damaging events to be avoided.

Freezing (choice B) is absolutely contraindicated.

Alcohol (choice C) would damage the tissues.

Antiseptic solutions and direct contact with dry ice (choice D) would damage the finger both chemically and physically.
A 12-yr-old boy is brought to his pediatrician due to failing grades in school. The boy failed last year and is repeating the sixth grade, his parents have suspected for several years that the boy has low intelligence because of repetitive failing at school. The family is referred to a psychologist for psychological assessment and testing for intelligence. Which of the following tests would be most appropriate for testing boy's intelligence and assist in possible placement in special classes in his school.

A. Million clinical multiaxial inventory.
B. Minnesota multiphasic personality inventory.
C. Rorschach test.
D. Stanford-Binet test.
E. Thematic apperception test.

EXPLANATION

The correct answer is D. The Stanford-Binet Test is a comprehensive intelligence test that is used in psychiatry and education. Another widely used intelligence test is the Wechsler Adult Intelligence Scale. Such tests are routine intelligence tests in the assessment of borderline intellectual functioning, mental retardation, and specific learning disorders.

The Millon Clinical Multiaxial Inventory (choice A) is a 175-item, true-false personality inventory. This test would not be appropriate for assessing intelligence.

The Minnesota Multiphasic Personality Inventory (choice B) contains over 500 true-false items, with 17 scales including most major areas of psychopathology. This personality test provides a wide range of data on numerous personality variables and is supported by a strong research base.

The Rorschach test (choice C) contains a standard set of 10 inkblots that serve as stimuli for associations. Five of the cards are in black and white, and the other five include colors. A record of the patient’s verbatim response, along with initial reaction times and total time spent on each card allows for interpretation. This test is referred to as a projective test.

The Thematic Apperception Test (choice E) is also a projective test that consists of a series of 30 pictures and one blank card. After looking at the card, the patient is instructed to create a story. This test is more useful as a technique for inferring motivational aspects of behavior than as a basis for making a diagnosis. It would not be appropriate for assessing intelligence.
Q-48
A 44-yr-old school bus driver presents to the ER complaining of severe abdominal pain. She reports that the pain began approximately 8-hours ago after eating lunch at a fast food restaurant. Pain has become increasingly severe and is radiating to her back. She recalls a similar episode lasting 3-hours, 2-months earlier and another episode lasting 12-hours in her last pregnancy. She is afebrile with a temperature of 38.1 C (98.5 F) and has right upper quadrant tenderness with deep palpation of this area. A rectal examination reveals a brown guaiac-negative stool. Her WBCs are 12,900/mm³ and hematocrit 38% and total bilirubin 2.1 mg/dl. Which of the following is the most appropriate test.

A. CT-scan of the abdomen and pelvis.
B. Endoscopic retrograde cholangiopancreatography.
C. HIDA scan.
D. Percutaneous transhepatic cholangiogram.
E. Upper gastrointestinal barium study.

EXPLANATION

The correct answer is C. This patient has the classic presentation of acute cholecystitis. The episodes she had several months ago and during pregnancy suggest a prior history of biliary colic. A HIDA scan is a noninvasive nuclear medicine test that will reveal obstruction of the cystic duct, which is caused by an impacted gallstone and is the cause of acute cholecystitis.

A CT scan (choice A) may show a distended gallbladder, but it is not as accurate as a HIDA scan for evaluating the cystic duct.

Endoscopic retrograde cholangiopancreatography (ERCP) (choice B) is useful for evaluation of the common bile duct but is of a less value in evaluation of the cystic duct and, furthermore, is a far more invasive test than a HIDA scan.

Percutaneous transhepatic cholangiography (PTC) (choice D) is an examination that is performed by the interventional radiologist by injecting the intrahepatic biliary tree percutaneously. This is rarely done since ERCP is a more accurate evaluation of the biliary of tree. PTC is of limited value in evaluating the cystic duct and it is an invasive procedure.

An upper gastrointestinal barium study (choice E) may be useful for the evaluations of peptic ulcer disease but the symptoms here are far more suggestive of acute cholecystitis. Furthermore, if the patient has been vomiting she is unlikely to tolerate this examination.
A 35-yr-old man comes to the physician with complaints of daily right sided peri-orbital, severe headaches for the past six weeks. The pain often awakens him from sleep and is so excruciating that he wants to bang his head against the wall. He reports nasal stuffiness and nausea and has had similar episodes twice before. Examination shows right sided ptosis, lacrimation and reddening of the right eye. Lab studies show hemoglobin 16 g/dl, hematocrit 49%, leukocyte count 6000/mm$^3$, ESR 5mm/hr. Which of the following is the most likely diagnosis.

A. Classic migraine.
B. Cluster headache.
C. Common migraine.
D. Subarachnoid hemorrhage.
E. Temporal arteritis.
F. Tension headache.

EXPLANATION

The correct answer is B. This patient has cluster headaches, which are daily, unilateral, severe headaches that occur over a period of 1-2 months. They are associated with nasal stuffiness, ptosis, and lacrimation. Middle-aged males are most commonly affected. Treatment during the acute attack is oxygen. Prophylaxis includes prednisone, lithium, ergotamine, and verapamil.

Classic migraine (choice A) is a severe, throbbing headache that is associated with nausea, vomiting, and photophobia. It is preceded by an aura (focal neurological disturbances). Treatment is with sumatriptan and ergotamine.

Common migraine (choice C) is similar to classic migraine except that it is not preceded by an aura.

A subarachnoid hemorrhage (choice D) is often caused by a ruptured saccular aneurysm, and is described as the "worst headache of my life". It may be associated with a loss of consciousness and vomiting. A CT scan followed by a lumbar puncture confirms the diagnosis. Prompt microsurgical clipping of the aneurysm is the treatment.

Temporal arteritis (choice E) produces a unilateral, throbbing headache with temporal artery tenderness. Associated findings include anemia and an increased erythrocyte sedimentation rate. Diagnosis is made by temporal artery biopsy. Treatment is with corticosteroids, which should be given immediately to prevent blindness.

Tension headache (choice F) is a bilateral occipital headache that is described as "band-like" or "vise-like". Therapy consists of analgesics.
Q-50
A neonate develops severe cyanosis that begins within minutes of birth. Blood drawn one-hour after birth shows metabolic acidosis and respiratory acidosis. A chest x-ray film shows a narrow base to the great vessels and the heart resembles an egg on its side. ECG is normal. Which of the following is the most likely diagnosis.

A. Aortic valve stenosis.
B. Complete atrio-ventricular canal defect.
C. Tetralogy of Fallot.
D. Transposition of great vessels.
E. Hypoplastic left ventricular syndrome.

EXPLANATION

The correct answer is D. This is transposition of the great arteries, in which the aorta arises from the right ventricle and the pulmonary artery arises from the left ventricle. Approximately 5% of congenital cardiac anomalies have transposition of the great arteries. Affected babies present within minutes of birth with severe cyanosis and metabolic acidosis secondary to inability to oxygenate tissues. The only exchange of blood between pulmonic and circulatory systems is typically occurring through a patent ductus arteriosus. The chest x-ray changes illustrated in the question stem are typical, and are due to superposition of the great vessels (rather than the normal side-to-side position). Surgical repair is usually performed within 7 to 10 days of life.

Aortic valve stenosis (choice A) produces a loud ejection murmur with a prominent systolic click heard best at the upper right sternal border.

Complete atrioventricular canal defect (choice B) can also cause cyanosis at birth, but will show marked ECG changes, sometimes including absent Q waves.

Tetralogy of Fallot (choice C) may present at birth, with ECG changes showing right ventricular hypertrophy and right axis deviation. Chest x-ray films usually show a small heart with a concave main pulmonary artery.

Underdeveloped left ventricle syndrome (choice E) causes an abrupt onset of severe heart failure with loss of peripheral pulses at 2-3 days of life.
Q-51
A patient complains to the physician of chronic pain and tingling of the buttocks. The pain is exacerbated when buttocks are compressed by sitting on toilet seat or chair for long periods, no lumbar pain is noted. Pain is elicited when physician performs Friberg’s maneuver in which there is forceful internal rotation of the extended thigh. Which of the following is most likely diagnosis.

A. Compression of the sciatic nerve.
B. Fibromyalgia.
C. Piriformis syndrome.
D. Popliteus tendonitis.
E. Posterior femoral muscle strain.

EXPLANATION

The correct answer is C. This is piriformis syndrome. As you may recall from your anatomy, the piriformis is the small muscle that crosses the greater sciatic foramen, cutting it into two spaces as the muscle passes from the edge of the sacrum to the greater trochanter. The sciatic nerve comes out of the greater sciatic foramen below the piriformis, and is liable to compression by the muscle. Symptoms are as described above: bicycle riding and running may also set off the symptoms, which may take the form of chronic nagging ache, pain, tingling, or numbness. Treatment is usually to teach the patient to avoid maneuvers that set off the symptoms. Some patients have been helped by corticosteroid injection near the site where the piriformis muscle crosses the sciatic nerve; this therapy is thought to work by reducing the fat around the muscle and thereby increasing the available space in the area.

Disk compression of the sciatic nerve (choice A) can also produce sciatic pain, but there is almost always lumbar as well as buttock pain.

Fibromyalgia (choice B) causes achy pain, tenderness, and stiffness of involved sites, including muscles, tendon insertions, and nearby soft tissues. Sites commonly involved include head, neck, shoulders, thorax, low back, and thighs.

Popliteus tendinitis (choice D) is inflammation of the tendon of the popliteus muscle of the knee.

Posterior femoral muscle strain (choice E) produces pain in the posterior thigh on jumping.
Q-52
A 54-yr-old heavy smoker comes to the ER for mild cough, chest pain, diarrhea, fever and fatigue for three days. He has a scant amount of non-purulent sputum. Several of his co-workers are experiencing similar symptoms. His temperature is 39.8°C (103°F), blood pressure is 120/80 and pulse if 50. Rales are heard on auscultation and diffuse abdominal tenderness is present on palpation. A chest X-ray film reveals bilateral infiltrates. Gram stain of his sputum reveals numerous neutrophils but no organisms. A sputum culture on buffered charcoal yeast extract agar shows gram-negative bacilli. Which of the following is the most likely pathogen.

A. Chlamydia trachomatis.
B. Leigonella pneumophilia.
C. Morexella catarrhalis.
D. Mycoplasma pneumonia.
E. Pneumocystis carinii.

EXPLANATION
The correct answer is B. This patient has Legionella pneumonia, which is caused by L. pneumophila, a gram-negative bacillus. It is often acquired from a contaminated water supply (air conditioning systems) and can lead to outbreaks. The major risk factors include advanced age, immunosuppression, chronic lung disease, and cigarette smoking. Clinical features include a cough, chest pain, diarrhea, high fever, malaise, fatigue, and anorexia. A chest x-ray film reveals infiltrates and later, consolidation. Gram's stain reveals leukocytes, but no organisms. Cultures on BCYE agar grow the organism. The treatment is erythromycin.

Chlamydia trachomatis(choice A) is an obligate intracellular parasite that has features similar to gram-negative bacteria. Pneumonia develops in neonates born to mothers infected with the bacteria.

Moraxella catarrhalis(choice C) is a gram-negative coccus that causes pneumonia in elderly patients with COPD. Clinical features include low-grade fever, chills, chest pain, and malaise. Gram's stain reveals the organism. Penicillin/clavulanic acid is the treatment.

Mycoplasma pneumoniae(choice D) causes a community-acquired pneumonia that occurs in young adults. The features are a sore throat, nonproductive cough, and headache. Chest x-ray films show interstitial infiltrates. Treatment is with erythromycin.

Pneumocystis carinii(choice E) is an opportunistic pathogen that causes pneumonia in immunocompromised hosts. Diffuse interstitial infiltrates are found on chest x-ray films. Diagnosis is made by examination of sputum or bronchial washings. The treatment is trimethoprim-sulfamethoxazole.
Q-53
A patient with a history of chronic bacterial sinusitis presents to the ER with a very severe headache, while waiting to be seen he develops grand mal seizure. Physical examination after the seizure is over demonstrates high-grade fever, exophthalmos, papilledema and nerve palsies of the third and sixth cranial nerves on one side. What is the most appropriate next step.

A. Admit to the medical floor for monitoring of progression of symptoms.
B. Emergency CT-scan.
C. Emergency exploratory surgery.
D. Emergency ultrasound.
E. Keep in ER for monitoring of progression of symptoms.

EXPLANATION
The correct answer is B. This is the way that cavernous sinus thrombosis presents. This condition is due to a septic thrombosis that can complicate chronic bacterial sinusitis. Meningitis is another significant possibility. Lumbar puncture is dangerous in a patient with increased intracranial pressure, as indicated by the papilledema. Emergency CT scan of the cavernous sinus, air sinuses, orbit, and brain is warranted. Additionally, cultures of blood and any nasal discharge are warranted; Gram’s stain of the nasal discharge may give a preliminary indication of the causative organism. High dose intravenous antibiotics are started, and then altered, if necessary, when culture results are reported. Cavernous sinus thrombosis has a 30% mortality rate, even when prompt, appropriate medical care is given.

Simply monitoring (choices A and E) a patient like this would be very dangerous.

Ultrasound (choice D) would probably not adequately visualize the complex structures of the sinuses, orbits, and brain.

Surgery (choice C) is not indicated in this setting.
Q-54
A baby is born at 34-weeks gestation, amniotic fluid is brown and murky. The baby has low apgar scores and appears to be septic with lethargic apnea, bradycardia and temperature instability. The mother lives on a farm and gives a history of flu-like illness one month before delivery. Gram stain of a smear from mother's cervix show abundant pleomorphic, gram variable, coccobacillary forms. Which of the following is the most likely diagnosis.

A. Genital cytomegalovirus infection.
B. Congenital rubella.
C. Congenital syphilis.
D. Neonatal herpes simplex infection.
E. Neonatal listeriosis.

EXPLANATION
The correct answer is E. Listeria monocytogenes, the causative agent of listeriosis, can be acquired by mothers exposed to unpasteurized dairy products or raw vegetables exposed to cattle or sheep manure. The condition can cause a febrile, flu-like disease in the mother. The affects on the fetus and newborn depend on the timing of the infection. The bacteria have a predilection for causing amnionitis, which may then produce abortion, stillbirth, or neonatal sepsis. The presence of brown, murky amniotic fluid may be a helpful diagnostic clue (and a clue on test questions). Disseminated disease in the fetus can cause granuloma formation (with associated tissue destruction) in many tissues, including liver, adrenal glands, lymphatic tissue, lungs, and brain; the term granulomatosis infantiseptica is sometimes used in these cases. The mortality rate in affected infants ranges from 10 to 50% (higher in early onset disease). Some authors recommend blood and cervical culture in pregnant women who have a potential exposure and develop a flu-like illness.

Congenital cytomegalovirus infection (choice A) can cause asymptomatic to mild to severe disease in neonates; look for a reference to flu-like symptoms during pregnancy in the question stem. Another clue with some specificity (also present in toxoplasmosis) is a reference to periventricular calcifications. (A good negative clue is no reference to cats, which would have suggested toxoplasmosis.)

Congenital rubella (choice B) can cause multiple severe problems in infants; look for a reference to the mother having had a rash during pregnancy.

Congenital syphilis (choice C) can also cause devastating disease in newborns; look for references to rash involving palms and soles, Hutchinson's molars, or bone deformities, including saber shin.

Neonatal herpes simplex infection (choice D) can be a devastating infection of the neonate; look for skin vesicles and often prominent neurologic involvement.
Q-55
A 42-yr-old man who is HIV-positive is being treated for his first episode of pneumocystis carinii pneumonia in an inpatient medical ward when he become increasingly disoriented, combative and agitated. Pulse oximetry shows that he is oxygenating at 93% on room air. He is currently taking nortriptylline for depression and gabapentine for peripheral neuropathies. He has a history of alcohol abuse for past several years, hospitalization and a remote history of opioid abuse. Which of the following is the most likely diagnosis.

A. Alcohol withdrawal.
B. HIV dementia.
C. Hypoxemic encephalopathy.
D. Major depressive disorder.
E. Multifactorial delirium.

EXPLANATION

The correct answer is E. In a patient such as this with a medical illness, a history of the acute onset of agitation, disorientation, and confusion is consistent with and most suggestive of the diagnosis of delirium.

Alcohol withdrawal (choice A) is something to consider, but this patient has a history of alcohol abuse, not dependence, in the distant past. Therefore, this diagnosis is less likely.

HIV dementia (choice B) is not likely, as this is the patient’s first opportunistic infection, and most patients with HIV dementia are well into the course of their illness before the dementia presents.

Hypoxemia (choice C) is often a cause of delirium. In this patient, however, his alteration in orientation and level of consciousness make delirium the more appropriate diagnosis.

Major depressive disorder (choice D) is excluded as a diagnosis when medical complications, such as delirium, limit the ability to accurately assess alterations in mood.
Q-56
A 17-yr-old female patient comes to the physician because she has not yet had a menstrual period. She also complains of lack of breast development. Past medical history is significant for anosmia and color blindness. Past surgical history is significant for cleft palate that was repaired in childhood. She takes no medications and has no allergies to medications. Examination is significant for no breast development and a hypo-estrogenic vulva and vagina. Urine HCG is negative. Which of the following is the most likely diagnosis.

A. Anorexia nervosa.
B. Kallman syndrome.
C. Polycystic ovarian syndrome.
D. Pregnancy.
E. Testicular feminization syndrome.

EXPLANATION

The correct answer is B. Patients with Kallmann syndrome (i.e., isolated gonadotropin deficiency or familial hypogonadotropic hypogonadism) can present with primary amenorrhea. Primary amenorrhea is defined as the absence of menses in a female by the age of 16. Associated findings in Kallmann syndrome may include anosmia or hyposmia, color blindness, and cleft lip or cleft palate. These findings are attributable to the fact that during embryogenesis the GnRH neurons originally develop in the epithelium of the olfactory placode and normally migrate into the hypothalamus. Thus exists the link between the midline defects and the amenorrhea. Physical examination may reveal absent to minimal breast development. Treatment of the patient with Kallmann syndrome is with exogenous estrogen and progestin replacement therapy. If pregnancy is desired, ovulation induction can be brought about with the pulsatile administration of exogenous GnRH.

Anorexia nervosa (choice A) can cause amenorrhea and a reduction in breast size, but it is not associated with anosmia, color blindness, and cleft palate. These features are associated with Kallmann syndrome.

Polycystic ovarian syndrome (choice C) is characterized by oligomenorrhea, hirsutism, infertility, and obesity. This patient does not have a presentation consistent with polycystic ovarian syndrome.

Pregnancy (choice D) should always be the first thought when a potentially fertile woman presents with amenorrhea. However, this patient has a negative urine pregnancy test and no findings consistent with pregnancy.

Testicular feminization syndrome (choice E) represents complete androgen insensitivity. This syndrome occurs in individuals with a 46, XY karyotype. Affected males have a female appearance with breast development.
Q-57
A 56-yr-old man develops a slowly progressive paralysis of facial nerve on one side. It took several weeks for full-blown paralysis to become obvious. It has been present now for almost three months, it affects both the forehead and lower face. He has no pain anywhere and no palpable masses by physical examination. Which of the following is the most likely diagnosis.

A. Bell's palsy.
B. Facial nerve tumor.
C. Hemorrhagic stroke.
D. Parotid gland cancer.
E. Pleomorphic adenoma of the parotid gland.

EXPLANATION

The correct answer is B. Slowly developing paralysis on one side is suggestive of a tumor. Since there are no physical findings to place the tumor in the parotid gland, it must be impinging on the nerve itself at a more proximal location.

Bell’s palsy (choice A) has sudden onset, rather than gradual development.

Hemorrhagic stroke (choice C) would have occurred suddenly, with an excruciating headache.

A parotid cancer (choice D) would have been palpable by physical examination and would have produced pain.

Pleomorphic adenoma (choice E) would also have been palpable, and such tumors almost never produce facial nerve paralysis.
After a minor but distressing automobile accident, patient is unable to move one leg. Careful physical examination demonstrates no obvious injury that might have caused the paralysis. Reflexes are intact. Ct of the spine show intact spine. The patient is re-assured and the paralysis is resolved over a two-week period. Which of the following is the most likely diagnosis.

A. Body dysmorphic disorder.
B. Conversion disorder.
C. Munchausen syndrome.
D. Pain disorder.
E. Somatization disorder.

EXPLANATION

The correct answer is B. This case illustrates conversion disorder. In this condition, physical symptoms are caused by psychological conflict. The symptoms develop unconsciously and are, by definition, limited to those that mimic a neurologic disorder, such as impaired coordination, weakness, paralysis, loss of sensation, blindness, deafness, or inability to speak. The onset is usually abrupt and linked to a stressful event. In most patients, symptoms improve within 2 weeks, although some patients will have persistent or recurrent problems.

Body dysmorphic disorder (choice A) refers to an abnormal body image, such as when a youthful patient believes she is terribly wrinkled even when everyone around her perceives her as young.

Patients with Munchausen syndrome (choice C) tend to have elaborate and deliberate fabrications of illness that don’t usually resolve spontaneously.

Pain disorder (choice D) is the term used for patients with persistent problems of psychogenic pain.

Somatization disorder (choice E) usually involves long-standing, nonspecific bodily complaints.
Q-59
A car is involved in a head-on-collision. Driver, who is sober and is wearing his seat belt explains that he clearly saw his unrestrained, drunk, front seat passenger hit the wind shield with his face and the dash board with his knees. Examination also shows mutiple facial lacerations but because of his intoxication he is unable to tell where else he might be hurting. He is neurologically intact and his cervical spinal X-ray films are normal. Additional injury that is potentially an orthopedic emergency is not obvious but is suspected so, X-ray film of which of the following areas should be ordered.

A. Both patellas.
B. Both hips.
C. The jaw.
D. The lumbar spine.
E. The skull.

EXPLANATION

The correct answer is B. When hitting the knees against the dashboard, the femurs can be driven backward and out of the acetabulum, resulting in posterior dislocation of the hips. Because of the tenuous blood supply of the femoral heads, such injury must be promptly recognized and treated.

Both patellas (choice A) and the jaw (choice C) could indeed be fractured, but such fractures would be easily recognized clinically. If they were not identified until the next day, no damage would be incurred.

The lumbar spine (choice D) should always be thought of when someone falls from a height and lands on his feet, but it is not a likely hidden injury in this setting.

Skull x-ray films (choice E) have gone out of favor as a way to assess head injury. The main issue in head injuries is intracranial bleeding, and the study to show it is the CT scan.
Q-60
A 48-yr-old man presents with recent onset of complex partial seizures. CT-scan and MRI of the head show a well-circumscribed, dural based mass in the right middle cranial fossa. The tumor displaces posteriorly the tip of the temporal lobe without evidence of intra-parenchyma infiltration. The adjacent calvarial bone is mildly thickened. Which of the following is the most likely diagnosis.

A. Craniopharyngioma.
B. Glioblastoma multiform.
C. Meningioma.
D. Paget's disease.
E. Schwannoma.

EXPLANATION

The correct answer is C. The CT and MRI scans clearly show an extraaxial mass (i.e., located outside the brain parenchyma). The mass pushes and displaces the underlying brain but does not infiltrate it. It is dural-based, i.e., it develops from the dura. These features are characteristic of meningiomas, which are the most common benign intracranial neoplasms. These tumors originate from meningothelial cells and may grow to a large size before producing clinical symptomatology, especially when located over the cerebral convexities. On the other hand, if meningiomas develop from the meninges of the skull base, brain compression or impingement on nerves and vessels results in clinical symptoms at early stages of growth. Meningiomas may induce a reactive bone thickening in the adjacent calvarium.

Craniopharyngioma (choice A) develops in the suprasellar region close to the pituitary gland, hypothalamus, and optic chiasm. Thus, the most common initial manifestations are diabetes insipidus, visual deficits, and hypopituitarism. This tumor typically occurs in children. It is often heavily calcified, which facilitates the radiologic diagnosis.

Glioblastoma multiforme (GBM) (choice B) is the most frequent primary malignant brain tumor. It derives from astrocytes and is therefore intraaxial (i.e., grows within the brain). Grossly, it is characterized by areas of hemorrhage and necrosis. Central necrosis within the tumor results in a typical MRI/CT appearance, with a peripheral rim of contrast enhancement (ring-enhancing mass) surrounding the central dark region.

Paget disease (choice D) is a common bone disease that involves the skull, producing abnormal and irregular thickening of the bone. The patient may present to medical attention after noticing an increase in head size.

Schwannoma (choice E) is a benign tumor of Schwann cells. The eighth cranial nerve is its most common nerve of origin, and the cerebellopontine angle is thus the most common location. Patients with schwannomas present with progressive hearing loss. If bilateral, acoustic schwannomas are typical of neurofibromatosis type 2.
Q-61
A 52-yr-old man is admitted to the hospital after sustaining an acute myocardial infarction. 8-hours after this event his blood pressure is 70/50 and pulse is 45/min. ECG reveals sinus rhythm. Which of the following is the most appropriate intervention.

A. Administer atropine IV.
B. Administer dobutamine.
C. Administer a beta-blocker.
D. Insert a trans-venous pacemaker.
E. Perform cardiac catheterization.

EXPLANATION
The correct answer is A. The patient is hypotensive and bradycardic. This suggests a vagal response, and administering an anticholinergic agent, such as atropine, is the correct treatment.

Inotropic agents, such as dobutamine (choice B), are not indicated at this time, since the patient is hypotensive. If other methods of resuscitation, such as IV hydration, fail, then a pressor is indicated.

A beta blocker, such as metoprolol (choice C), is indicated in the setting of a myocardial infarction, given its cardioprotective effect. In this acute setting, however, its effect on the pulse and blood pressure will be counter-productive.

If the bradyarrhythmia and hypotension persist after the administration of atropine, the insertion of a temporary pacemaker is indicated (choice D). If the patient develops a sick sinus syndrome as a result of the infarct, and is symptomatic in terms of hypotension and syncope, then a pacemaker may be needed.

Cardiac catheterization is indicated in the acute setting (choice E). In this patient, 8 hours have elapsed, and his ST segments have resolved. If he develops another ST segment elevation myocardial infarction, then he will need an emergent catheterization.
Q-62
A 33-yr-old man with a history of IV drug use presents to the ER complaining of fever, chills and a productive cough. He has a prior history of cellulites and a tricuspid valve endocarditis. A recent HIV test at his methadone clinic is negative. On examination his temperature is 39.2 C (102 F), blood pressure is 112/62, pulse is 98 and respirations are 28. Lung examination reveals ronchi in the right middle posterior lung field. There is a soft holo-systolic murmur heard at the left lower sternal border that increases with inspiration. Chest x-ray film shows a lobar consolidation in the right middle lobe with an air fluid level. Which of the following is the most likely cause of his pneumonia.

A. E.coli.
B. Haemophilus influenzae.
C. Staphylococcus aureus.
D. Staphylococcus epidermidis.
E. Streptococcus pneumonia.

EXPLANATION

The correct answer is C. This patient is an IV drug abuser with a history that describes two prior infections probably related to drug use and Staphylococcus infection, i.e., cellulitis and tricuspid valve endocarditis. The lobar consolidation with an air-fluid level is consistent with Staphylococcus aureus pneumonia with cavitation. None of the other infections noted cause a cavitating pneumonia.

Associate Escherichia coli(choice A) with pneumonia secondary to dissemination of a urinary tract or other E. coli infection.

Associate Haemophilus influenzae(choice B) with community acquired pneumonia, particularly in children and in the elderly with pre-existing lung disease.

Associate Staphylococcus epidermis(choice D) with conditions causing a skin break. Remember: the resulting pneumonia will not cause cavitation, since this organism does not have the range of lytic enzymes that Staphylococcus aureus does.

Associate Streptococcus pneumonia(choice E) with the most common form of community-acquired pneumonia.
Q-63
A 62-yr-old man presents with symptoms of worsening heart failure. He has a history of rheumatic heart disease as a child. Over the past 3-years he has had progressive symptoms of dyspnea on exertion, paroxysmal nocturnal dyspnea and orthopnea. He has been maintained on digoxin, furosemide and enalapril for symptoms of congestive heart failure. Cardiac examination reveals a loud decrescendo diastolic murmur plus bounding peripheral pulses. Which of the following additional findings would most likely be found on physical examination.

A. Bradycardia.
B. Isolated systolic hypertension.
C. Pulsus paradoxus.
D. Tachycardia.
E. Wide pulse pressure.

EXPLANATION
The correct answer is E. This patient has the characteristic physical findings of an aortic insufficiency, including the loud blowing decrescendo murmur and the bounding peripheral pulses. These patients typically will have a wide pulse pressure, i.e., elevated systolic blood pressure related to a large left ventricular volume being ejected (until left ventricular failure supervenes). The low diastolic pressure is a result of the rapid run-off from the aorta due to the regurgitant flow across the aortic valve into the left ventricle, as well as the forward flow to the aorta.

Bradycardia (choice A) is not a feature of either aortic insufficiency or left ventricular dilatation.

Isolated systolic hypertension (choice B) may be found in the elderly and is an independent risk factor for stroke, but it is not correlated with the presence of aortic insufficiency.

Pulsus paradoxus (choice C) may occur in patients who have severe asthma or other signs of high right-sided pressures. It is not a feature of aortic insufficiency.

Tachycardia (choice D) may occur in patients with a failed left ventricle, but it is not a hallmark of aortic insufficiency.
Q-64
An 8-yr-old boy presents with a two-day history of a rash. The rash started on the head and spread downward to his trunk and extremities. He also complains of fever, cough and a runny nose for five days. On physical examination temperature is 38.2°C (100.7°F), blood pressure is 88/56, pulse is 76 and respirations are 16. There is a small, irregular red spot with central gray color on his buccal mucosa. The rash on his body is erythematous and maculo-papular in quality. Which of the following is the most likely diagnosis.

A. Erythema infectiosum.
B. Hand-foot-mouth disease.
C. Measles.
D. Roseola infantum.
E. Rubella.

EXPLANATION
The correct answer is C. Measles (rubeola) is a very contagious, exanthematous respiratory disease with a pathognomonic enanthem. A live attenuated measles vaccine became available in 1963 in the U. S. and elsewhere, and measles is now an unusual disease in countries where this vaccine is widely used. However, measles continues to occur sporadically in mini-epidemics.

The measles virus is transmitted by respiratory secretions, predominantly through exposure to aerosols but also through direct contact with larger droplets. Patients are contagious for 1-2 days before the onset of symptoms until, 4 days after the appearance of the rash. Measles begins with a few-day respiratory prodrome of malaise, cough, coryza, conjunctivitis, nasal discharge, and increasing fever. Just before the onset of the rash, Koplik’s spots appear as 1- to 2-mm blue-white spots on a bright red background. The characteristic erythematous, non-pruritic, maculopapular rash of measles begins at the hairline and behind the ears, spreads down the trunk and limbs to include the palms and soles, and often becomes confluent. At this time, the patient is at the most severe point of the illness. By the 4th day, the rash begins to fade in the order in which it appeared. Brownish discoloration of the skin and desquamation may occur later. Fever usually resolves by the 4th or 5th day after the onset of rash; prolonged fever suggests a complication of measles. Lymphadenopathy, diarrhea, vomiting, and splenomegaly are common features. Therapy for measles is largely supportive and symptom based.
Erythema infectiosum (choice A), or Fifth’s disease, is a mild illness caused by parvovirus B-19. It usually begins as a marked erythema of the cheeks, giving a “slapped cheek” appearance.

Hand-foot-mouth disease (choice B) presents with a prodrome of fever and anorexia, followed by ulcers on the tongue and oral mucosa and a vesicular rash on the hands and feet.

Roseola infantum (choice D) presents with an abrupt onset of a high fever, with temperatures up to 39.5-41.1 °C (103-106 °F). A maculopapular rash appears on the trunk on the 3rd or 4th day when the fever breaks.

Rubella (choice E) causes a mild syndrome, which is characterized by an erythematous, maculopapular, discrete rash, generalized lymphadenopathy, and fever. It can cause congenital rubella syndrome in the infant if the pregnant mother is infected with the virus.
A 28-yr-old man presents to the ER complaining of 3-moth history of insomnia, depression, fatigue and weight loss. He also has feeling of guilt over his occasional IV heroine use. On mini mental state examination he has some mild cognitive defects with a score of 30. Which of the following is the most appropriate next step in management of this patient.

A. Order fluoxetine.
B. Order imipramine.
C. Order an HIV test.
D. Order a urine drug screen.
E. Refer the patient to outpatient drug rehabilitation.

EXPLANATION

The correct answer is C. Given this patient’s risk factors for HIV, this is the most likely diagnosis in the context of mild cognitive deficits and mood disturbance. To begin treatment with antidepressant medication, mood disturbance due to a general medical condition must be ruled out. Thus, ordering fluoxetine (choice A) or imipramine (choice B) is inappropriate at this time.

A urine drug screen (choice D) may provide helpful information, but is of less value at present than an HIV test in treating the patient.

Referral to rehab (choice E) would be indicated at some point, but is of less urgency in evaluating and treating the patient’s current symptoms.
Q. 66
A football player is tackled and he develops severe knee swelling and pain. On physical examination with the knee flexed at 90 degrees the leg can be pulled anteriorly like a drawer being opened, a small finding can be elicited with the knee flexed at 20 degrees, grasping the thigh with one hand and pulling the leg with the other. Which of the following is the most likely injured structure.

A. Anterior cruciate ligament.
B. Lateral collateral ligament.
C. Medial collateral ligament.
D. Medial meniscus.
E. Posterior cruciate ligament.

EXPLANATION

The correct answer is A. Swelling of the knee after trauma usually denotes the presence of a significant injury. The tests described (anterior drawer and Lachman test) are classic for an injury to the anterior cruciate ligament.

The lateral collateral ligament (choice B), if disrupted, would allow the leg to be bent inward to a greater extent than normally possible (varus test).

The medial collateral ligament (choice C), when injured, would produce the opposite findings: the leg could be bent outward more than the normal leg (valgus test).

The medial meniscus (choice D), when injured, produces loose intraarticular bodies and locking of the knee.

The posterior cruciate ligament (choice E) is much less commonly injured than the anterior cruciate. When it is injured, it produces the very opposite findings to those described in the vignette: the leg could be pushed backward, as if a drawer was being closed rather than opened.
Q-67
An exploratory laparotomy for multiple abdominal injuries has lasted 3 1/2-hours, multiple blood transfusions have been given, liters of ringer's lactate have been infused. When surgeons are ready to close the abdomen they found out that edges of abdominal wall cannot be pulled together without undue tension. Both the belly wall and abdominal contents seem to be swollen. Which of the following is the most appropriate management in this situation.

A. Approximate the skin only using towel clips.
B. Close the abdomen with heavy retention sutures.
C. Give diuretics and close the abdomen in usual way.
D. Leave the abdomen and its contents open to the air.
E. Provide temporary bowel coverage with an absorbable mesh.

EXPLANATION
The correct answer is E. This is a new entity known as the abdominal compartment syndrome, unknown in the days when severely traumatized patients died prior to, or during, surgery. The life-saving massive fluid infusions produce severe edema in the surgical field. Forced closure would compromise ventilation and venous return. A temporary plastic coverage, or a mesh, allows the bowel to be protected without undue pressure.

Closing the skin only (choice A) can be life-saving when hypothermia develops during surgery. In this setting, however, the skin will not come together without undue tension.

Forced closure (choice B) would compromise ventilation and produce acute renal failure due to pressure on the inferior vena cava.

Diuretics (choice C) cannot selectively remove the fluid from the swollen tissues.

Leaving the bowel exposed to the air (choice D) is not an option. In the short term, the patient would suffer severe heat loss; later, the bowel would dry out and perforate.
Q-68
A 62-yr-old man is found to have a malignant polyp in the ceacum. He undergoes a right hemicolectomy and the specimen reveals a 2-cm adenocarcinoma extending into but not through the muscularis propria. 11 lymph nodes are negative and there is no evidence of distant metastasis. He recovers normally and discharged home on the sixth postoperative day. 4-weeks later he develops sudden onset of abdominal distension, vomiting and inability to pass flatus. Abdominal examination shows distention, diffuse tenderness and hyperactive rushing bowel sounds in the mid abdomen. A rectal examination reveals no masses and a brown guaic negative stool. X-ray films of the abdomen reveal multiple air fluid levels in the small intestine. Which of the following is the most appropriate next step in management.

A. Placement of a nasogastric tube.
B. Small bowel series.
C. Barium enema.
D. Abdominal CT-scan.
E. Surgical exploration.

EXPLANATION

The correct answer is A. This patient has signs and symptoms, as well as x-ray confirmation, of a small bowel obstruction. Given the histologic findings of the surgical specimen of an early (Duke’s B1) lesion, it is highly unlikely that there is recurrent tumor, especially given the prompt occurrence of this bowel obstruction. The most likely etiology is therefore adhesions, which have caused this obstruction. Placement of a nasogastric tube would be the most appropriate measure to decompress the bowel. In most of these patients, this approach will lead to gradual and complete resolution of the bowel obstruction. Should there be any symptoms of clinical deterioration with the placement of a nasogastric or small intestinal tube, then surgery (choice E) should be considered.

Although a small bowel series (choice B) or a CT scan (choice D) may be helpful in delineating the site of the adhesion and small bowel obstruction, they would be performed after bowel decompression with a nasogastric tube.

Similarly a barium enema (choice C), if thought necessary, would be performed after bowel decompression. However, a barium enema is unlikely to demonstrate an obstructive point since the obstruction is unlikely to be due to anastomotic tumor recurrence, given the early lesion and recent resection.

Surgical exploration (choice E) would not be indicated until a trial of conservative therapy with small bowel decompression and a period of NPO have been attempted.
The patient with long history of sinus infection presents to the physician because one eye is extremely sore. Physical examination shows erythema and edema of lower eyelid and conjunctiva, the eyeball is protruding and patient is unable to move his eyes in some directions. Additionally patient is running high fever. Which of the following is the most likely diagnosis.

A. Bacterial conjunctivitis.
B. Blepharitis.
C. Dacryocystitis.
D. Hordeolum.
E. Orbital cellulitis.

EXPLANATION

The correct answer is E. This is orbital cellulitis, which is a dangerous infection of the orbital tissues. Orbital cellulitis can be seen as a complication of paranasal sinusitis, eyelid trauma, or dental/oral infections. The presentation described in the question stem is typical. Major complications include potentially permanent visual loss secondary to optic neuritis; meningitis secondary to spread of the infection to the brain; and cavernous sinus thrombosis secondary to extension of clots in orbital veins. Treatment is with antibiotics in either oral or intravenous form, depending upon the severity of the infection. Surgical drainage can be helpful if suppuration is present.

Bacteria conjunctivitis (choice A) can be a component of orbital cellulitis, but does not by itself does not produce exophthalmos (eyeball protrusion), limitation of eye movement, or extremely severe orbital pain.

Blepharitis (choice B) is an inflammation of the lid margins, and can be a component of orbital cellulitis, but does not by itself produce the other orbital signs and symptoms seen in this patient.

Dacryocystitis (choice C) is inflammation of the tear duct, located at the nasal corner of the eye.

Hordeolum (choice D) is a localized infection of an eyelash follicle or small gland in the eyelid.
A 57-yr-old woman presents to the ER complaining of a painful left foot. The patient explains the acute onset of foot tingling and numbness three days ago, since that time the symptoms has progressed to constant pain and inability to bear weight on that foot. The patient's other medical history is significant for atrial fibrillation secondary to amyloidosis. She has been in atrial fibrillation intermittently since last three years and has attempted chemical and electrical cardioversion but without success. She is currently taking no medication. On physical examination the pulse is irregularly irregular at 94/min. An ECG shows atrial fibrillation. Which of the additional findings most likely support the initial diagnosis.

A. Absent dorsalis pedis pulse in the left foot.
B. Lactate dehydrogenase level of 500 U/L.
C. Loss of light touch sensation in the affected limb.
D. Prothrombin time of 14 seconds.
E. Regular heart rhythm.

EXPLANATION

The correct answer is A. An embolization that would cause the symptoms described by the patient would most likely lead to an absence of distal pulses in the affected leg, unless the embolism underwent autolysis.

The cell death and subsequent lysis caused by a thromboembolic event would likely be reflected by increases in the lactate dehydrogenase level (choice B).

Loss of sensation (choice C) is one of the classic signs of an ischemic limb. The other signs include pain, pallor, paresthesias, loss of function, and coolness.

A normal level of the prothrombin time (choice D) reflects the fact that she is not currently anticoagulated, which, in the setting of atrial fibrillation (AF), places her at significant risk for a thromboembolic event.

Finding that the patient has a regular rhythm (choice E) may, at first blush, make the physician question the diagnosis. On further reflection, however, the patient may have paroxysmal atrial fibrillation (PAF). The spontaneous conversion to normal sinus rhythm may have precipitated thrombi from the atrium to be transmitted to the distal arteries. The possible occurrence of this type of event is precisely why patients who are chronically in AF or PAF are typically anticoagulated for several months prior to cardioversion.
A 35-yr-old woman arrives on floor after an uneventful hysteroscopy to evaluate her long history of uterine fibroids. About 30-minutes after her arrival she has nausea and two bouts of vomiting. Physician administers 0.625mg of droperidol and 400 mg of acetaminophen by mouth. On follow up examination the patient's neck is involuntarily flexed to one side. She is oriented, conversant and has normal neurological examination otherwise. Which of the following is the most likely diagnosis.

A. Cerebrovascular accident.
B. Conversion disorder.
C. Dystonic reaction to droperidol.
D. Munchausen syndrome.
E. Seizure.

EXPLANATION

The correct answer is C. The most likely diagnosis is a dystonic reaction to the droperidol. Droperidol causes its antiemetic effect by antagonizing dopaminergic receptors in the vomiting center (central chemoreceptor zone) of the brain. This antidopaminergic action can produce torticollis or other dystonias.

A cerebral vascular accident (choice A) is unlikely given that the patient is alert and oriented, has no detectable language deficit, and has an otherwise nonfocal neurologic examination.

A conversion disorder (choice B) is unlikely since the patient has no prior history of a psychiatric disorder and has a viable medical reason (dystonia from droperidol) for her neuromuscular deficit.

Munchausen syndrome (choice D) is also unlikely since the patient had valid medical reasons for her initial admission and your current visit. We are also not informed of any prior history of hospitalizations or seeking of medical attention without appropriate cause.

A seizure (choice E) is similarly unlikely since the patient has no history of a seizure disorder and is alert, oriented, and conversant.
A 9-month-old infant is seen in pediatrician's office for failure to gain weight. Her height and weight are both below the fiftieth percentile for her age. Patient's chart shows that at the age of 6-months he height and weight were at fiftieth percentile. A careful history reveal that the mother returned to work when the patient was 6-months old and the grandmother assumes the care of the infant since then most of the time. She is receiving 6-8 ounce of iron fortified, cow protein based formula every 4-hours. Which of the following is best initial step in management of this patient.

A. Ask how the formula is mixed.
B. Obtain a detailed history of lactose intolerance.
C. Obtain a stool specimen.
D. Obtain a sweat chloride test.
E. Obtain a urine analysis.

EXPLANATION

The correct answer is A. This 9-month-old infant presents with failure to thrive, which is determined by the decline in her length and weight to below the 5th percentile. Failure to thrive can be either organic or inorganic (i.e., social). Although it is important to identify the causes of organic failure to thrive, most cases are inorganic. In this clinical vignette, since the reduction of weight happens after the mother returned to work, an inorganic cause is likely. One of the most common causes of failure to thrive is improper preparation of the formula, resulting either from an incorrect water-to-formula ratio or from poor mixing techniques. In addition to obtaining a detailed history of how the formula is mixed, it might be very useful to have the caretaker actually demonstrate how he or she prepares the formula. In this case, the most likely reason that the infant has failure to thrive is that the grandmother has improperly mixed the formula.

Lactose intolerance (choice B) is an uncommon cause of failure to thrive. It usually presents with abdominal pain, bloating, and diarrhea.

Obtaining a stool specimen (choice C), sweat chloride test (choice D), or urinalysis (choice E) might be helpful if no identifiable inorganic causes of failure to thrive are identified. Urinalysis is helpful in screening for renal disease. A sweat chloride test is used to detect cystic fibrosis. Stool specimens can be useful in a great variety of gastrointestinal disorders, such as gastroenteritis, parasitic infection, and fat malabsorption.
A grandmother brings her 13-year-old grandson who is in her custody to a psychiatrist. He has been talking back to his teachers and not complaint with school rules, when asked to stop he becomes angry and blame others usually his classmates. In addition his grades are deteriorating. The grandmother has been struggling with him in the past year and thinks that he need structure and control. The boy says that she does not let him do anything and he resents having to live with her. Psychological testing shows no indications of a learning disorder. Which of the following is the most likely diagnosis.

A. Adjustment disorder with disturbance of conduct.
B. Attention deficit hyperactivity disorder.
C. Conduct disorder.
D. Cornelia de Lange syndrome.
E. Oppositional defiant disorder.

EXPLANATION

The correct answer is E. Oppositional defiant disorder belongs to the group of disruptive behaviors characterized by a pattern of negativistic hostile behavior lasting at least 6 months and including four or more of the following: arguing with others, blaming others for own mistakes, being angry and resentful, being vindictive, refusing to comply with adults’ requests, and being easily annoyed by others. The disorder is not due to a mood or psychotic disorder. It causes significant impairment in functioning.

Adjustment disorder with disturbance in conduct (choice A) represents a maladaptive response to a stressor within 3 months of an exposure and does not meet the criteria for oppositional disorder.

Attention deficit/hyperactivity disorder (choice B) includes either inattention, presenting with six or more associated symptoms for 6 months, or six of the hyperactivity-impulsivity symptoms that are inconsistent with developmental level.

Conduct disorder (choice C) is a repetitive pattern of behavior in which the basic rights of others or social rules are violated. The criteria include aggression to animals, destruction of property, violation of rules, deceitfulness, and theft. Three of the criteria need to be present at least for 12 months, and at least one needs to be present in the past 6 months, to make this diagnosis.

Cornelia de Lange syndrome (choice D) is characterized by mental retardation, short stature, continuous eyebrows, thin downturnning lip, microcephaly, small and malformed hands, and hirsutism.
Q-74
A 36-yr-old primigravid woman at 36-weeks gestation comes to the physician for a prenatal visit. She is experiencing good fetal movements and has not lost any fluid, bleeding from vagina or any complains. Her past medical history is significant for mitral stenosis which she developed after an episode of rheumatic fever as a child. She also has asthma for which she uses an albuterol inhaler daily. She has herpes outbreaks approximately once a year. At her last visit she was positive for group B streptococci colonization. For which of the following disease processes patient would benefit from forceps assisted vaginal delivery at the time of delivery.

A. Asthma.
B. Group B streptococcus colonization.
C. Herpes.
D. Mitral stenosis.
E. This patient would not benefit from forceps assisted vaginal delivery.

EXPLANATION

The correct answer is D. Mitral valve stenosis is one of the more common valvular lesions seen in pregnancy. The most common cause of mitral stenosis is rheumatic endocarditis. During normal pregnancy there is an increase in the cardiac output and an increase in preload and circulating volume. Patients with mitral stenosis have a fixed, decreased valve area, which places them at risk for the development of pulmonary hypertension and pulmonary edema. Control of arrhythmias is absolutely essential in these patients because they are at increased risk, given the left atrial enlargement that often goes along with their mitral stenosis. Labor and delivery can be a particularly dangerous time for these patients. Therefore, patients with significant mitral stenosis should be monitored invasively using a Swan-Ganz catheter. It is recommended that the second stage of labor be shortened using forceps or vacuum to prevent excess maternal Valsalva efforts and maternal tachycardia.
Asthma (choice A) is not an indication for forceps-assisted vaginal delivery. In terms of mode of delivery, asthmatic patients may be managed like any other patient in the second stage of labor.

Group B Streptococcus colonization (choice B) is an indication for intravenous penicillin or clindamycin (if the patient has an allergy to penicillin). These antibiotics are given to prevent GBS sepsis in the neonate. GBS colonization is not an indication for forceps-assisted vaginal delivery.

Herpes (choice C) can be transmitted to the fetus at the time of delivery. Therefore, when lesions are present in the birth canal, most obstetricians recommend cesarean delivery. A history of herpes outbreaks, as this patient has, is not an indication for forceps.

To state that this patient would not benefit from a forceps-assisted vaginal delivery (choice E) is incorrect. As explained above, given this patient’s mitral stenosis, forceps-assisted vaginal delivery would be recommended.
A 31-yr-old male immigrant from India is found on a routine physical examination to have a single nodule in his right thyroid gland. The mass is firm, moves up and down with swallowing and is not tender. The skin of his face and neck is pitted with multiple scars, which suggest smallpox however he says that the scars are due to very severe acne which he had as a youngster for which he eventually received external beam radiation therapy at the age of 14. Thyroid function tests are normal and fine needle aspiration cytology of the mass is read by a biopathologist as indeterminate. Which of the following is the most appropriate next step in management.

A. No further care is needed.
B. Thyroid function tests should be repeated yearly.
C. Thyroid scan and sonograms are needed.
D. FNA should be repeated until it can be read as benign or malignant.
E. Thyroid lobectomy.

EXPLANATION

The correct answer is E. The patient is at high risk for thyroid cancer (young, male, with a single nodule and a history of radiation), and a reading of "indeterminate" in an FNA is a surgical indication.

No further care (choice A) is totally wrong. It assumes that normal thyroid function means there is nothing wrong with the thyroid, when in fact thyroid cancer almost never alters thyroid function. This choice also assumes that if an FNA is not read as cancer, the patient does not have that disease.

Focusing on function (choice B) as the criterion to do something is wrong for the same reasons.

Thyroid scan and sonogram (choice C) were formerly valuable criteria to select surgical candidates (cold solid nodules meant a high risk of cancer), but the FNA provides a higher yield of malignancy in resected specimens, and thus has rendered the other tests obsolete for this purpose.

Repeating the FNA (choice D) assumes that, given more cells, the pathologist should be able to distinguish benign from malignant. The pathologist has no trouble recognizing malignant features in papillary, medullary, or anaplastic cancers of the thyroid, but cannot do so with follicular neoplasms. Follicular adenoma and follicular carcinoma require a look at the entire specimen to tell them apart.
Q-76
A 4196-gram (9 lb 4 ounce) infant is delivered by vaginal delivery to a 31-yr-old mother by gestational diabetes. The delivery is complicated by shoulder dystocia. He is taken to the newborn nursery where his initial plasma glucose was 20 mg/dl, initial spun hematocrit is 65%. Which of the following congenital anomalies this baby is most likely to have.

A. Aniridia.
B. Cleft palate.
C. Macroglossia.
D. Omphalocele.
E. Single palmar crease.
F. Small left colon.

EXPLANATION
The correct answer is F. This is a classic presentation of an infant of a diabetic mother. Exposure to hyperglycemia in utero causes hyperinsulinism in the fetus, which leads to macrosomia, since insulin is a growth factor. Hyperinsulinism continues after birth, causing mild to severe hypoglycemia. Other common features include polycythemia, hypocalcemia, jaundice, and respiratory distress syndrome. Several congenital anomalies are associated with infants of diabetic mothers, including small left colon, which can cause meconium plugging, CNS and cardiac anomalies, sacral agenesis and renal vein thrombosis.

Aniridia (choice A) actually refers to a hypoplastic iris, although the name suggests an absence of the iris. It occurs either through dominant inheritance or sporadically. Patients with aniridia may develop Wilms tumor, glaucoma, nystagmus and other vision problems. There is also an abnormality of chromosome 11 that causes aniridia, genital anomalies and mental retardation. There is no association with maternal diabetes.

Cleft palate (choice B) is a common facial anomaly that occurs sporadically or in association with a genetic syndrome (i.e. Pierre Robin Syndrome) or due to maternal drug exposure. It is more common in Asians and least common in blacks. Cleft palate results from the failure of the palatal shelves to fuse during fetal development. It is not usually associated with infants of diabetic mothers.
Macroglossia (choice C) is a key feature of Beckwith-Wiedemann Syndrome, an overgrowth syndrome involving a large-sized patient, liver and kidney enlargement, hyperinsulinism, omphalocele and macroglossia. People with Down Syndrome also have a relative macroglossia, due to a small mandible and maxilla.

Omphalocele (choice D) is a herniation or protrusion of abdominal contents into the base of the umbilical cord. The abdominal contents are covered only with peritoneum and no overlying skin. It occurs sporadically in about 1 in 5000 births, or as part of the Beckwith Wiedemann Syndrome. Immediate surgical correction before the abdominal contents dry out is the treatment of choice.

A single palmar crease (choice E) is a common feature of Trisomy 21 (Down Syndrome) but also can be seen as an isolated finding in many healthy people who have a normal karyotype. This is not a feature caused by maternal diabetes.
Q-77
A 32-yr-old woman comes to her physician because of recurrent painful outbreaks on her labia and vagina. Her first outbreaks were six-years ago, at that time she developed, what she thought was a bad flue with malaise and fever along with a painful rash on her labia. This initial outbreak resolved but since then she had 8-10 outbreaks each year. Each outbreak is preceeded by itching and burning in her perianal area, a few days later she develops vesicles and then shallow ulcers that resolve in about ten days. Which of the following is most appropriate pharmacotherapy.

A. Daily oral acyclovir.
B. Daily oral estrogen.
C. Daily topical estrogen.
D. Daily oral ferrous sulphate.
E. Daily oral penicillin.

EXPLANATION

The correct answer is A. This patient has a classic presentation of herpes genitalis, a venereal disease caused by herpes simplex virus type II (90% of cases) or type I (10%). Initial infection usually results in generalized illness including malaise, myalgias, and low-grade fever along with the perineal lesions. These lesions start out as clear vesicles that progress to ulcers over the following days. The ulcers may then coalesce to form a larger, shallow, painful ulcer. After the initial infection, the virus resides in the dorsal root sacral ganglia. From there it is periodically reactivated. Recurrent episodes are characterized by a prodrome of tingling, burning, or itching prior to the appearance of the lesions. There is no "cure" for herpes genitalis. Acyclovir can be used to shorten the duration of symptoms. In patients who have more than 6 outbreaks per year, daily oral acyclovir is recommended to prevent these frequent outbreaks.

Daily oral estrogen (choice B) or daily topical estrogen (choice C) would not be appropriate pharmacotherapy for these outbreaks. Estrogen (oral and topical) is used for patients with atrophic vaginitis. Atrophic vaginitis is characterized by pale vaginal mucosa with a loss of rugae. It is associated with estrogen deficient states such as menopause. This patient has no evidence of estrogen deficiency and therefore estrogen would not be recommended.

Daily oral ferrous sulfate (choice D) is appropriate pharmacotherapy for patients with iron-deficiency anemia. Sufficient iron stores are necessary for effective erythropoiesis. There is no evidence that this patient is iron deficient and the most appropriate pharmacotherapy to prevent recurrent herpes outbreaks is acyclovir, not ferrous sulfate.

Daily oral penicillin (choice E) would not be appropriate pharmacotherapy for this patient. This patient has herpes genitalis and not a bacterial infection. Thus, acyclovir, and not penicillin, would be indicated.
Q-78
A 31-yr-old homeless woman is brought to the ER after being found face down on the street. The woman has a long history of admission to the hospital for alcohol related issues including withdrawl, seizures and hallucinations. Today she was seen to fall on the street, have what were described as convulsions and then vomit and remained face down in the street until the paramedics arrived. On examination she has dry mucous membranes, a JVP of less than 5cm and diffuse ecchymosis on her face, body and breast. Which of the following vitamins should be given before IV administration of fluids containing glucose.

A. Vitamin B1 (thiamine).
B. Vitamin B3 (niacin).
C. Vitamin B12 (cobalmin).
D. Vitamin C.
E. Vitamin K.

EXPLANATION

The correct answer is A. Administering glucose to a patient who is deficient in thiamin may precipitate Wernicke-Korsakoff syndrome, which is a combination of confusion, ataxia, ophthalmooplegia, anterograde and retrograde amnesia, and confabulation. It is therefore imperative to administer IV thiamin prior to glucose-containing IV fluids.

Niacin (choice B) is an essential component of the coenzymes involved in oxidation-reduction reactions. Profound deficiency in niacin causes the classic triad of pellagra: dermatitis, diarrhea, and dementia.

Vitamin B12 deficiency (choice C) may lead to megaloblastic anemia, neurologic complications, and dementia.

Vitamin C deficiency (choice D) may lead to difficulty with wound healing and scurvy.

Vitamin K (choice E) is essential for the production of selected clotting factors. Although alcoholics may be deficient in all the vitamins mentioned in the answer choices, only deficits in thiamin are associated with harmful effects if glucose is administered without replenishment.
A 25-yr-old woman presents to the ER complaining that she is having auditory hallucinations and tremors along associated nausea and vomiting. She is very anxious. On mini-mental state examination she scores 22 out of 30 and she appears to be obtunded. From which of the following substances this patient is most probably withdrawing.

A. Alprazolam.
B. Caffeine.
C. Cocaine.
D. Heroine.
E. Nicotine.

EXPLANATION

The correct answer is A. This patient has the symptoms of withdrawal from benzodiazepines, such as alprazolam (Xanax). Symptoms include insomnia, tremor, gastrointestinal distress, hallucinosis, and anxiety. Withdrawal from benzodiazepines can also be accompanied by generalized seizures.

Caffeine (choice B) withdrawal does not have associated obtundation and usually manifests as mild psychomotor agitation.

Cocaine withdrawal (choice C) is characterized by dysphoria, psychomotor agitation or retardation, and marked fatigue.

Heroin withdrawal (choice D) is characterized by generalized pain, nausea, vomiting, diarrhea, and piloerection (goose flesh).

Nicotine withdrawal (choice E) is characterized by intense craving activity and mild to moderate psychomotor agitation.
Foot examination is performed on a 45-yr-old patient who have been diagnosed with type I diabetes at the age of 15. While the patient has no complains of foot pain, both feet clearly appear deformed with loss of normal arches and abnormal orientation of toes. No inflammation is noted. X-ray film shows deformed bones with new bone formation adjacent to the bone cortex, several bizarrely shaped osteophytes are seen at the joint margins. Which of the following is most likely diagnosis.

A. Avascular necrosis.
B. Gout.
C. Infectious arthritis.
D. Neurogenic arthropathy.
E. Rheumatoid arthritis.

EXPLANATION

The correct answer is D. This patient most likely has neurogenic arthropathy. The disorder develops in a setting of impaired pain perception and position sense, and can cause a rapidly destructive osteoarthritis-like arthropathy. The problems appear to be due to unfelt minor injury, without the normal response of pain, causing resting of, and natural splinting (by muscle contraction or shifting position) of the affected joints. The most commonly encountered setting is diabetic foot disease. You should be aware that it can also occur in a wide variety of other conditions, including tabes dorsalis (syphilis), syringomyelia, Arnold-Chiari malformation, meningomyelocele, leprosy, tumors of peripheral nerve or spinal cord, vertebral disease with damage to peripheral nerves, amyloidosis, and familial hereditary neuropathies. The joints affected are those that have lost pain innervation, possibly in association with palsies of nearby muscles.

Avascular necrosis (choice A) usually involves a single joint rather than multiple joints.

Gout (choice B) can involve the feet with crystal deposition, but does not usually cause osteophyte formation. The great toe is the most likely site of involvement in the foot.

Infectious arthritis (choice C) can complicate diabetes mellitus, but usually produces an obviously inflamed joint.

Rheumatoid arthritis (choice E) usually produces obviously inflamed joints and more frequently involves the hands or large joints of the feet.
Q-81
A 67-yr-old retired librarian presents to her physician because of 48-hours of shaking chills, persistent fever and a productive cough. She is a former smoker who quit 25-years ago, she is in otherwise good health except for a transient ischemic attack 2-years ago. On physical examination there are coarse ronchi on left posterior lung base with increased fremitus and hyperresonance to percussion. A chest x-ray film reveals a lobar consolidation in left lower posterior lung segment. Which of the following would most likely to appear on a sputum gram stain.

A. Gram-negative cocci in chains.
B. Gram-negative rods.
C. Gram-positive cocci in chains.
D. Gram-positive cocci in clusters.
E. Gram-positive rods.

EXPLANATION

The correct answer is C. The most likely organism in an otherwise healthy patient residing at home ("community-acquired pneumonia") is Streptococcus pneumoniae, otherwise known as the "pneumococcus." This organism appears as a gram-positive, lancet-shaped diploccus in short chains on a Gram’s stain of sputum. It is usually present in very large numbers in clinical cases of pneumococcal pneumonia. S. pneumoniae accounts for about two thirds of community acquired pneumonias and occurs most frequently in the very young and the elderly. More than 80 distinct serotypes exist, which is why the pneumococcal vaccine (directed against 23 different polysaccharide antigens), although very useful, does not protect perfectly against pneumonia caused by S. pneumoniae.

Gram-negative cocci in chains (choice A) is consistent with gonococcus, which rarely causes a bacterial pneumonia—and almost always in people who have gonorrhea of the genital organ systems.

The patient has no underlying diseases to suggest that there might be a predisposition to a gram-negative pneumonia (choice B), such as due to Pseudomonas or Escherichia coli. E. coli pneumonia is seen in patients with underlying E. coli infection elsewhere, notably in the urinary tract. Pseudomonas pneumonia is common in patients with underlying cystic fibrosis, neutropenia, AIDS, bronchiectasis, or other organ system disease serious enough to require therapy in an intensive care unit.
Gram-positive cocci in clusters (choice D) suggest Staphylococcus aureus. Although S. aureus can occur (2% of the time) in community-acquired pneumonias and may affect the elderly, it is more commonly seen as a nosocomial infection, particularly in patients who have tracheostomy, endotracheal intubation, immunosuppression, or recent surgery. Other particularly vulnerable patients include those with underlying cystic fibrosis, granulomatous lung disease, IV drug abuse with staphylococcal endocarditis, or bacterial superinfection following viral pneumonia.

Finally, there is no history to suggest an anaerobic infection with Clostridium or Listeria monocytogenes, which are gram-positive rods (choice E). Clostridium infection can complicate wounds; Listeria infection can be acquired in utero or through ingestion of contaminated milk products.
Q-82
A 62-yr-old factory worker complains of difficulty in swallowing. She has had trouble with solid foods and senses discomfort in mid-lower chest after eating meat or dry bread. She denies any weight loss or any other associated problem. There is no family history of gastrointestinal malignancy. Physical examination is unremarkable. Which of the following is the most appropriate next step in evaluation of this patient’s symptoms.

A. Barium esophagram.
B. Chest x-ray.
C. CT-scan of the chest.
D. Esophagoscopy.
E. 24-hour pH monitoring.

EXPLANATION
The correct answer is D. This patient is presenting with symptoms of a peptic stricture after many years of gastroesophageal reflux disease (GERD) symptoms. An endoscopy not only will allow evaluation of the stricture but will also allow biopsy to ensure that it is of a benign nature. Furthermore, it would allow dilatation of the stricture using an endoscopic-guided balloon to relieve the patient’s symptoms.

A barium esophagram (choice A) would demonstrate the typical smooth tapering nature of a peptic stricture, distinguishing it from the irregular, ulcerated, mass-like stricture seen in patients with esophageal carcinoma. However, it would not conclusively make this distinction and would require a follow-up endoscopy with biopsy anyway.

A chest x-ray (choice B) is not of specific diagnostic value in patients who are undergoing evaluation for dysphagia.

A CT scan of the chest (choice C) is not very useful in determining intraluminal esophageal lesions. CT is used for patients with suspected malignant strictures to evaluate the paraesophageal regions and assess for the possibility of local spread.

A 24-hour pH monitor (choice E) is useful to demonstrate that there is acid reflux, which is not in question with this patient with the longstanding history of typical symptoms.
Q-83
A 3-week-old boy presents to the physicians office with a 1-week history of projectile vomiting. He has been vomiting after almost every feeding. The vomitus contains mostly undigested formula and is non-bilious. On examination his oral mucosa is dry and his anterior fontanelle appears depressed and his capillary refill is 3-4 seconds. Abdominal examination reveals an olive sized mass in the epigastrium. Which of the following electrolyte will most likely be seen.

A. Hypochloremic metabolic acidosis.
B. Hypochloremic metabolic alkalosis.
C. Normal electrolytes.
D. Respiratory acidosis with metabolic compensation.
E. Respiratory alkalosis.

EXPLANATION
The correct answer is B. This baby most likely has pyloric stenosis. Pyloric stenosis occurs in approximately 1:500 births. Male infants are more commonly affected than female infants are, and the incidence is far greater in full-term infants than in preterm infants. Clinical manifestations include projectile non-bilious vomiting shortly after feeding and an olive-sized mass palpable in the epigastrium. Symptoms typically present in the 2nd or 3rd week of life. As the vomiting continues, hydrogen ions and chloride ions begin to decrease in the body, causing hypochloremic metabolic alkalosis. In addition, the infant might also be hypokalemic from repeated vomiting. Plain radiographs may demonstrate the absence of air distal to the obstructed pylorus. In barium contrast studies, a small amount of barium may pass through the hypertrophied pylorus, causing the "string sign." Ultrasound studies are also useful in demonstrating the hypertrophied pylorus. The dehydration and electrolyte abnormalities should be corrected. Definite treatment is pyloromyotomy.
Q-84
A 52-yr-old man is recuperating in a hospital after having sustained a recent CVA that damaged part of his right temporal lobe. Once the patient has recuperated from the immediate effects of his stroke which of the following psychiatric parameters will he be most predisposed.

A. Conversion disorder.
B. Mania.
C. Major depressive disorder.
D. Schizophrenia.
E. Substance abuse.

EXPLANATION

The correct answer is C. Any event that affects the vasculature, such as a myocardial infarction or a cerebrovascular accident (CVA), has been shown to increase the risk of major depressive disorder in the months following such an event. The pathophysiology of such a development is unclear, but is thought to be related to the effects of serotonin on vascular physiology.

Conversion disorder (choice A) is a disorder of physiological complaints that are related to social stressors; it has not shown to be related to vascular events.

Mania (choice B) is a syndrome of increased elevated mood, irritability, and grandiosity associated with bipolar affective disorder, but not associated with CVAs.

Schizophrenia (choice D) is a thought disorder characterized by disturbances in language, thought content, and perception. It is not related to CVA.

Substance abuse (choice E) is not increased in incidence in individuals after cerebrovascular accident.
A 31-yr-old woman comes to the physician because she has not had a menstrual period for seven months. She previously had normal cycles. She also states that over the past year she has felt increasingly weak and tired, she noticed that she always feels cold and that her hair has been thinning over the course of the year. She also complains of weight gain, constipation and depression. Her temperature 36.7°C (98°F), blood pressure 100/60, pulse is 56 and respirations are 10. Examination is significant for brittle hair and delayed deep tendon reflexes. Urine HCG is negative, TSH is 20 microunits/ml, prolactin is normal. Which of the following is the most likely cause of patient's amenorrhea.

A. Hyperprolactenimia.
B. Hypothyroidism.
C. Kallmann's syndrome.
D. Polycystic ovarian syndrome.
E. Pregnancy.

EXPLANATION

The correct answer is B. Secondary amenorrhea is defined as the absence of menses for 6 cycle intervals or 12 months in a woman who previously had regular cycles. This patient, therefore, has secondary amenorrhea. She also has a constellation of signs and symptoms that are highly suggestive of hypothyroidism. Patients with hypothyroidism often complain of some combination of weakness, fatigue, cold intolerance, constipation, weight gain, depression, or thinning of the hair. Physical examination can reveal bradycardia and low blood pressure. Laboratory evaluation often shows an elevated TSH as the pituitary attempts to stimulate the underfunctioning thyroid. However, many patients with hypothyroidism will be asymptomatic and the thyroid abnormality is found by thyroid function tests. Hypothyroidism likely leads to amenorrhea through changes in GnRH production. Treatment with thyroid replacement will often return these patients to regular menses.

Hyperprolactenimia (choice A) is the cause of secondary amenorrhea in approximately 20% of cases. This patient, however, has a normal prolactin level.

Kallmann syndrome (choice C) is a rare cause of primary amenorrhea. This syndrome is characterized by gonadotropin deficiency, anosmia or hyposmia, cleft lip or palate, and minimal sexual development. This patient does not have primary amenorrhea.

Polycystic ovarian syndrome (choice D) is often characterized by obesity, hirsutism, infertility, and oligomenorrhea. Thyroid dysfunction is not part of this syndrome.

Pregnancy (choice E) is, by far, the most common cause of secondary amenorrhea. This patient has a negative urine hCG.
An 81-yr-old man with alzheimer's disease who lives in a nursing home undergoes surgery for a fractured femoral neck. On the fifth of his post-operative day it is noted that his abdomen is grossly distended and tense but not tender. He has occasional bowel sounds and rectal vault is empty and on digital examination there is no evidence of any occult blood. X-ray film shows a few loops of distended small bowel and a very distended colon. The cecum measures 9-cm in diameter and the gas pattern of distension extends throughout the large bowel including sigmoid and rectum. No stool is seen in the films. Other then the abdominal distension and the ravages of his mental disease he does not appear to be ill. Vital signs are within normal limits for his age. Which of the following is the most likely diagnosis.

A. Fecal impaction.
B. Mechanical intestinal obstruction.
C. Ogilvie syndrome.
D. Paralytic ileus.
E. Volvulus of the sigmoid colon.

EXPLANATION

The correct answer is C. Ogilvie syndrome is a type of colonic dysfunction often seen in elderly patients who are not too active to begin with and are then further immobilized by extra-abdominal surgery. Colonoscopy rules out obstructing cancer (always a consideration in this age group) and allows the gas to be sucked out as the instrument advances. A long tube is then left in place.

Fecal impaction (choice A) is always a good thing to look for in old immobilized people with abdominal distention. However, the rectal vault would have been full of feces, and the x-ray films might have shown the fecal column extending up into the sigmoid and descending colon.

Neither mechanical intestinal obstruction (choice B) nor paralytic ileus (choice D) would develop from hip surgery. When these complications occur after abdominal surgery, they affect primarily the small bowel, not the colon.

Volvulus of the sigmoid (choice E) is another good thought in the distended old patient, but the radiologic picture would have been different, with a huge distended sigmoid way up into the right upper quadrant and tapering toward the left lower quadrant with the classic image of a "parrot's beak."
Q-87
An adult develops insidious onset of severe infectious disease. The condition is characterized by high fever, pharyngitis, headache and arthralgia. The patient then goes to develop intestinal complaints of anorexia, abdominal pain and constipation. During the second week of illness he has a rash and discrete pink blanching lesions (rose spots) on the abdomen and chest. The rash resolves about three days later. In the third week of illness the patient appears very ill and has developed florid diarrhea that is positive for occult blood. In the same period the man has developed secondary pneumococcal pneumonia. At the height of patient’s illness he was stuporous and had short periods of delirium. The spleen was palpable during that period. Blood studies demonstrate leukopenia, anemia, liver function abnormalities and a mild consumption coagulopathy. Which of the following is the most likely diagnosis.

A. Brucellosis.
B. Cholera.
C. Melioidosis.
D. Plague.
E. Typhoid fever.

EXPLANATION
The correct answer is E. This is typhoid fever, which, despite widespread immunization in many parts of the country, still has an incidence of 400 to 500 cases per year in the United States. The organism is an enteric organism spread most frequently by a fecal-oral route (including contamination of food or water supplies). Many of the estimated 2000 carriers of the disease in the United States are elderly women with biliary tract disease. The disease can be difficult to diagnose, often because it is not suspected. It should be considered in patients who appear much more ill than a simple listing of their complaints would suggest. The rose spot rash described in the question stem is a classic diagnostic clue that will probably show up in test questions about the disease, but you should be aware that it is only seen in about 10% of cases. CNS symptoms and superinfections such as the pneumococcal pneumonia are relatively common in severe cases. The blood study results noted in the question stem can be another helpful clue to the possibility of typhoid fever, and are unusual in other GI conditions. The organism can be cultured from blood or bone marrow in the first two weeks of illness, and from stool in the third to fifth week of illness. Antibiotic therapy with cephalosporins or quinolones may decrease the severity or duration of the illness; relapses may occur, which also usually respond to antibiotic therapy. Severely ill patients may benefit from supportive care including nutritional support and sometimes glucocorticoid therapy.
Brucellosis (choice A) causes a recurrent fever after exposure to contaminated milk products.

Cholera (choice B) causes a profound secretory diarrhea with rice water stools and has fewer systemic manifestations (other than those due to dehydration and electrolyte imbalance) than typhoid fever.

Meliodosis (choice C) causes pneumonia and disseminated infection.

Plague (choice D) causes massive lymph node enlargement and pneumonia after exposure to infected rodents and their parasites.
Q-88

A 74-yr-old man presents with two episodes of passing large quantities of bright red blood per rectum. He has a long history of constipation without a recent change in his bowel habits. A flexible sigmoidoscopy reveals multiple large diverticula in the sigmoid colon with copious amounts of fresh blood in this region. No other abnormalities are seen. On examination of the splenic flexure where formed brown stool is encountered. Which of the following is the most likely explanation for his bleeding.

A. Diffuse descending colon ischemia.
B. Hemorrhage from a single diverticular arteriole.
C. Oozing from an inferior mesenteric vein.
D. Thrombosis of a branch of inferior mesenteric artery.
E. Thrombosis of internal hemorrhoids.

EXPLANATION

The correct answer is B. One of the important complications of diverticular disease is bleeding that can be massive enough, as in this patient, to be potentially life-threatening. The mechanism involved in producing bleeding in diverticular disease is usually the disruption of an often single arteriole or small artery in a diverticulum. The diverticulum involved is often, but not always, particularly large. The small vessel can be sufficiently stretched by the diverticulum that it cannot undergo contraction, which normally stops blood flow through this size vessel after damage. In many cases, the bleeding may stop spontaneously. If it recurs within a few days, surgical resection of the involved segment of bowel (if it can be identified, which can be problematic) may be required.

The patient does not have any evidence of a diffuse descending colon ischemia (choice A), which would have produced an obviously edematous bowel mucosa, often with many focal hemorrhages.

Inferior mesenteric veins course primarily in the serosal fat of the bowel, and consequently do not ooze into the bowel lumen as a cause of bleeding (choice C).

Thrombosis of a branch of the inferior mesenteric artery (choice D) would cause an ischemic colitis with features as described in the discussion of choice A, which are not described in this patient.

Thrombosis of internal hemorrhoids (choice E) is very common but does not cause bleeding per se.
A patient with AIDS and a CD4 cell count of 16/mm³ comes to the medical attention because of a recent onset of motor and sensory neurological deficit and mental status changes. CSF studies show mild lymphocytosis. Neuroimaging studies show multiple ill-defined areas of T2 changes, interpreted as evidence of demyelination. These areas are located in the white matter of both cerebral hemispheres and cerebellum. Which of the following is the most likely diagnosis.

A. AIDS dementia complex.
B. Cerebral toxoplasmosis.
C. Cytomegalovirus encephalitis.
D. Progressive multifocal leukoencephalopathy.
E. Multiple sclerosis.

EXPLANATION

The correct answer is D. The history of severe HIV-related immune compromise and evidence of destruction of myelin at multiple sites in the CNS points to a diagnosis of progressive multifocal leukoencephalopathy (PML). PML is caused by JC virus, a papovavirus that produces asymptomatic infections in immunocompetent hosts. Oligodendrocytes in active lesions contain characteristic intranuclear inclusions. Usually, biopsy of the lesions is not necessary, as a presumptive diagnosis of PML can be made on clinical grounds. PML is also seen in patients with lymphomas, or those receiving organ transplants.

In AIDS-dementia complex (choice A), there is no focal brain lesion. Sometimes, diffuse, but usually mild, cerebral atrophy can be identified by MRI. Patients present with progressive dementia, often associated with incontinence and disorientation.

Cerebral toxoplasmosis (choice B) typically manifests with a round, well-circumscribed lesion that shows a peripheral rim of contrast enhancement.

CMV encephalitis (choice C) has a predilection for the periventricular gray matter and ependyma, as well as the retina.

Multiple sclerosis (MS) (choice E) does not develop in the context of immune impairment. Demyelinating plaques of MS are typically well-demarcated and most commonly located in the periventricular regions.
Q-90
A 2-yr-old child has been shot in the arm in a drive-by shooting. His brachial artery was partially transected and there was copious bleeding. The EMTs controlled the site of bleeding by local pressure and the child is no more losing blood, however he is hypotensive and tachycardic. IV fluid resuscitation is urgently needed but several attempts to start peripheral IV lines have been unsuccessful. Which of the following would be the best alternative route in this situation.

A. Central line by subclavian puncture.
B. Hypodermolysis.
C. Intraosseous cannulation in proximal tibia.
D. Percutaneous femoral vein cannulation.
E. Saphenous vein cut-down.

EXPLANATION

The correct answer is C. In very small children, the preferred alternate route, if peripheral veins cannot be cannulated, is the placement of a trocar in the bone marrow of a long bone. The upper tibia is usually chosen.

Subclavian puncture (choice A) was at one time routinely used in the resuscitation of patients in shock, but it is now recognized that it is invasive and has many possible complications. Furthermore, frequently in the trauma setting, the head and neck and upper thorax are not accessible, as many other life-saving and diagnostic examinations are being done. The extremities, on the other hand, are free to be used.

The subcutaneous tissue (choice B) cannot take fluid fast enough to meet the needs here.

The femoral vein by percutaneous puncture (choice D) or a saphenous vein cut-down (choice E) are the preferred alternate routes in an adult when peripheral veins cannot be rapidly cannulated.
Q-91
A 40-yr-old woman has an 8-month history of diffuse joint pain and swelling that involves both hands and knees. She states that she cannot get any work done in the morning due to the pain but it subsides as the day progresses. She tires easily and constantly feels feverish. Her temperature is 37.8 C (100 F), blood pressure is 110/70, pulse is 60 and respirations 18. Examination shows tender, swollen and boggy hands and knees. Lab studies show hematocrit 34%, hemoglobin 10 gm/dl. A radiograph of this patient’s knee is most likely to show which of the following.

A. Bone erosions.
B. Osteophyte formation.
C. Subchondral cyst formation.
D. Subchondral sclerosis.
E. Subchondral tophi.

EXPLANATION
The correct answer is A. This patient most likely has rheumatoid arthritis, a chronic inflammatory disorder characterized by symmetrical joint involvement and extraarticular manifestations. It typically affects middle-aged women. Symptoms include joint pain and swelling, low-grade fever, malaise, fatigue, vasculitis, pericarditis, rheumatic nodules, episcleritis, and scleritis. Laboratory findings include normochromic, normocytic anemia, increased erythrocyte sedimentation rate, and serum rheumatoid factors. The proximal interphalangeal joints (PIP), metacarpophalangeal joints (MCP), and the wrist joints are the most commonly involved joints. Distal interphalangeal joints (DIP) are usually spared. Radiographic findings include soft tissue swelling, joint effusions, juxtaarticular osteopenia, loss of articular cartilage, joint space narrowing, and bone erosions. The treatment includes rest, physical therapy, NSAIDs, aspirin, corticosteroids, gold, methotrexate, penicillamine, cyclosporine, sulfasalazine, and hydroxychloroquine.

Osteophyte formation (choice B), subchondral cyst formation (choice C), and subchondral sclerosis (choice D) are the radiographic findings of osteoarthritis. Osteoarthritis is a noninflammatory joint disease characterized by loss of articular cartilage and the aforementioned findings. The symptoms include a deep, aching joint pain that is aggravated by use and relieved by rest. Physical examination shows joint tenderness, bony crepitus, warmth and deformities (Heberden’s nodes-DIP and Bouchard’s nodes-PIP). Age, wear and tear, obesity, trauma, and certain chronic conditions are factors that increase the risk of osteoarthritis. The treatment includes weight loss, physical therapy, acetaminophen, and surgery.

Subchondral tophi (choice E) are found in gouty arthritis. They typically appear as “punched out” lesions of the subchondral bone. A tophus is a collection of urate crystals, inflammatory cells, and fibrosis. Tophi can lead to cartilage and bone destruction.
Q-92
A 34-yr-old woman with no underlying medical problem presents to the clinic with temperature up to 101 F and cough productive of greenish sputum for two days without any dyspnea. Pulse is 88 and respiratory rate is 18. There is no accessory muscle used or any conversational dyspnea nor are there wheezes, bronchial breath sounds, rales or egophony over the right lower field. Chest x-ray film shows a right lower lobe consolidation. A CBC shows leukocyte count of $13,000/mm^3$. Which of the following is the most appropriate pharmacotherapy.

A. Amoxicillin.
B. Ampicillin + sulbactem.
C. Ceftriaxone.
D. Erythromycin.
E. Erythromycin + ceftriaxone.

EXPLANATION

The correct answer is D. The first step in the approach to this patient with a community-acquired pneumonia is to categorize her condition according to the American Thoracic Society guidelines (1993), which are based on severity of illness, age, comorbidities, and the need for hospitalization. This patient does not meet the criteria for hospitalization (one of the following is needed: respiratory rate > 30 breaths/min, room air PaO2< 60 mm Hg, O2 saturation less than 90% on room air, or bilateral or multiple lobes involved), and she is younger than 60 years without any comorbidities. The most common organisms are Streptococcus pneumoniae, Mycoplasma pneumoniae, Chlamydia pneumoniae, Haemophilus influenzae, Legionella, and respiratory viruses. Recommended treatment is with erythromycin or a related macrolide, such as azithromycin or clarithromycin.

Amoxicillin (choice A) does not have broad enough coverage to include the organisms listed above.

Ceftriaxone (choice C) and ampicillin-sulbactam (choice B) are used for hospitalized patients with community-acquired pneumonia.

Erythromycin plus ceftriaxone (choice E) is reserved for patients who are severely ill and hospitalized.
Q-93
A 54-yr-old man presents for a periodic health examination. His family history is significant for his mother who died of cerebrovascular accident at the age of 72 and father who died of myocardial infarction at the age of 68 and a brother who developed sigmoid cancer at the age of 60. He is on no medication except aspirin 81 mg/day. His physical examination is unremarkable. The patient asks for a recommendation regarding current cancer screening. Which of the following is the most appropriate screening test for this patient.

A. Annual digital rectal examination and occult fecal blood testing.
B. Flexible sigmoidoscopy.
C. Flexible sigmoidoscopy and barium enema.
D. Colonoscopy.
E. Genetic testing for P53 gene.

EXPLANATION
The correct answer is D. Any patient with a first-degree relative who has developed an adenoma or colorectal cancer should undergo colonoscopy for screening at age 50, or 10 years before the relative developed the adenoma or carcinoma, whichever comes first. This patient has a brother who has a colon cancer at age 60; therefore, a full colonoscopy is warranted. Although there are various opinions regarding appropriate screening in the "average risk individual," there is a consensus that full colonoscopy is required in patients who have an increased risk, e.g., first-degree relative with a positive history.

Annual digital rectal examination and fecal occult blood testing (choice A) are no longer considered a reliable method of screening for colon cancer, since a shift in the demographics of colon cancer has lead to more than half being identified in the first half of the colon. Digital rectal examination also often fails to identify premalignant colonic polyps.

Flexible sigmoidoscopy (choice B) is a good initial screening technique for patients older than 50 with no specific known risk factors. If polyps are identified, they can be biopsied, their type established, and subsequent complete colonoscopy performed if adenomas were identified microscopically.

Flexible sigmoidoscopy and barium enema (choice C) offers an alternative way of screening the entire colon in patients in whom a complete colonoscopy cannot be performed.

Genetic testing for the p53 gene (choice E) is not currently used for colon cancer screening.
Q-94

A 14-yr-old male presents with complain of soreness in his legs for the past day that has slowly spread from his calf to his thighs. He now complains of weakness in his trunks and arms. On examination he appears tired and lays on the examination table. His temperature is 37 C (98.6 F), pulse is 48 and respirations are 22. Both of his legs are diffusely tender. Deep tendon reflexes are absent in the lower extremities and sensation is greatly diminished. Which of the following studies is essential for the patient's diagnosis.

A. Creatinine phosphokinase levels.
B. Stool culture for campylobacter jejuni.
C. Motor nerve conduction test.
D. Cerebrospinal fluid studies.
E. Muscle biopsy.

EXPLANATION

The correct answer is B. Guillain-Barré syndrome (GBS) is a postinfectious polyneuropathy that causes demyelination of BOTH motor and occasionally, sensory nerves. It is classically an ascending paralysis. CSF studies are essential for diagnosis and reveal a protein level usually twice normal values but with normal amounts of white blood cells, normal glucose level and an absence of pleocytosis (elevated lymphocytes). Autonomic nervous system involvement can produce the bradycardia seen in this vignette.

Creatinine phosphokinase levels (choice A) may be mildly elevated and sometimes are normal, but are not essential for diagnosis.

Motor nerve conduction tests (choice C) would show decreased velocities, but are not specific for GBS.

A muscle biopsy (choice D) is not indicated and can be normal in early stages. Late disease reveals denervation atrophy.

Stool culture for Campylobacter jejuni(choice E), a well recognized infection associated with GBS, is again not essential for diagnosis. By the time the disease presents stool cultures are often negative.
Q-95
A 50-yr-old man presents to the ER complaining of the onset over the past day of bilateral tremor in his hands, diaphoresis, headache, anxiety and the sensation that my skin is crawling. He denies any other symptoms. His medical history is significant only for hypertension for which he takes hydrochlorothiazide. He states that he sees a psychiatrist for bipolar disorder and anxiety and that he takes three medications prescribed by his psychiatrist, names of which he cannot remember. He ran out of his medications three days ago and he has an appointment for his primary care physician and his psychiatrist tomorrow. His temperature is 37 C (98.6 F), blood pressure is 150/100, pulse is 115 and respirations are 20. Physical examination is noted for diaphoresis and tremulousness. Administration of which of the following is the most appropriate initial step in this patient’s care.

A. Clonidine.
B. Haloperidol.
C. Hydrochlorothiazide.
D. Lorazepam.
E. Prochlorperazine.

EXPLANATION
The correct answer is D. The patient takes an unknown anxiety medication, and is most likely experiencing benzodiazepine withdrawal symptoms. Commonly observed symptoms of benzodiazepine withdrawal include: anxiety, diaphoresis, irritability, insomnia, fatigue, headache, myalgias, nausea, perceptual disturbances, tremors, and seizures. The most appropriate management step would be parenteral administration of a short-acting benzodiazepine, such as lorazepam.

Clonidine (choice A) is often used for the acute treatment of elevated blood pressure. However, it would not be an appropriate initial management choice for this patient, because the elevated blood pressure is most likely caused by or exacerbated by the withdrawal syndrome.

Haloperidol (choice B) can be used in the emergency management of extreme anxiety and agitation, but it would not be an appropriate choice for a withdrawal syndrome. Although haloperidol would likely produce sedation, it would not treat the underlying withdrawal; the withdrawal would likely continue to progress.

Hydrochlorothiazide (choice C) would not be an appropriate initial management choice. Although the patient has an elevated blood pressure, this is most likely associated with the withdrawal syndrome.

Prochlorperazine (choice E) could be used to treat the nausea and headache, but it would not be an appropriate initial management step because these symptoms are most likely due to benzodiazepine withdrawal, which should be treated initially.
A 19-yr-old primary gravid woman at 42-weeks gestation comes to the labor and delivery ward for induction of labor. Her prenatal course was uncomplicated. Examination shows her cervix to be long, thick, closed and posterior. The fetal heart rate is in the 140s and reactive. Fetus is in vertex on ultrasound. Prostaglandin E2 gel is placed intravaginally, one hour later the patient begins having contractions lasting for more then two-minutes and the fetal heart rate falls in the 70s. Which of the following is the most appropriate next step in management.

A. Administer general anesthesia.
B. Administer terbutaline.
C. Perform amnioinfusion.
D. Start oxytocin.
E. Perform cesarian delivery.

EXPLANATION

The correct answer is B. Once patients reach 42 completed weeks of gestation, many physicians will induce labor for post-term pregnancy. This is done to avoid the uncommon but catastrophic outcome of fetal demise and the higher rates of placental insufficiency that develop as patients get further post-term. Prostaglandin (PGE2) gel is an effective agent to use for labor induction. It has been shown to improve the Bishop’s score, to shorten the length of labor and delivery, to decrease the amount of oxytocin needed, and to decrease the cesarean delivery rate. The main complication from its use is uterine hyperstimulation. This hyperstimulation is defined as an increased frequency of contractions (greater than 5 every 10 minutes) or an increased length of each contraction (greater than 2 minutes) with evidence of fetal distress. When this hyperstimulation occurs, the patient may be treated with IV or subcutaneous terbutaline. This medication usually has a rapid onset of action in resolving hyperstimulation. IV magnesium sulfate can also be used.

To administer general anesthesia (choice A) would be incorrect. There are occasions in which the fetal heart rate tracing rapidly deteriorates and emergency cesarean delivery is needed. On these occasions, it may be necessary to administer general anesthesia to the mother during the cesarean. In this case, however, more conservative measures should be tried prior to cesarean delivery.

To perform amnioinfusion (choice C) would be incorrect. Amnioinfusion can be used when a patient has ruptured membranes and decelerations of the fetal heart rate or thickened meconium. It is not used with intact membranes.

To start oxytocin (choice D) would be contraindicated. Oxytocin is known to cause uterine hyperstimulation, as is prostaglandin (PGE2) gel. Oxytocin would not be given to a patient in the midst of uterine hyperstimulation.

To perform cesarean delivery (choice E) would be incorrect for the reasons detailed above.
Q-97
Ten days after undergoing liver transplantation a patient's level of gamma glutamyl transferase, alkaline phosphatase and bilirubin begin to rise. Which of the following is the most appropriate next step in diagnosis.

A. Measurement of preformed antibodies.
B. Ultrasound of the biliary tract and Doppler studies of anastomosed vessels.
C. Liver biopsy and determination of portal pressures.
D. Liver biopsy and more detailed LFTs.
E. Liver biopsy and trial of steroid boluses.

EXPLANATION

The correct answer is B. In all other solid organ transplants, deterioration of function 10 days out would suggest an acute rejection episode, and appropriate biopsies would be done to confirm the diagnosis. In the case of the liver, however, antigenic reactions are less common, whereas technical problems with the biliary and vascular anastomosis are the most common cause of early functional deterioration. They are, therefore, the first anomalies to be sought.

Preformed antibodies (choice A) are responsible for hyperacute rejection, which would be evident within minutes of establishing blood flow to the graft.

Choices C, D, and E are centered on liver biopsy, which would be done only after technical problems have been ruled out.
Q-98

A 29-yr-old woman is seen in the ER for a broken ankle. She describes that she fall down from stairs at her home earlier in the day. She denies any drug or alcohol use at that time. She has no significant past medical history but she has admitted to the hospital many times for previous fractures and she has been seen in the ER many times for lacerations and minor injuries. The patient explains that all these visits are due to her active lifestyle and her frequent home repair projects. The patient has been married for two years. She is employed as a manager at a local restaurant and her husband is unemployed and on disability pay for back problems. The patient is admitted to the hospital and undergoes successful open reduction and internal fixation for her ankle. She is able to give more detailed history about her social situation and describes that she has been very depressed lately and having had an argument with her husband the morning of her injury; domestic abuse is suspected. Which of the following is the most appropriate step in addressing this problem.

A. Address the concern with her husband directly.
B. Ask her to give more details about her relationship with her husband.
C. Explain to her that her marriage is obviously not having a positive impact on her life.
D. Refer her case to the social services department as obligated.
E. Refer to a psychiatrist who specializes in domestic abuse.

EXPLANATION

The correct answer is B. The concern for potential abuse must be addressed as any other new piece of clinical suspicion. The best initial step is to try to gather more information in a non-threatening way that is comfortable for the patient. Although the physician will ultimately want to ask her directly if she is being abused, it is often better to let that disclosure "fall out" from a discussion about the particulars of the relationship.

Although physicians often feel the desire to "take things into their own hands" and address alleged abusers directly (choice A), this approach can be extremely dangerous for the abused party. Abusers obviously dread being discovered and are likely to seek retribution against their victim if they are confronted by a doctor.

Explaining that her marriage is not having a positive impact on her life (choice C) is presumptuous without first exploring all of the particulars of the relationship.

Physicians in most states are obligated to report (choice D) potential abuse only in cases involving children younger than 18 and adults older than 65. There is no obligatory reporting for domestic abuse not falling within these parameters.

Although the patient may respond very well to treatment from a psychiatrist who specializes in domestic abuse (choice E), this referral, like any other, should be made after an earnest attempt to gather the clinical and social details from the patient by the referring physician.
Q-99
A 4-yr-old girl is found drinking a bottle of liquid drain cleaner and is immediately brought to the ER. She seems very irritable and is unwilling to swallow any liquid. Examination of her oral cavity reveals no evidence of burns or lacerations. Which of the following is the most appropriate management of this patient.

A. Barium swallow.
B. CT of the abdomen.
C. NPO for 12-hours then clear liquid diet for 3-days.
D. Indirect laryngoscopy.
E. Esophageoscopy.

EXPLANATION
The correct answer is E. Ingestion of corrosive material is a rather common problem in pediatrics. Annual incidence ranges from 5000 to 15,000. The most common corrosive substances ingested by children include household cleaners, detergents, bleaches, disk batteries, and coins. Liquid drain cleaner is a highly alkaline substance, and ingestion can cause severe esophageal necrosis of the liquefaction type. Full-thickness injury is common. In severe cases, it can cause esophageal perforation and mediastinitis. Acid ingestion causes coagulation necrosis and eschar formation. The eschar tends to protect the esophagus from full-thickness injury and corrosive perforation.

When a child has a definitive history of ingestion of corrosive substance, he or she needs to be evaluated emergently. Especially in this case, dysphagia further suggests the presence of esophageal injury. Even though there are no ulcerations or burns in the mouth, esophageal ulceration is very likely because oral lesions correlate poorly with esophageal injuries. The child should be stabilized, and flexible esophagoscopy is indicated to directly visualize the esophagus. It might be prudent to perform a chest radiograph first to rule out overt perforation and mediastinitis. If esophagoscopy shows no esophageal injury, no treatment is necessary. For mild-to-moderate burns, therapy should include IV hydration, analgesics, and antibiotics. Complications include esophageal stricture.
Prevention is better than treatment. When there is a young child at home, corrosive substances should always be put in a safe place, out of the child’s reach. Pediatricians should also address this issue with the parents and give appropriate anticipatory guidance on routine office visits.

Barium swallow (choice A) is not appropriate in the setting of acute corrosive injury of the esophagus.

CT of the abdomen (choice B) is not indicated unless there are peritoneal signs that suggest stomach perforation and peritonitis.

NPO for 12 hours, then liquid diet for 3 days (choice C) without further evaluation by esophagoscopy is inappropriate.

Indirect laryngoscopy (choice D) is not indicated unless there is a burn of the larynx that might result in laryngeal edema.
A 35-yr-old man is taken to the ER by after the man start having severe tonic spasm that cause his arm and legs to flail. The friend thinks that he is having seizures but there is no loss of consciousness and the man is able to describe his medical condition. The patient's difficulties has begun a day and a half earlier when he noticed jaw stiffness, this has since progressed to difficulty swallowing, sore throat, stiff neck, fever, chills and tonic spasm of his arms and legs. Patient's speech is difficult to understand. Mental state is intact. Which of the following is the most likely diagnosis.

A. Botulism.
B. Diphtheria.
C. Lyme disease.
D. Pertussis.
E. Tetanus.

EXPLANATION

The correct answer is E. This is tetanus, caused by a reaction to the toxin produced by Clostridium tetani. While the classic history involves a contaminated puncture wound, you should be aware that no such history may be elucidated in many patients, possibly because the initial injury was so trivial as to have since been forgotten. Childhood primary immunization is common, but adult patients who have never received booster shots may have sufficiently low antibody titers to develop clinical disease. The incubation period following exposure ranges from 2 to 50 days, with typical incubation times being 5 to 10 days. Worldwide, tetanus has a 50% mortality rate, with particularly high mortality among babies, the elderly, and drug abusers. The presentation illustrated in the question stem is typical. As the disease progresses, the rigidity and spasm of muscles becomes widespread, and may even leave the patient in opisthotonus with an arched back. Treatment of established tetanus is complex. The patient should be kept in a quiet room, and adequate doses of human immune serum globulin and anti-toxin be used. Wound debridement should be used at the site of injury; antibiotics (penicillin G or tetracycline) are used adjunctively. It is critical that the airways be maintained, if necessary with mechanical ventilation through a tracheostomy coupled with neuromuscular blockade. IV hyperalimentation may reduce the risk of aspiration. Chest physiotherapy is needed to prevent pneumonia.

Botulism (choice A) causes a flaccid paralysis.

Diphtheria (choice B) causes severe respiratory disease with pseudomembrane formation on the respiratory mucosa.

Lyme disease (choice C) causes a rash followed by a flu-like illness.

Pertussis (choice D) causes "whooping cough."
Q-101
A 60-yr-old woman comes to the physician for an annual examination. She has no complaints. She had her last menstrual period at the age of 55 and had no vaginal bleeding since. She has no medical problems and never had a surgery. She takes no medications and has no allergies to medications. Physical examination is unremarkable. She is concerned about cancer and wants to know which type of cancer is major cause of cancer death in women. Which of the following is the correct response.

A. Breast cancer.
B. Cervical cancer.
C. Endometrial cancer.
D. Lung cancer.
E. Ovarian cancer.

EXPLANATION
The correct answer is D. Breast cancer accounts for the greatest number of new cancer cases in women each year. In 1997, there were 180,200 new breast cancer cases. However, lung cancer is the major cause of cancer death in women. In 1997, lung cancer accounted for 66,000 cancer deaths in women, compared with the 43,900 female deaths caused by breast cancer. There is currently no test used to screen for lung cancer. Smoking cessation is the most effective way to reduce mortality from lung cancer.

As stated above, breast cancer (choice A) accounts for the most number of cancer cases in women each year in the U.S., but not the highest number of cancer deaths. Mammography is the screening method used to detect subclinical breast cancer—the stage at which breast cancer is least likely to have spread.

Cervical cancer (choice B) is the gynecologic type that causes the fewest number of cancer deaths, partly because of the success of Pap test screening. Pap testing allows preinvasive lesions to be identified and treated, which prevents the progression to invasive disease.

Endometrial cancer (choice C) is the most common gynecologic cancer in women older than 45. There is no proven screening test available for endometrial cancer.

Ovarian cancer (choice E) is a major cause of cancer death in women. More women die of ovarian cancer than of cervical or endometrial cancer combined. There is no proven screening test available for ovarian cancer.
Q-102
A 30-yr-old woman consults a physician because of a painless pea-like lesion on the back of her wrist. She finds the lesion disfiguring and annoying and so she had it removed by the surgeon. Grossly the lesion is white and translucent and oozes gelatinous material when cut. Which of the following is the most likely diagnosis.

A. Aneurysmal bone cyst.
B. Felon.
C. Ganglion cyst.
D. Herpetic whitlow.
E. Osteoid osteoma.

EXPLANATION

The correct answer is C. This is a ganglion cyst. These cystic swellings occur on the hands, particularly on the dorsal aspect of the wrists, and are usually near or attached to tendon sheaths and joint capsules. About 65% of them arise near the scapholunate joint on the back of the wrist; other common sites include the distal volar aspect of the radius and the flexor tendon sheath. The lesions appear to be degenerative rather than tumorous in character, and the gelatinous material found in the center has a high hyaluronic acid content. Many ganglion cysts regress spontaneously or after needle aspiration of the contents. Recurrent ganglia or ganglia that are cosmetically unacceptable to the patient can be surgically excised, but may recur after excision.

Aneurysmal bone cyst (choice A) is a cystic lesion usually located in a long bone. It is most commonly identified before age 20.

Felon (choice B) is an infection of the pulp space of a finger.

Herpetic whitlow (choice D) is a viral infection of the distal finger.

Osteoid osteoma (choice E) is a benign bone tumor that is most common in long bones.
Q-103

A 35-yr-old man presents to the ER with shortness of breath, which has worsened over the past 3-days and is associated with cough productive of yellow sputum. His past medical history is significant for asthma. His medications include an albuterol inhaler. He has a 20packs/year history of smoking and currently smokes 2 packs/day. On physical examination, his temperature is 37.8 C (100 F), blood pressure is 160/87, pulse is 69 and respirations 24. His lung examination is significant for diminished breath sounds with diffuse wheezing but no evidence of consolidation. His chest radiograph is significant for hyperexpansion. Pulse oximetry show 90% oxygen saturation on room air. Which of the following is the most appropriate next step in therapy.

A. Albuterol nebulizer.
B. Ipratropium nebulizer.
C. Helium oxygen mixture.
D. IV beta-adrenergic blocker.
E. Racemic epinephrine.

EXPLANATION

The correct answer is A. The patient’s hypoxia (on room air) is most likely a result of bronchospasm in the setting of pre-existing reactive airways disease. The appropriate treatment, therefore, is a bronchodilator, and the most appropriate bronchodilator would be albuterol, since it does not have the unwanted associated side effect of promoting the drying of respiratory secretions as with an antimuscarinic agent.

An ipratropium nebulizer (choice B) would be less preferred compared with the albuterol nebulizer since it is associated with the risk of drying mucous secretions and worsening possible airway plugging. This is a definite concern in this patient since his bronchospasm is most likely occurring in the setting of bronchitis (productive cough without evidence of pneumonia to examination or chest radiograph).

A mixture of helium and oxygen (choice C) can be considered when oxygenation is impaired despite maximal therapy with bronchodilatory agents. It is not used as a first-line agent for bronchospasm. The low density of this gas makes flow through high-resistance airways faster; thus, it can be used to deliver oxygen to patients with a severe bronchospastic attack.

IV beta adrenergic blockade (choice D) will worsen the bronchospasm by inhibiting beta-2 adrenergic receptor mediated bronchodilation. Therefore, it has no place in the treatment of bronchospasm.

Racemic epinephrine (choice E) is reserved for refractory bronchospasm or for the treatment of airway edema associated with anaphylaxis.
Q-104

A 71-yr-old man comes to the ER because of blurry vision and blood tinged urine. He states that he has a long history of hypertension treated with a beta-blocker, an ACE inhibitor and a calcium channel blocker. He reports that he has had three days of blurry vision and urine that is cola-colored. The symptoms began when he ran out of his medications 3-days ago and he has not had the time to get the prescription refilled. Physical examination is remarkable for a blood pressure of 200/110 in both arms and a fundoscopic examination shows flame hemorrhages and papilledema. Urine analysis show red blood cells and some dysmorphic red blood cell casts. He has an abdominal bruit.

Which of the following is the most appropriate next step in management.

A. Order an ECG and observe the patient.
B. Give the patient his usual daily doses of his BP medications and observe him.
C. Give the patient IV drugs to reduce his BP.
D. Order an abdominal CT-scan to rule out an abdominal aneurysm.
E. Perform a bedside cystoscopy to evaluate hematuria.

EXPLANATION

The correct answer is C. This patient has a hypertensive emergency, as evidenced by both the presence of elevated systolic and diastolic blood pressure, as well as evidence of end-organ damage. The blood pressure numbers themselves are a good reason for urgency, but the presence of increased intracranial pressure and renal failure require that this patient be triaged as an emergency. Elevated blood pressure alone, in the absence of symptoms or end organ damage, rarely requires emergency therapy. The therapy for a hypertensive emergency requires IMMEDIATE LOWERING of the blood pressure by approximately 20-30 mm Hg by intravenous administration of medication. The blood pressure should not be reduced to normotensive levels because of the risk of watershed cerebral infarcts with such a dramatic reduction.

Ordering an ECG and observing the patient (choice A) is incorrect. Observation is certainly warranted, but not without intervention.

Giving the patient his usual daily doses of blood pressure medications and observing him (choice B) would not achieve a rapid enough reduction of the blood pressure, given the presence of end-organ damage on physical examination.

Ordering an abdominal CT scan to rule out aortic aneurysm (choice D) is not an appropriate intervention in the case of an active hypertensive emergency.

Performing a bedside cystoscopy to evaluate the hematuria (choice E) is not indicated as the almost certain cause for his hematuria is his elevated blood pressure.
Q-105

A 3-yr-old boy is brought by his father to the ER with fever, headache and neck pain that developed over the past several hours. He states that he is not the birth father and he and his wife adopted the child at 18-months of age after his birth mother has abondoned him. Physical examination reveals a lethargic male with temperature of 39.7 C (103.5 F), there is photophobia and mildly injected conjuctiva are appreciated. Pupils are equal and reactive. Fundoscopic examination is unremarka ble and the patient has neck stiffness with positive Kernig’s sign. A complete blood count reveals a total leukocyte count of 24,000/mm^3 with 64 segmented neutrophils and 25 bands. Lumber puncture is performed that reveals elevated CSF pressure, decreased glucose and elevated proteins. Gram stain shows gram negative pleomorphic rods, there is no growth on blood agar; growth on choclate agar reveals white colonies. Which of the following is the most likely pathogen.

A. Haemophilus ducreyi.
B. Haemophilus influenzae type B.
C. Neisseria meningitidis.
D. Listeria monocytogens.
E. Streptococcus pneumoniae.

EXPLANATION

The correct answer is B. Haemophilus influenzae is now a rare cause of meningitis in children since development of the Haemophilus influenzae type b (Hib) vaccine. The case reveals a questionable immunization history, thus making this patient susceptible to H. influenzae type b. Kernig’s sign is elicited by placing the patient in a supine position, flexing the leg at the hip to 90 degrees and then straightening the knee to elicit pain in the back or posterior thigh as predictive evidence of meningitis. Laboratory and CSF data support a bacterial etiology, and Gram’s stain with growth on chocolate agar confirms the diagnosis of Haemophilus influenzae as the causative agent.

Haemophilus ducreyi(choice A) is the causative agent for chancroid (soft chancre).

Neisseria meningitidis(choice C) is a gram-negative diplococcus that also can grow on chocolate agar, but grows best on modified Thayer-Martin media. Meningococcal meningitis classically presents with a petechial rash.

Streptococcus pneumoniae(choice E) and Listeria monocytogens(choice D) are both organisms that cause meningitis. Both, however, are gram-positive. Listeria monocytogenes is predominantly seen as a cause of neonatal meningitis.
A 62-yr-old woman is brought to the ER by her daughter who is concerned that her mother had a stroke. According to the daughter the woman woke up that knowing where she was, confused and didn't remember what had happened the day before. She recently saw her family care physician who started her on a new medication. The work up for stroke is negative and the physician suspect that the condition is related to the new medication. Which of the following medication would most likely cause cognitive impairment.

A. Alprazolam.
B. Bupropione.
C. Selegiline.
D. Sertraline.
E. Vitamin E.

EXPLANATION

The correct answer is A. Alprazolam belongs to the group of short-acting benzodiazepines. Even though it has a short half-life, it can produce confusion, disinhibition, and amnestic problems like blackouts in the elderly population. The risk is increased if it is combined with CYP3A inhibitors.

Bupropion (choice B) is an antidepressant with dopaminergic and noradrenergic properties and minimal anticholinergic properties. Cognitive functions are usually improved and not impaired with bupropion.

Selegiline (choice C) is a selective MAO B inhibitor that, when metabolized, has three active metabolites, including amphetamine and methamphetamine, that stimulate the release of norepinephrine and dopamine, thus improving some cognitive functions.

Sertraline (choice D) is an SSRI, but it also has some dopaminergic properties and is currently being marketed as a product to improve cognitive functioning. SSRIs is usually not associated with cognitive impairments.

Vitamin E (choice E) has been used in elderly population as a scavenger of free oxygen radicals to improve cognitive functions. There are no reports of vitamin E related cognitive impairment.
A 28-yr-old primigravid woman at 34-weeks gestation comes to the physician for a prenatal visit. At 28-weeks she missed her 50 gm 1-hour glucose loading test, she also failed her follow-up 100gm 3-hour oral glucose tolerance test with a normal fasting glucose but abnormal 1,2 and 3-hour values. For the past several weeks she has kept good control of her fasting glucose and 2-hour post-prandial glucose by adhering to diet given by her physician. She asked her physician that what type of effect her diabetes can have on her fetus. Which of the following is the most appropriate response.

A. Gestational diabetes is associated with fetal anomalies.
B. Gestational diabetes is associated with intrauterine growth restriction.
C. Gestational diabetes is associated with macrosomia.
D. Gestational diabetes is associated with future diabetes.
E. Gestational diabetes and normal fasting glucose is associated with future stillbirths.

EXPLANATION

The correct answer is C. Gestational diabetes is defined as glucose intolerance that either has its onset or its first recognition during pregnancy. Gestational diabetes is usually diagnosed by means of oral glucose tolerance testing. Patients with gestational diabetes and normal fasting glucose levels have two major risks. The first is fetal macrosomia. Women with gestational diabetes are known to have larger babies, and this creates an increased risk of complications of delivery including shoulder dystocia and cesarean delivery. The second risk is of the eventual development of overt diabetes. Fifty percent of women with gestational diabetes will go on to develop overt diabetes within the next 20 years. Patients with gestational diabetes and abnormal fasting glucose levels do have an increased risk of stillbirth.

To state that gestational diabetes is associated with fetal anomalies (choice A) is incorrect. However, patients with overt diabetes do have an increased risk of fetal anomalies.

To state that gestational diabetes is associated with intrauterine growth restriction (choice B) is not correct. Gestational diabetes is associated with macrosomia.

To state that gestational diabetes is not associated with future diabetes is incorrect (choice D), as explained above.

To state that gestational diabetes with normal fasting glucose is associated with stillbirth (choice E) is incorrect. However, overt diabetes and gestational diabetes with abnormal fasting glucose levels (class A2) are associated with stillbirth.
A 44-yr-old woman has a palpable nodule in the left lobe of her thyroid gland. The nodule measures 2cm and is firm, the rest of the thyroid gland cannot be felt and is not tender. She also describes loosing weight despite of her ravenous apattite, palpitations and heat intolerance. She is thin, fidgety and constantly moving with a moist skin and a pulse of 105. She has no exopthalmos or pretibial edema. Her TSH is reported as much below the normal and she has elevated levels of free T4. which of the following is the most appropriate next step in diagnosis.

A. Exploratory neck surgery.
B. MRI of the pituitary gland.
C. Needle core biopsy of the thyroid mass.
D. Radionucleotide thyroid scan.
E. Serum levels of T3.

EXPLANATION

The correct answer is D. There is no question, both clinically and by laboratory, that the patient is hyperthyroid. She has no clinical signs of acute thyroiditis, and none of the other findings seen in Graves disease; however, she has a thyroid nodule, which raises the possibility of a hyperfunctioning adenoma (a "hot" adenoma). If indeed she does, the scan will show that the nodule traps all the iodine, with suppression of the rest of the gland.

Exploratory neck surgery (choice A) would be premature without first defining the source of the hyperfunction.

The pituitary (choice B) is not at fault if the TSH is low.

Hyperthyroidism and thyroid cancer rarely coexist. Should one wish to exclude the latter, fine-needle aspiration would be the first test. Percutaneous core biopsy of thyroid nodules (choice C) is not favored in this country.

Levels of T3 (choice E) are needed only when clinical hyperthyroidism and low TSH are found to exist in the presence of normal levels of free T4.
Q-109

A 67-yr-old man is admitted to the hospital for foot pain. Patient explains that over the past two-days his right foot has become increasingly painful and a few hours before began to turn gray. Patient complains of some pain and tingling in his foot but no other symptoms. Past history is significant for hypertension, hypercholestrolemia and peripheral vascular disease, the patient had undergone bilateral carotid endarterectomy in the past two-years. Examination reveals cold, blue, gray right foot with no palpable dorsalis pedis or posterior tibalis pulse. Which of the following is the most appropriate diagnostic test at this time.

A. CT-scan of the abdomen.
B. CT-scan of the head and neck.
C. Echocardiogram.
D. Lateral spine radiograph.
E. Lower extremity angiography.

EXPLANATION

The correct answer is E. In the case of a cold foot, the key issues are documenting a neurologic examination as it pertains to the area, as well as documenting any compromise of circulation. For this patient, the lack of pulses and the likely insensate and weak foot necessitate angiographic documentation of any vascular issues that may be reparable or relieved by fasciotomy.

A CT scan of the abdomen (choice A) is not indicated as a routine screening test in the absence of blunt or penetrating abdominal trauma.

The same holds true for a CT scan of the head and neck (choice B). In practice, however, many trauma patients who have any history of head injury often get a head CT to ensure that there is no underlying brain trauma or bleeding.

An echocardiogram (choice C), is not indicated in this patient. In trauma patients, this imaging modality is often used to evaluate for cardiac contusions or wall motion abnormalities after blunt chest trauma.

Since this patient was not under the influence of any substances and was oriented and alert, a clinical examination is adequate to clear his cervical spine from injury, and a lateral c-spine radiograph (choice D) is not needed.
Q-110
A 44-yr-old obese woman comes to the ER complaining of three hours of severe abdominal pain. She also has multiple episodes of vomiting during that time. She describes that the pain is worse then labor and radiates to the intra-scapular region. Her temperature is 38.9°C (102°F) and she has severe tenderness in the right upper quadrant. She reports that she had multiple similar episodes in the past that have lasted approximately 30-minutes and then resolved spontaneously. Which of the following is the most likely been obstructed by a gallstone.

A. Common bile duct.
B. Common hepatic duct.
C. Cystic duct.
D. Pancreatic duct.
E. Right hepatic duct.

EXPLANATION

The correct answer is C. This patient with acute cholecystitis has multiple risk factors, including female gender, obesity, and a classic history of prolonged biliary colic in association with fevers. The presentation illustrated is typical and results from obstruction of the cystic duct, which drains the gallbladder.

Obstruction of the common bile duct (choice A) or the pancreatic duct (choice D) will produce acute bacterial cholangitis, which would be demonstrated by Charcot’s triad, i.e., right upper quadrant pain, fever, and jaundice.

Obstruction of either the common hepatic duct (choice B) or the right hepatic duct (choice E) may give a limited episode of cholangitis but will not cause cholecystitis, since the obstruction occurs in the biliary tree above the level of the entry of the cystic duct.
Q-111

A 34-yr-old woman with documented bipolar disorder comes to the physician’s office because of feelings of guilt and worthlessness, she has amassed thousands of dollars of credit card in the past two months. Her parents are going to pay it for her but she believes that this will bankrupt them. On further questioning she reveals that she bought a gun earlier in the day because it would be easier for everyone if she is not here anymore. She plans to go to the roof with her new purchase and do what’s needed to be done. Which of the following is the most appropriate next step in management.

A. Send home with lithium.
B. Send home with valproic acid.
C. Send home with carbamazapine.
D. Observe in the ER.
E. Admit to the hospital.

EXPLANATION

The correct answer is B. Any patient with serious suicidal thoughts, suicidal intent, and a plan, must be hospitalized, against her will, if necessary. The patient expressed a desire to die, she bought a weapon, and developed a believable plan. She needs to be hospitalized for her own safety. Patients with bipolar disorder have a lifetime suicide rate of 10-15%.

Sending home with lithium (choice A), valproic acid (choice B), or carbamazepine (choice C) are inappropriate choices because this patient requires hospitalization due to her high risk of suicide. A mood stabilizer is indicated, but must be given as inpatient therapy.
Q-112
A 47-yr-old man presents to the hospital with complains of palpitations. The patient reports that while cooking breakfast this morning he felt that his heart is racing in his chest and he was unable to catch his breath. He states that sitting down brought no relief and he called for an ambulance and then he was brought to the ER. The man has no significant past medical history and doesn’t take any medications regularly other then ranitidine for occasional heartburn. On physical examination the patient is quite thin but well developed and in mild distress, his globes appear exophthalmic. Pulse is 140/min and irregularly irregular, there are no murmurs and lung examination is clear. A non-tender midline thyroid mass is palpable. Which of the following findings on his ECG would suggest longstanding atrial fibrillation.

A. Dilated left ventricle.
B. Dilated right ventricle.
C. Enlarged left atrium.
D. Hypertrophied ventricular septum.
E. Pericardial thickening.

EXPLANATION
The correct answer is C. Echocardiography is an invaluable tool for assessing cardiovascular function in both normal and disease states. In the case of atrial fibrillation (AF), a chronic course versus an acute and self-limited course portend completely different treatment strategies and long-term prognoses. The most common cause of chronic AF is valvular disease, followed by congestive heart failure (CHF).

The most common anatomic correlate seen in patients with AF (Framingham Heart Study) is an enlarged left atrium.

A dilated left ventricle (choice A) is commonly seen with both CHF and AF. However, an enlarged left atrium is more closely correlated with chronic AF than is left ventricular dilation.

The causal relationship between an enlarged left atrium and AF is unclear. A dilated right ventricle (choice B) is commonly seen in severe right heart failure (RHF). The most common cause of RHF is left heart failure (LHF). There is no consistent relationship between right heart size and the presence of AF.

A hypertrophied ventricular septum (choice D) is commonly seen in hypertensive heart disease or idiopathic hypertropic aortic stenosis. Chronic AF in these patients, however, is much less common.

Pericardial thickening (choice E), as seen with chronic pericardial inflammation, is not routinely associated with chronic AF. Acute AF, however, is associated with acute pericarditis.
A 58-yr-old dental hygienist presents complaining of swelling in the right knee. For the past 24-hours her right knee suddenly becomes swollen and painful to weight bearing with limited range of motion. She has no history of arthritis or trauma in that region. She does not remember any needle stick injury while at work. Untill the onset of knee pain she has been exercising daily on her treadmill daily. Physical examination reveals tenderness, swelling and erythema in right knee. There is painless flexion and limitation in extension. Which additional information would be most relevant in this patient's history.

- A. Family history of rheumatoid arthritis.
- B. History of bacterial gastroenteritis.
- C. History of hepatitis B vaccination.
- D. History of traumatic ankle injury.
- E. Sexual history.

EXPLANATION

The correct answer is E. This patient has monoarticular arthritis of the right knee. The major differential diagnosis in these patients is of a crystalline arthritis (gout) versus an infectious arthritis (Staphylococcus vs. Gonococcus). In this regard, knowledge of her sexual history and any high-risk sexual behaviors that would put her at risk for gonococcal infection would be relevant.

Bacterial gastroenteritis (choice B) may be associated with Reiter syndrome, but this involves multiple joints in association with conjunctivitis and urethritis and does not present as monoarticular arthritis.

Hepatitis B vaccination (choice C) is appropriate in occupations such as dental hygiene, which are exposed to bodily fluids. However, hepatitis B is not associated with a monoarticular arthritis, although polyarthralgias may occur in patients with hepatitis B who develop a serum-sickness like illness.

A traumatic joint injury (choice D) is always of relevance in the setting of monoarticular arthritis. However, since the arthritis is in the right knee, trauma to the right ankle would be unlikely to be causative.
A 54-yr-old man presents complaining of shortness of breath. Patient describes a slowly progressive inability to perform physical activities over the past 2-year, he states that he starts the activity like playing golf or tennis but within a few minutes feels like he has lost his breath. There is no associated chest pain, pressure or discomfort. More recently he has severe shortness of breath even at rest. The clinical picture with a restricted pattern of pulmonary function test and infiltrates on the chest x-ray film suggest the diagnosis of interstitial lung disease. Which of the following is the most appropriate next step in management.

A. Follow-up in the clinic after 2-months as most of the interstitial lung diseases are untreatable.
B. Refer to a pulmonologist for further evaluation and a possibility of transbronchial biopsy.
C. An empirical course of prednisone for 6-weeks.
D. Immunosuppressive therapy with azathioprine.
E. Refer to a thoracic surgeon for further evaluation and a possible open lung biopsy.

EXPLANATION

The correct answer is B. A pulmonologist may be able to help confirm your diagnosis and is best equipped to recommend confirmatory tests, such as transbronchial biopsy, and help direct treatment options.

Simply arranging for follow up (choice A) without confirming the diagnosis is inadequate. It is true that many of the interstitial lung diseases have disappointing treatment responses, but there are important new advances all the time, and a tissue diagnosis may be indicated. Overall, patients will be helped by referral to a specialist at this point.

Prednisone (choice C) and azathioprine (choice D) are immunosuppressive agents that are sometimes used to treat the active inflammation seen in some interstitial lung processes. Because of their severe, systemic side effects, however, they should generally be used in coordination with a lung specialist.

Open lung biopsy performed by a thoracic surgeon (choice E) may ultimately help confirm the diagnosis, but referral to a pulmonologist is more appropriate initially. Pulmonologists are more likely to play a role in the confirmatory evaluation and help direct treatment. They may then decide to perform a biopsy via bronchoscopy or consult a thoracic surgeon if indicated.
Q-115
A 45-yr-old woman comes with complains of burning and tingling sensation in left hand for several months. She relates that she has been frequently awakened at night by similar pain. She is otherwise in good health. Examination fails to detect any impairment in sensation but pain is elicited with extreme dorsiflexion of the wrist. The patient is unable to identify different things by rubbing between the left thumb and index finger. Which of the following is the most likely diagnosis.

A. Angina pectoris.
B. Carpal tunnel syndrome.
C. Dupuytren contracture.
D. Fibrositis.
E. Reflex sympathetic dystrophy.

EXPLANATION

The correct answer is B. The symptomatology is classic for carpal tunnel syndrome, which is a form of neuropathy resulting from anatomic compression of the median nerve. Pain, tingling sensations, and hypoesthesia in the distribution of the median nerve are the cardinal manifestations. These often undergo exacerbations at nighttime. A shock-like pain upon percussion on the volar aspect of the wrist (Tinel sign) is an additional characteristic sign. Carpal tunnel syndrome is most often idiopathic, but may represent a manifestation of underlying disorders such as rheumatoid arthritis, sarcoidosis, amyloidosis, acromegaly, and leukemia.

Carpal tunnel syndrome may be confused with angina pectoris (choice A) when located on the left side. However, angina pectoris typically manifests with physical or emotional stress and very rarely results in pain limited to the hand.

Dupuytren contracture (choice C) is a relatively common disorder characterized by fibrous thickening of the palmar fascia. Contracture and nodule formation ensue. This condition is most common in Caucasian men over 50.

Fibrositis (choice D), also known as fibromyalgia, refers to a poorly understood syndrome of widespread musculoskeletal pain associated with tenderness in multiple trigger points. Fatigue, headache, and numbness are also common. Women between 20 and 50 years of age are most commonly affected. Neck, shoulders, low back and hips are usually involved.

Reflex sympathetic dystrophy (choice E) describes a syndrome of pain and swelling of one extremity (most commonly a hand), associated with skin atrophy. It is thought to be secondary to vasomotor instability. Sometimes, it follows injuries to the shoulder (shoulder-hand variant).
Q-116
A 5-yr-old boy presents to the ER with two-day history of anorexia, loose stool, fever and yellow skin color. He attends a large day-care-center. On physical examination temperature is 38.1°C (101°F), blood pressure is 88/56, pulse is 74 and respirations are 15. Lab evaluation reveals a total bilirubin of 1.8 mg/dl, ALT 764 U/l. Which of the following is the most appropriate diagnostic test.

A. Hepatitis B surface Ag in serum.
B. IgG for Hepatitis A in serum.
C. IgG for hepatitis B surface antigen in serum.
D. IgM for hepatitis A in serum.
E. Stool culture for hepatitis A.

EXPLANATION

The correct answer is D. This boy most likely has hepatitis A. Although it is more common in developing countries, it is still a common infection in the developed world. It is transmitted by the fecal-oral route when contaminated food or water is ingested. The incubation period is about 15-40 days. Ninety percent of children acutely infected with hepatitis A are asymptomatic. The virus is shed in the feces 2-3 weeks before the onset of jaundice until approximately 1 week after onset. Most infected children are infectious for a long time before they are symptomatic. Therefore, hepatitis A is very difficult to control. Large outbreaks frequently occur in daycare centers. Diagnosis is best made by determination of IgM levels against hepatitis A virus. The presence of IgM for hepatitis A suggests acute infection; this antibody peaks at 4-6 weeks and does not persist beyond 6 months. IgG is produced in the primary infection, but for most viral infections, including hepatitis A, it persists for a lifetime. Therefore, the presence of IgG against hepatitis A (choice B) could mean a previous infection and is not diagnostic of a current infection. Stool culture for hepatitis A (choice E) cannot be used to confirm the diagnosis.

Prophylaxis with immunoglobulin is recommended for the household and close contacts of the infected person within the first 2 weeks of exposure. Strict hand washing is also very important. There is a killed-virus vaccine available that provides immunity to travelers to developing countries if given in two doses 6-12 months apart.

The presence of hepatitis B surface antigen in the serum (choice A) signifies previous infection with hepatitis B. IgG against hepatitis B surface antigen (choice C) comes from an immunologic response to either the hepatitis B virus surface antigen from an infection, or from the hepatitis B virus vaccine.
Q-117
A 41-yr-old man with a long history of schizophrenia, paranoid type has been on inpatient unit for almost two-weeks. This is his third admission in the past three months and each time he seems to be less responsive to treatment. In past he has been on typical antipsychotics and then tried on combination including some atypical ones with limited success. His family is supportive and makes sure that he takes his medications. Given his poor response which of the following is the most appropriate treatment.

A. Clozapine.
B. Droperidol.
C. Electroconvulsive treatment.
D. Lamotrigine.
E. Topiramate.

EXPLANATION
The correct answer is A. Clozapine is an atypical agent that has been proven to be more effective than conventional antipsychotics in the treatment of patients with resistant schizophrenia. It exerts an antagonistic effect on D1 and D4 receptors, as well as on the alpha-adrenergic, histaminergic, serotonergic, and cholinergic systems. It is 30% effective in the treatment of patients with resistant schizophrenia in the first 6 weeks. However, it produces troublesome side effects. The most serious one is agranulocytosis. Clozapine requires regular blood count monitoring because of this serious but rare side effect.

Droperidol (choice B) is a butyrophenone that has been approved as adjunctive treatment with anesthetics. It can be used in emergency settings because of its strong sedative potential and parenteral form. It is not approved for the treatment of resistant schizophrenia.

Electroconvulsive treatment (choice C) is indicated in treatment of schizophrenia only after medication treatment failed.

Lamotrigine (choice D) is an anticonvulsant approved as adjunctive treatment for refractory partial seizures. It has been used lately in treating bipolar disorder and pain disorders, but these instances have been reported only in open trials and case reports.

Topiramate (choice E) belongs to the group of anticonvulsants approved as adjunctive in the treatment of partial epilepsy in adults. It has not been approved for treatment of schizophrenia, but there have been anecdotal reports of its use as a mood stabilizer.
A 22-yr-old woman in labor progresses to 7-cm dilatation and then she has no further progress, she therefore undergoes primary cesarian section. Examination two-days after cesarian section shows temperature of 39.1 C (102.8 F), blood pressure of 110/70 and pulse is 90/min, respirations are 14. Lungs are clear to auscultation bilaterally, abdomen is mildly tender, incision is dry, clean and intact with no evidence of erythema. Pelvic examination demonstrates uterine tenderness. Which of the following is the most appropriate pharmacotherapy.

A. Ampicillin.
B. Ampicillin + gentamicin.
C. Clindamycin + gentamicin.
D. Clindamycin + metronidazole.
E. Metronidazole.

EXPLANATION

The correct answer is C. This patient has signs and symptoms that are most consistent with endometritis. Postpartum endometritis is believed to result from organisms ascending from the vagina and causing a polymicrobial infection of the endometrium. Infection may also involve the myometrium and parametrial tissues. Patients with endometritis typically present with fever and chills, lower abdominal pain, a foul-smelling vaginal discharge, and malaise. Examination is significant for fever, abdominal tenderness, and uterine tenderness. Cesarean section is the major risk factor for postpartum endometritis. Patients undergoing cesarean section have a several-fold higher risk of developing endometritis compared with those having a vaginal delivery. The treatment of choice for endometritis following a cesarean section must include anaerobic coverage, along with gram-positive and gram-negative coverage. Therefore, the treatment of choice is clindamycin and gentamicin.

Ampicillin (choice A) and ampicillin-gentamicin (choice B) fail to cover the anaerobic organisms that play an important role in the pathophysiology of post-cesarean section endometritis.

Clindamycin-metronidazole (choice D) and metronidazole (choice E) have good activity against anaerobic organisms, but fail to cover gram-negative organisms.
A 72-yr-old man has a 3-mm ureteral stone impacted at the uretrovesical junction. He is having mild ureteral colicky pain for last 12-hours. He has been given fluids and analgesics in expectation that he will spontaneously pass the stone. He then has spikes and shaking chills, temperature of 40 ºC (104 F). When seen shortly afterwards he has flank pain and looks quite ill. Which of the following is the most appropriate next step in management.

A. Addition of IV antibiotics to the current regimen.
B. Crushing and extraction of stone by cystoscopy.
C. Extracorporeal shockwave lithotripsy and IV antibiotics.
D. Immediate insertion of a suprapubic catheter into the bladder.
E. IV antibiotics and immediate decompression of the urinary tract above the stone.

EXPLANATION

The correct answer is E. The combination of obstruction and infection in the urinary tract constitutes a dire emergency that requires, in addition to IV antibiotics, the immediate decompression of the urinary tract above the point of obstruction.

Adding antibiotics without decompressing the urinary tract (choice A) is not enough. Rapid destruction of the kidney, and even death from septic shock, will ensue if decompression is not done.

It is too late to crush and remove the stone (choice B) once the infection has occurred. Complicated instrumentation should not be done in these circumstances. Such steps should await resolution of the lethal infection-obstruction combination.

The same can be said for the use of extracorporeal shock wave lithotripsy (choice C). If it is chosen as the way to manage the stone, it should be done when infection and obstruction are no longer present.

Putting a catheter into the bladder (choice D) would provide decompression below the level of obstruction. The drainage of infected urine is needed above the obstructing point.
A 25-yr-old woman with a several year history of binging and purging presents to a psychiatrist complaining of lack of sleep, lack of energy and poor concentrating ability. She is very concerned about weight gain. Which of the following medication would be most appropriate to initiate.

A. Bupropion.
B. Fluoxetine.
C. Haloperidol.
D. Lithium carbonate.
E. Valproic acid.

EXPLANATION

The correct answer is B. This patient appears to have symptoms of major depression in the context of bulimia. She should therefore be treated with an antidepressant medication, and a selective serotonin reuptake inhibitor (SSRI), such as fluoxetine, would be most appropriate.

Bupropion (choice A) is an antidepressant, but it is contraindicated in patients with binging and purging behavior because of its lowering of the seizure threshold in patients with eating disorders.

Haloperidol (choice C) is an antipsychotic medication and is not indicated in major depression.

Lithium carbonate (choice D) is sometimes used to treat depression, but only in the context of bipolar disorder. Its usual indication is for the treatment of mania.

Valproic acid (choice E) is an anticonvulsant used as a mood stabilizer in the treatment of bipolar disorder.
A 64-yr-old man presents to the physician's office complaining of fever for the past 2-days. Over the past 24-hours he has developed a productive cough, he also has shaking chills and has been waking for the past two nights in drenching sweats. His past medical history is remarkable only for mild exertional angina. On physical examination he does not appear chronically ill but appears moderately dyspnic. His temperature is 38.6°C (101.4°F), blood pressure is 136/94 and respiration is 26. There is no jugular venous distention. The lungs have coarse ronchi at the right lung base with increased fremitus in the same area, he has a regular rhythm in the heart area and I/VI systolic murmur at the left sternal border. The remainder of the physical examination is unremarkable. Which of the following is the most appropriate next step in diagnosis.

A. Chest x-ray film.
B. Sputum gram stain.
C. Chest CT-scan.
D. Pulmonary function test.
E. Peak expiratory flow rate measurement.

EXPLANATION

The correct answer is B. This patient has a classic presentation of an acute community acquired bacterial pneumonia, as demonstrated by the findings of acute onset of fevers, rigors, and a productive sputum. His physical examination is consistent with a right lower lobe pneumonia and consolidation in this region. A sputum Gram’s stain may demonstrate the organism responsible for this patient’s pneumonia. The next step would then be a chest x-ray to confirm the presence of a pneumonia and identify its size and any associated parapneumonic effusions.

A chest x-ray film (choice A) is also indicated, but may take an hour or more to actually be obtained. For this reason, collecting sputum for a Gram’s stain, before the x-ray, may shorten the time to definitive therapy.

Chest CT scan (choice C) is usually reserved for evaluation of suspected masses.

Pulmonary function tests (choice D) and peak expiratory flow rate measurement (choice E) are usually reserved for evaluation of chronic lung diseases, such as emphysema, chronic bronchitis, pulmonary fibrosis, and asthma.
Q.122
A 2-week-old post-mature baby is born and immediately exhibits respiratory distress. Previously green tinged meconium was noted in the amniotic fluid. Which of the following is the most appropriate next step in management.

A. Emergency tracheostomy.
B. Intubation with mechanical ventilation.
C. Chest x-ray film.
D. Oxygen supplementation with face mask.
E. Suction of the mouth and nasopharynx.

EXPLANATION

The correct answer is E. Meconium is the fetal stool, which is mostly composed of desquamated cells from the gastrointestinal tract admixed with enough bile to give the soft stool a greenish color. A distressed fetus will pass meconium into the amniotic fluid and then may aspirate it. The infants often have placental insufficiency as a result of conditions such as maternal preeclampsia, hypertension, or postmaturity. The aspirated meconium is very irritating to the lungs and causes a chemical pneumonitis. Postmature infants are particularly likely to have severe problems, because the meconium is diluted much less in their small amniotic fluid volume. The most important initial step in therapy is prompt suction of the nasopharynx and mouth to remove the meconium before more (or even any) is aspirated. This can be performed even before the infant is fully delivered, as soon as a head coated with meconium emerges from the birth canal.

Emergency tracheostomy (choice A) is not warranted at this point.

Intubation with mechanical ventilation (choice B) is deferred until after the nasopharynx and mouth are cleared of meconium.

A chest x-ray film (choice C) is not warranted at this point.

Oxygen supplementation by face mask (choice D) is deferred until after the nasopharynx and mouth are cleared of meconium.
A 38-yr-old woman presents to a primary care physician with complaints of fatigue and insomnia. Review of system reveals no medical symptoms but the patient does endorse some symptoms on psychiatric review of symptoms. She describes feeling tired most of the day, having difficulty falling asleep as well as waking up too early, crying spells, poor appetite, poor concentration and a recent loss of interest in her hobbies. Physical examination and routine laboratory studies including TSH are within normal limits. Which of the following is the most appropriate initial pharmacological intervention.

A. Alprazolam.  
B. Buspirone.  
C. Imipramine.  
D. Paroxetine.  
E. Phenelzine.

EXPLANATION

The correct answer is D. Paroxetine is a selective serotonin reuptake inhibitor (SSRI). Along with other newer antidepressants, the SSRIs are currently the first-line agents for the treatment of depression. This patient has a symptom profile consistent with major depressive disorder, and treatment should be initiated with a goal of complete remission of symptoms. SSRIs are safe in overdose and have a relatively mild side effect profile.

Alprazolam (choice A) is a short-acting benzodiazepine used in the short-term treatment of anxiety, such as during initiation treatment for panic disorder while an SSRI is being started. Due to the significant risk of dependence and withdrawal, such short-acting benzodiazepines should be used very sparingly.

Buspirone (choice B) is an anxiolytic agent that acts as an agonist or partial agonist on serotonin 1A (5-HT1A) receptors. When used in the treatment of conditions causing anxiety, the full clinical response may take two to four weeks, without immediate anxiolytic effects.

Imipramine (choice C) is a tricyclic antidepressant (TCA) that is efficacious in the treatment of depression. However, TCAs are not currently first-line agents due to their potential lethality in overdose, need for pre-treatment electrocardiographic monitoring, and significant side effect profile (due to antiadrenergic, antihistaminic, and antimuscarinic effects).

Phenelzine (choice E) is a monoamine oxidase inhibitor (MAOI) antidepressant agent. These agents are rarely used and would never be considered a first-line agent. Patients taking MAOIs (phenelzine, tranylcypromine, isocarboxazid) must follow a diet that restricts tyramine due to the potential for a hypertensive crisis when ingested with tyramine-containing foods. Potential lethality in overdose is also a concern.
Q-124
A 20-yr-old female comes to the physician because she has never had a period. She has no medical problems, has never had surgery and takes no medication. Examination shows tall female, long extremities, normal sized breast although the areolas are pale. She has little axillary hair. Pelvic examination is significant for scant pubic hair and a short blind-ended vaginal wall. Which of the following is the most appropriate next step in management of this patient.

A. No intervention is necessary.
B. Bilateral gonadectomy.
C. Unilateral gonadectomy.
D. Bilateral mastectomy.
E. Unilateral mastectomy.

EXPLANATION

The correct answer is B. This patient has the findings that are most consistent with androgen insensitivity syndrome (formerly called testicular feminization syndrome). This syndrome results from genetic defects leading to abnormal androgen receptor function. Patients with androgen insensitivity syndrome are genotypically males (46, XY) but phenotypically females-with breasts and no external male genitalia. The reason that breasts develop is that estrogens, which are expressed at puberty and which also result from peripheral conversion of androgens, act upon the breast tissues unopposed by androgens because of the androgen receptor defect. This unopposed estrogen leads to breast growth and the resultant breasts are normal sized, although they have undeveloped nipples and pale areolae. There are no internal female organs, because mullerian-inhibiting substance is present during development. There are no external male organs because of the androgen receptor defect. Testicles do exist, but they are intra-abdominal. The gonads have a high rate of malignant degeneration in patients with androgen insensitivity syndrome and therefore, after puberty, they should be removed via bilateral gonadectomy. It is important to wait until after puberty so that full development can take place.

To state that no intervention is necessary (choice A) is incorrect. If the gonads are not removed from a patient with androgen insensitivity syndrome there is a significant risk that the patient will develop a gonadal malignancy.

To perform a unilateral gonadectomy (choice C) is incorrect. To leave one of the gonads in would still run the risk of malignant degeneration in that gonad. Once puberty has taken place, therefore, both gonads should be removed.

To perform a bilateral mastectomy (choice D) or a unilateral mastectomy (choice E) would be incorrect. In patients with androgen insensitivity syndrome (testicular feminization syndrome) the primary concern is for gonadal malignancy and not breast malignancy.
Q-125
A 55-yr-old, HIV positive male has a fungating mass growing out of his anus. He can feel it after he wipes himself after having a bowel movement but it is not painful. For the past six-months he has noted blood on the toilet paper and from time to time there has also blood coating the outside of the stools. He has lost weight and looks emaciated and ill. On physical examination the mass is easily visible. It measures 3.5cm in diameter is fixed to the surrounding tissue and appears to grow out of the anal canal. He also has rock hard, enlarged lymph nodes on both groins, some of them as large as 2cm in diameter. Which of the following is the most likely diagnosis.

A. Adenocarcinoma of the rectum.
B. Condylomata acuminata of the anus.
C. External hemorrhoids.
D. Rectal prolapse.
E. Squamous cell carcinoma of the anus.

EXPLANATION

The correct answer is E. The entire description is classic for anal cancer, but the clincher is the presence of metastasis in the inguinal nodes.

Adenocarcinoma of the rectum (choice A) could look like this if it arose very low in the rectum, but it would not metastasize to inguinal nodes.

Condyloma acuminata (choice B) could give fungating masses, but it would not lead to cachexia and would not produce the rock-hard inguinal nodes. Viral infections may precede the development of this kind of tumor (and could coexist with it), but it would be wrong to assume that all the patient has is the benign viral process.

External hemorrhoids (choice C) are not fungating masses, they do not bleed, and they do not lead to inguinal adenopathy or cachexia.

Rectal prolapse (choice D) would produce a protruding mass with concentric mucosal folds, would come in and out with straining, and would be a nuisance—but it would not produce adenopathy and cachexia.
Q-126
A 14-yr-old boy is brought in by his mother after the police caught him stealing his neighbor's bicycle. In addition the boy is doing poorly at school and he is suspected of being involved in a recent arson fire in the adjacent neighborhood. Neighbors report that they often see him lighting fires and burning trash in the vacant lots and suspect him into other burglaries that occurred in the past year. The boy has a history of fighting in the school since the age of ten. Which of the following is the most likely diagnosis.

A. Antisocial personality disorder.
B. Attention deficit hyperactivity disorder.
C. Conduct disorder.
D. Kleptomania.
E. Pyromania.

EXPLANATION
The correct answer is C. Conduct disorder is defined as a repetitive pattern of behavior in which the basic rights of others, or major age-appropriate societal rules or norms are violated, often with accompanying aggression to people and animals, destruction of property, deceitfulness, or theft. This diagnosis is usually given to individuals younger than 18 years.

Antisocial personality disorder (choice A) is not diagnosed before adulthood and consists of many of the same criteria that are used to diagnose conduct disorder. It is also usually accompanied by reckless disregard for the safety of self or others.

Attention deficit/hyperactivity disorder (choice B) is a diagnosis requiring inattention and hyperactivity before the age of 7, making it an unlikely diagnosis in this case.

Kleptomania (choice D) is the recurrent failure to resist impulses to steal objects that are not needed for personal use or for their monetary value. The stealing is not committed to express anger or vengeance and is not in response to a delusion or hallucination.

Pyromania (choice E) is the deliberate and purposeful setting of fire on more than one occasion. This diagnosis requires that the fire setting is not better accounted for by conduct disorder, or antisocial personality disorder.
An 82-yr-old woman is brought to the ER from the local nursing home because of complains of severe constipation. She has not moved her bowel in the last five days and today began complaining of a lower abdominal discomfort and distention. She takes hydrochlorothiazide and acetaminophen with codeine for severe arthritic pain in both hips. Over the past week she has been bed ridden for severe pain. She is afebrile. An abdominal examination shows mid and lower abdominal distention with mild tenderness. Bowel sounds are normo-active. A rectal examination demonstrates that the rectal vault is filled with hard stools. Which of the following is the most appropriate next step in management.

A. Barium enema.
B. Colonoscopy.
C. Flexible sigmoidoscopy.
D. Manual disimpaction.
E. Passage of a naso-gastric tube.

EXPLANATION

The correct answer is D. This elderly woman who has been bedridden and on a narcotic analgesic has become severely obstipated. This multifactorial condition is caused by her immobilization, bowel hypomotility secondary to the codeine, and possible mild dehydration from her diuretic. The treatment is manual disimpaction, which will promptly "open the flood gates" and yield immediate relief for the patient.

No other imaging studies, i.e., barium enema (choice A), colonoscopy (choice B), or flexible sigmoidoscopy (choice C) are necessary at present. The patient should be disimpacted to promptly resolve her abdominal distention and discomfort.

Passage of a nasogastric (choice E) tube would be indicated if the patient showed signs of upper gastrointestinal bleeding, but would not be appropriate for this woman with obvious constipation.
Q-128
A 74-yr-old woman with a long history of type II diabetes mellitus undergoes surgery for small bowel obstruction. After surgery she develops acute renal failure however, she refuses to undergo dialysis on advise of her husband. A psychiatrist is called to assess patient's condition and mental status. The patient does not show any signs of cognitive impairment and scores well on mini-mental state examination. Which of the following statements best explains the patient's position.

A. Patient is aware of the consequences of her decision and does not show signs of major psychiatric illness.
B. Patient is competent who decided to not undergo dialysis and the refusal to not undergo dialysis must be respected.
C. Patient is competent but her decision to not undergo dialysis must be overruled because of medical emergency.
D. Patient is operating in a suicidal manner and should be committed for treatment against her will.
E. Patient is temporarily incompetent so start her on dialysis.

EXPLANATION
The correct answer is A. This patient raises one of the most difficult legal and ethical problems in psychiatry. It is important to understand that competency, or lack of competency (choices B, C, and E), can be determined only by a legal authority, such as a court of law. The role of psychiatrists is solely advisory in determining competency. In this situation, only if the patient is suicidal by virtue of a major psychiatric illness, or if the patient were subject to an immediate medical emergency, could treatment be involuntarily administered. The psychiatrist's role is to assess a person's mental status for evidence of cognitive impairment, as well as to ascertain that the patient has a thorough understanding of the consequences of treatment decisions that are made. This patient does not meet criteria for treatment against her will (choice D), which requires both a mental disorder and the threat of impending immediate harm to self or others.
A 35-yr-old woman had a pigmented lesion removed from her palm for cosmetic reasons. The lesion is light brown in color, consisting of 2-mm very slightly elevated macule with well-demarcated edges and adjacent skin has normal color. Microscopic examination of the lesion demonstrates clustering of the pigmented melanocytes at the epidermo-dermal junction. No clusters of the melanocytes are seen in dermis. Which of the following diagnosis is correct.

A. Compound nevus.
B. Junctional nevus.
C. Halo nevus.
D. Intradermal nevus.
E. Lentigo.

EXPLANATION

The correct answer is B. The patient has a junctional nevus, which is one type of mole. Junctional nevi may be light brown to nearly black, and range in size from 1 to 10 mm. They may be either flat or very slightly raised. It is thought that almost all melanocytic nevi may begin as junctional nevi. In adulthood, the lesions are seen most frequently on the palms, soles, and genitalia. Clustering of melanocytes at the dermal-epidermal junction is characteristic microscopically. These lesions are very common, and removal is usually undertaken only when the mole has been exhibiting color changes; is irritated; or is cosmetically a problem.

Compound nevus (choice A) is characterized by clusters of melanocytes both at the epidermodermal junction and within the dermis.

A halo nevus (choice C) is a compound or intradermal nevus surrounded by an area of intense inflammation. The inflammation destroys the melanocytes of the immediately adjacent skin, producing a pale halo around the nevus.

Intradermal nevus (choice D) is characterized by clusters of melanocytes with the dermis but not at the junction.

Lentigo (choice E) clinically closely resembles a junctional nevus, but microscopically there is an increased number of melanocytes occurring as isolated cells, rather than in nests, in the lower epidermis.
Q-130
A 57-yr-old man presents to his physician for pre-operative evaluation. He has been a long time patient in this office and has been treated for hypertension and gastritis. He is scheduled for an open cholecystectomy in two-days. He currently takes omeprazole for his gastritis and thiazide for his hypertension daily. He smokes two packs of cigarettes/day. His home blood pressure log shows systolic pressure range from 150-190 mmHg and his diastolic pressure range from 80-105 mmHg, indicating that his blood pressure may not be adequately controlled for the surgical procedure. Which of the following medication is most appropriate for added blood pressure control in the pre-operative period.

A. Captopril.
B. Clonidine.
C. Metoprolol.
D. Nifidipine.
E. Prazocin.

EXPLANATION

The correct answer is C. There is an extensive body of literature indicating that beta-blockers given to non-cardiac surgical patients who are at risk of cardiac events are associated with a more favorable outcome in terms of postoperative cardiovascular morbidity and mortality. This patient has somewhat poorly controlled hypertension, as well as at least three cardiovascular risk factors (hypertension, tobacco, age). Ideally, one would like to have better control of the blood pressure and to reduce any risk for adverse perioperative events. Beta-blockers can achieve both of these endpoints.

Captopril (choice A) is an ACE inhibitor that has good efficacy in the treatment of hypertension. This class of drugs has also been shown to prolong survival in patients with congestive heart failure.

Clonidine (choice B) is a central alpha-2 receptor agonist that works to attenuate sympathetic outflow and thus lower blood pressure. Although it is a reasonably efficacious drug, it is associated with rebound hypertension if abruptly discontinued. It has no role in the perioperative management of blood pressure.

Nifedipine (choice D) is a calcium channel blocker that has reasonable efficacy in treating hypertension. There is no benefit to giving this agent in the perioperative period.

Prazosin (choice E) is an alpha-1 receptor antagonist that is very efficacious in the treatment of hypertension. This class of drugs is also useful in the treatment of benign prostatic hypertrophy (BPH).
An 18-yr-old man is taken to the ER by his family when he developed very severe headache accompanied by high fever. On physical examination patient is incoherent and demonstrates nuchal rigidity. CSF shows gram-negative diplococci. Talking to the family physician realized that the patient had five episodes of meningococcal meningitis in the past. The earliest being at age six. Immunodeficiency related to impaired functioning to which of the following is suspected.

A. B-cells.
B. Complement factors.
C. Eosinophils.
D. Neutrophils.
E. T-cells.

EXPLANATION

The correct answer is B. A wide variety of defects related to complement can occur and can produce immunodeficiency. The pattern shown in the question stem of recurrent Neisseria meningitis is typical of deficiency of complement factors C6, C7, or C8. Other complement deficiencies produce the following patterns. Deficiency of C1q produces a combined immunodeficiency with an SLE-like syndrome. Deficiencies of C1s, C1s, C4, or C2 produce an SLE-like syndrome and glomerulonephritis. Deficiencies of C3 or C5 produce a tendency to pyogenic infections. No disease has yet been associated with C9 deficiency.

B cell deficiencies (choice A) occur in a number of conditions and tend, in general, to be associated with an increased susceptibility to pyogenic infections.

Eosinophil deficiency (choice C) is not a usual cause of immunodeficiency.

Neutrophil abnormalities (choice D) can cause a variety of conditions that may present with either pyogenic infections or granulomatous disease.

T cell deficiencies (choice E) may present with infections with opportunistic organisms such as Candida, Pneumocystis, or cytomegalovirus.
Q-132
A 59-yr-old man presents to his primary care physician with fever and chills. His medical history is significant for osteoarthritis for many years. He has a long smoking history of 150 packs/year. He routinely takes only a non-steroidal, anti-inflammatory agent for pain. He has presented with a five-day history of fever and chills associated with productive cough. He has not been hospitalized recently and lives at home with his wife and has no sick contacts. On physical examination his temperature 38.9 C (102 F), and has bibasilar crackles heard best at the left base. Which of the following is the most appropriate next step in diagnosis.

A. Arterial blood gases.
B. Chest radiographs.
C. Complete blood count.
D. Oxygen saturation check.
E. Sputum gram stain.

EXPLANATION
The correct answer is B. The suspicion, based upon the clinical examination, is that this patient has pneumonia. The only way to definitively diagnose pneumonia is with an infiltrate present on chest radiograph. All further decision making about this patient will depend on whether the suspicion of a pulmonary infection is confirmed.

An arterial blood gas (choice A) is not necessary in this situation. These tests are routinely performed on asthmatic and COPD patients when the results are already known empirically. For example, a COPD patient who has a room air saturation of 80% and is tachypneic with labored breathing will almost certainly be hypoxic and hypercarbic. Even if this patient did have a pneumonia, the arterial blood gas will reveal no useful information that an oxygen saturation and thorough history would not.

A complete blood count (choice C) is important, but not before you determine whether this patient has a pneumonia. An elevated leukocyte count can only be interpreted after such information is obtained. This concept is a general one in clinical medicine, never order laboratory tests unless there is specific information sought that may help to confirm or negate a diagnosis.

An oxygen saturation check (choice D) is not appropriate at this point given that the patient’s appearance is benign. Hypoxemia would be evident in the patient’s respiratory rate, appearance, or his inspiratory effort.

A sputum sample (choice E) is often obtained when a bacterial pneumonia is suspected and selective antibiotic therapy is desired, but the presence of an infiltrate on radiograph would dictate antibiotic therapy based on his age and place of residence (home, hospital, ICU bed). These empiric guidelines are adequate for most therapy and can be tailored to selective therapy based on evolving clinical findings.
Q-133
A 32-yr-old man presents complaining of severe pruritis over the past 2-week. He has a history of ulcerative colitis for the past 7-years which has remained well controlled with sulfasalazine and cortisone enemas. His physical examination is unremarkable except for diffuse excoriations over his trunk and extremities. Lab studies reveal a mild iron deficiency anemia and normal electrolytes. LFTs are normal except for an alkaline phosphatase that is 322 U/L (normal < 110 U/L). Which of the following is the most likely explanation for his symptoms.

A. Erythema nodosum.
B. Hepatitis C.
C. Primary biliary cirrhosis.
D. Primary sclerosing cholangitis.
E. Pyoderma gangrenosum.

EXPLANATION

The correct answer is D. This patient has had longstanding ulcerative colitis and has now developed pruritus in the setting of an elevated alkaline phosphatase. This is consistent with a diagnosis of primary sclerosing cholangitis, whose activity is not related to the activity of the associated ulcerative colitis. This sclerosing process involves both the intra- and extrahepatic ducts and is diagnosed by endoscopic retrograde cholangiopancreatography (ERCP). Primary sclerosing cholangitis occurs most often in young men and is commonly associated with inflammatory bowel disease, particularly ulcerative colitis. Classically, primary sclerosing cholangitis produces a triad of progressive fatigue, pruritus, and jaundice, although some patients will present with upper quadrant pain, fever, hepatosplenomegaly, or cirrhosis. The condition is worrisome because it may eventually progress to decompensated cirrhosis, portal hypertension, ascites, and liver failure. Treatment is generally supportive, with more specific measures as needed including antibacterial treatment for superimposed bacterial cholangitis, dilation by endoscopy or a transhepatic route of significant strictures, and ursodeoxycholic acid to relieve the pruritus. A variety of anti-inflammatory therapies (e.g., corticosteroids, azathioprine, methotrexate) have been tried but appear to have more adverse than beneficial effects. Liver transplantation appears to be the only true cure.
Although erythema nodosum and pyoderma gangrenosum can be skin conditions seen in association with ulcerative colitis, they do not present with pruritus and, furthermore, have characteristic findings on physical examination. Erythema nodosum (choice A) presents as tender, red nodules, typically found on the lower extremities. Pyoderma gangrenosum (choice E) are pustular, ulcerating lesions, also generally found on the extremities, which can be very painful.

There is no evidence of hepatocellular dysfunction or transaminase elevation, nor any history of hepatitis risk factors, so hepatitis C is unlikely (choice B).

Primary biliary cirrhosis (choice C) does in fact present with pruritus and an elevated alkaline phosphatase; however, it is typically seen in middle-aged women and has no association with ulcerative colitis.
An infant is delivered at full-term by a spontaneous vaginal delivery to a 29-yr-old primary gravida. At delivery the infant is noted to have subcostal retraction and cyanosis despite good respiratory effort. The abdomen is scaphoid. On bag and mask ventilation, auscultation of the lungs reveal decreased breath sounds on the left with heart sounds louder on the right. Which of the following is the most likely diagnosis.

A. Dextrocardia with situs inversus.
B. Diaphragmatic hernia.
C. Pneumonia.
D. Pulmonary hypoplasia.
E. Spontaneous pneumothorax.

EXPLANATION

The correct answer is B. Congenital diaphragmatic hernia is often seen on prenatal ultrasound. A diaphragmatic hernia is a defect in the hemidiaphragm that allows the abdominal contents into the thorax. It has the findings of respiratory distress, cyanosis, and scaphoid abdomen. Auscultation will show decreased breath sounds on the affected side. It occurs more often on the left side than the right.

Dextrocardia (choice A) refers to the location of the heart in the right chest and would cause the heart sounds to be louder on the right side. Breath sounds are not decreased, and the abdomen is not scaphoid.

Pneumonia (choice C) usually does not present immediately after birth with respiratory distress, usually taking several hours after delivery to develop symptoms. The abdomen is not scaphoid, and the heart sounds are normal.

Pulmonary hypoplasia (choice D) can be a result of insults (i.e., oligohydramnios) to the fetus in utero that decrease the lung size. It can also be a result of diaphragmatic hernia, since the lung is displaced by the abdominal contents.

Spontaneous pneumothorax (choice E) often occurs in the neonatal period after vigorous resuscitation at birth. A left-sided pneumothorax would cause the respiratory distress, cyanosis, and mediastinal shift but would not produce a scaphoid abdomen.
Q-135
A 65-yr-old woman presents to a primary care physician with complain of poor memory. Her husband died six-months ago and she recently decreased her church involvement and interest in her hobbies. She complains of feeling tired and worried and has difficulty in attention and memory. She has a history of major depressive disease approximately ten-years ago which required hospitalization. She was treated with an anti-depressant for two years then it was tapered and discontinued. She currently denies depressed mood and states that her mother died of alzheimer's disease and she finds her memory loss worrisome. In light of her family history which of the following factors is most likely if this patient has pseudo-dementia of depression rather then true dementia.

A. The patient appears unconcerned.
B. The patient emphasizes disability related to memory loss.
C. Patient has more difficulty with recent memory then remote memory.
D. The patient tends to conceal the difficulty.
E. The patient tries hard to answer questions related to orientation and registration.

EXPLANATION
The correct answer is B. Distinguishing a pseudodementia of depression from a true dementia is an important task requiring examination of subtle aspects of the mental status examination. Although these individual factors may be used in the assessment of depression-related cognitive dysfunction, the entirety of the mental status examination must be considered when making diagnostic decisions. Treatment for the two conditions would be very different, and memory loss in this woman should not be automatically presumed to be related to a primary dementia. In pseudodementia of depression, the patient often tends to emphasize disability related to memory loss much more than patients experiencing true dementia.

If the patient appears unconcerned (choice A) about the memory loss, this would be more characteristic of dementia. Usually in pseudodementia of depression, the patient communicates a strong sense of distress.

If the patient has more difficulty with recent memory than remote memory (choice C) true dementia should be considered. In pseudodementia of depression, significant memory loss for both recent and remote events usually occurs.

If the patient tends to conceal the difficulty (choice D), this would be more characteristic of dementia.

If the patient tries hard to answer questions about orientation and registration (choice E) dementia should be considered, since pseudodementia of depression is often accompanied by little effort to perform even simple tasks.
A 23-yr-old woman, gravida 2, para 1 at six-weeks gestation comes to the ER because of lower abdominal pain and fever. She states that her symptoms began two-days ago and have steadily worsened since. Past medical history is significant for two episodes of gonorrhea and one episode of chlamydia. Temperature is 38.9 C (102.3 F), blood pressure is 110/76, pulse is 102 and respirations are 12. Abdominal examination demonstrates significant lower abdominal tenderness. Pelvic examination show a mucopurulent cervical discharge and bimanual examination reveals cervical motion tenderness and adnexal tenderness. CBC show leucocyte count of 18,000/mm$^3$. Pelvic ultrasound show six-weeks intrauterine gestation with no adnexal findings. Which of the following is the most appropriate management.

A. No treatment is necessary.
B. Intramuscular ceftriaxone, oral doxycycline and discharge home.
C. Intravenous cefoteten, oral doxycycline and hospital admission.
D. Intravenous clindamycin and gentamycin and hospital admission.
E. Laparoscopy.

EXPLANATION

The correct answer is D. Pelvic inflammatory disease rarely occurs during pregnancy. The incidence of PID during pregnancy is far lower than in the nonpregnant state, likely because of the relative protection that the pregnancy provides against ascending infection from the cervix. However, while PID during pregnancy is rare, it is not impossible. This patient has the findings that are most consistent with a diagnosis of PID. She has abdominal tenderness, cervical motion tenderness, and adnexal tenderness. She also has a fever, a mucopurulent cervical discharge, and an elevated white blood cell count. She also has a history of gonorrhea and chlamydia. The correct management of a pregnant woman with PID is hospital admission and treatment with intravenous medications. Clindamycin and gentamycin should be used.

To state that no treatment is necessary (choice A) is absolutely incorrect. A patient with PID certainly needs treatment. And a pregnant patient with PID requires hospitalization and intravenous antibiotics.
To give intramuscular ceftriaxone, oral doxycycline, and discharge home (choice B) would not be appropriate. Nonpregnant patients that develop PID may be treated with intramuscular ceftriaxone and an extended course of doxycycline (14 days). This is a standard outpatient treatment for PID. A pregnant patient, however, must be admitted to the hospital for intravenous antibiotics.

To provide intravenous cefotetan and doxycycline and hospital admission (choice C) is incorrect. Doxycycline is a class D drug that should not be used during pregnancy.

Laparoscopy (choice E) would not be the most appropriate next step in management. The diagnosis of PID in this patient’s case is reasonably certain given the presentation. The next step, therefore, is treatment with intravenous antibiotics. If these fail, surgical alternatives may be considered.
Q-137
A 66-yr-old man with diabetes and generalized arteriosclerosis occlusive disease notices a gradual loss of erectile function over several years. Initially he can get erections but they do not last long enough, later he noticed decrease in quality of his erections and more recently he became by his own criteria totally impotent. He has occasional brief nocturnal erections but he can never get an erection when he needs one. Which of the following is the most appropriate initial step in management.

A. Psychotherapy.
B. Pharmacologic therapy.
C. Erectile nerve reconstruction.
D. Implantable penile prosthesis.
E. Pudendal artery revascularization.

EXPLANATION

The correct answer is B. This patient has organic impotence, but it is not related to trauma for which surgical reconstruction would be indicated. His remaining function can be augmented with sildenafil (Viagra®).

Psychotherapy (choice A) is the thing to do for psychogenic impotence, which has a sudden onset rather than the gradual development described in this case.

Nerve damage (as suggested in choice C) is the culprit in impotence following pelvic surgery (not the case here). As of now, there is no effective way to reanastomose those invisible little nerve fibers.

Penile prosthesis (choice D) is always the last option, never the first one. Once a prosthesis is inserted, the normal erectile mechanism is destroyed forever.

Had the history been that of a young man becoming impotent after a motorcycle accident, a vascular lesion would have been the likely problem, and a reconstruction (choice E) would be the thing to do.
Q-138
A 22-yr-old man comes to the ER with a three-day history of cough, fever, chills, pleuritic chest pain and low back pains. He says that symptoms came out of the blue. He is the son of a wealthy business woman and still lives at home which he says is cool because my parents are never around. Temperature is 39 C (102.2 F), blood pressure is 120/80, pulse is 70 and respirations are 16. Physical examination shows oval retinal hemorrhages with a clear, pale center and pinpoint lesion between his toes. Blood cultures are drawn. Chest x-ray film shows multiple patchy infiltrates. Lab studies show hemoglobin 11 gm/dl, hematocrit 39%, ESR 39 mm/hr. Which of the following is the most likely pathogen.

A. Candida albicans.
B. Pseudomonas aeruginosa.
C. Serratia marcescens.
D. Staphylococcus aureus.
E. Streptococcus viridans.

EXPLANATION

The correct answer is D. This patient has acute bacterial endocarditis, most likely due to Staphylococcus aureus, the most common organism causing endocarditis in intravenous drug abusers. The "pinpoint lesions" between his toes are signs of injection drug abuse. Acute endocarditis in drug abusers typically presents with a high fever, pleuritic chest pain, and a cough. The tricuspid valve is commonly affected in these patients. A murmur may not be present in early acute endocarditis or in injection drug abusers with tricuspid valve disease. The retinal lesions are called Roth spots. Other findings include anemia and an elevated erythrocyte sedimentation rate. Diagnosis is with blood cultures, which are typically positive for S. aureus, and with echocardiography. Treatment is with antibiotics.

Candida albicans(choice A), Pseudomonas aeruginosa(choice B), and Serratia marcescens(choice C) are infrequent causes of endocarditis.

Streptococcus viridans(choice E) is a common cause of endocarditis in individuals who are not injection drug abusers. The onset of symptoms is usually more gradual, patients present with a low-grade fever, new cardiac murmur, splenomegaly, hematuria, proteinuria, and an elevated erythrocyte sedimentation rate.
Q-139
A 56-yr-old alcoholic presents complaining of 6-months of worsening mid-epigastric pain radiating to his back. The pain is exacerbated by eating and continued alcohol use. One month ago he was told that he had developed diabetes and has also noted that over the past month he had greasy, large volume, foul smelling stools. Which of the following is the most likely cause of this man’s steatorrhea.

A. Acid inactivation of pancreatic enzymes.
B. Bacterial overgrowth.
C. Biliary insufficiency.
D. Excess secretion of glucagon.
E. Insufficient lipase available for normal fat digestion.

EXPLANATION
The correct answer is E. Midepigastric pain radiating to the back and exacerbated by eating and continued alcohol use should suggest the diagnosis of pancreatitis. Significant risk factors for pancreatitis include alcoholism (as this patient has) and biliary tract disease (for which there is no evidence in this patient). It is a little unclear from the history whether the patient is experiencing recurrent episodes of acute pancreatitis or is developing the onset of chronic pancreatitis. Whichever is the case, both processes are capable of destroying enough exocrine pancreatic tissue to predispose for exocrine pancreatic insufficiency with resultant insufficient production of pancreatic enzymes, such as lipase, which normally facilitates fat usage, to allow for normal digestion. Steatorrhea, or excess fat in stool, is seen clinically as greasy, foul-smelling (because of bacterial action on the fat), large-volume (in part due to gas production by bacteria and in part due to failure to digest most of the food) stools.

There is no evidence that there is hyperacidity to account for inactivation of pancreatic enzymes (choice A). This phenomenon can occur, but it would be more likely to be seen in settings such as Zollinger-Ellison syndrome, in which a gastrin-producing tumor of the pancreas or small intestine stimulates excess acid production by the stomach.

Bacterial overgrowth (choice B) can produce steatorrhea by deconjugating bile salts and making them unavailable to form micelles. However, this patient has no underlying etiology for bacterial overgrowth, such as blind loop syndrome or hypomotility.

Biliary insufficiency (choice C) can cause steatorrhea; however, although biliary tract disease can predispose for pancreatitis, pancreatitis does not predispose for biliary insufficiency. The pain of biliary tract disease is usually localized to the left upper quadrant and may radiate to the left shoulder.

Excess glucagon (choice D) is rarely noted in the absence of the very rare neuroendocrine tumor known as glucagonoma. It does not produce fat maldigestion or malabsorption.
Q-140

A 65-yr-old man comes to the medical attention because of multiple neurological deficits including loss of sensation in his right hand, weakness in the left lower leg and a visual field defect. He has smoked two packs/day for 40-years. His medical history is significant for asthma and emphysema. Examination of fundus is unremarkable. His temperature is 37°C (98.6°F), blood pressure is 137/86, pulse is 86 and respiration is 24. MRI of the head reveal five different intracerebral lesions ranging from 1-3 cm in main diameter and located at the gray-white matter junction in both cerebral hemispheres. Lesions are sharply demarcated and contrast enhancement after gandolinium administration is present in all of them. Which of the following is the most likely diagnosis.

A. Abscesses.
B. Arterio-venous malformations.
C. Embolic infarcts.
D. Metastasis.
E. Multifocal glioblastoma multiforme.

EXPLANATION

The correct answer is D. Awareness of the typical MRI/CT appearance of brain metastases is important because often patients present with cerebral metastases without prior history of cancer disease. Thus, a radiologic diagnosis of brain metastatic disease may prompt a search for the underlying primary tumor, which is often a lung carcinoma in men and lung or breast carcinoma in woman. Melanomas also have a peculiar propensity to metastasize to the brain. The typical radiologic features of brain metastases are summarized in this case: multiplicity of lesions, well-circumscribed borders, and location at the gray-white matter junction.

Multiple abscesses (choice A) may develop in patients with sepsis and, particularly, in association with conditions leading to septic emboli (e.g., infective endocarditis).

Arteriovenous malformations (AVMs) (choice B) are abnormal conglomerates of disorganized blood vessels composed of arteries, veins, and intermediate vessels with discontinuous elastic lamina. Intracerebral hemorrhage is their most frequent mode of clinical presentation.

Embolic infarcts (choice C) would be associated with wedge-shaped cortical lesions. Frequently, embolic infarcts are hemorrhagic.

Multifocal glioblastoma multiforme (GBM) (choice E), the most frequent malignant primary brain neoplasm, manifests as an ill-defined mass in the white matter. Contrast enhancement is usually present. Multifocal GBM is a rare event. Even so, the lesions are poorly circumscribed and centered in the white matter.
A 71-yr-old man presents to the hospital with an episode of bright red blood per rectum. Patient states that a few hours ago he passed a grossly bloody bowel movement. The passage was associated with some cramping, lower abdominal. The patient past medical history is significant for coronary artery disease, myocardial infarct three-years ago. He is poorly complaiant with his beta-blocker and diuretic therapy and his blood pressure have run around 140/85 mmHg. While the patient is on the floor he has another episode of large volume, bright red blood per rectum. Blood pressure is 100/60 while supine and his pulse is 120, hematocrit is 28%. He then began to complain of substernal chest tightness radiating to his left shoulder. An ECG shows new T-wave inversions in anterior leads. Which of the following is the most appropriate intervention at this juncture.

A. Administration of aspirin by mouth.
B. Administration of a beta-blocking agent.
C. Administration of nitroglycerine sublingually.
D. Administration of nitroglycerine topically.
E. Blood transfusion.

EXPLANATION

The correct answer is E. According to the available data, the patient is presenting with myocardial ischemia in the presence of anemia. The appropriate treatment, therefore, is a blood transfusion.

Administration of aspirin (choice A) would not be appropriate in this man who is passing bright red blood per rectum.

This patient’s tachycardia is an appropriate response to the anemia and hypovolemia (an effort to maintain oxygen delivery). The administration of a beta blocking agent (choice B), therefore, would be inappropriate.

The patient’s blood pressure (compare it with his previous pressures) while supine strongly suggests hypovolemia. The administration of nitroglycerin, either sublingually (choice C) or topically (choice D), therefore, becomes inappropriate. The nitroglycerin will further reduce preload, which in turn, could further compromise the patient’s cardiac output and worsen his myocardial ischemia.
Q-142

30-yr-old man consults a physician on his wife’s insistence because his eyes are a little yellow all the time now. Screening chemistries show moderate increase in liver transaminases, total bilirubin of 2mg/dl almost all of which is conjugated. The patient denies ever using alcohol. Viral hepatitis studies are negative. Liver biopsy show hepatic fibrosis with normal iron levels. There is no evidence of alpha-1-antitrypsin deficiency. On further questioning about his general health the patient reveals that he had an unusual episodes of bacterial pneumonias in his life, he has even had pneumocystis pneumonia at one time. HIV testing at that time and repeated twice since has always been negative. A doctor at the time had commented that he has trouble making neutrophils. T and B-cell number are within normal limits. Antibody studies reveal the following:

IgG total 200mg/dl (normal 723-1685 mg/dl)
IgA 40mg/dl (normal 81-463mg/dl)
IgM 450mg/dl (normal 48-271mg/dl)

Which of the following is the most likely diagnosis.

A. Adenosine deaminase deficiency.
B. Bruton’s agammaglobulinemia.
C. IgG sub-class deficiency.
D. Hyper IgM immunodeficiency.
E. Selective IgA deficiency.

EXPLANATION

The correct answer is D. Hyper IgM immunodeficiency is a congenital, often X-linked, form of immunodeficiency which is characterized by low IgG and IgA and compensatory high IgM. The immunodeficiency causes increased susceptibility to major gram-positive pathogens and opportunistic infections (such as the patient’s Pneumocystis infection). The biochemical basis of the condition appears to be a defect in a receptor on the T cell membrane that helps to trigger B cell switching from IgM to IgA, IgG, and IgE. Cases, such as in this question, in which the problem is not picked up because of the immunodeficiency may come to medical attention with other features of the syndrome, including lymphadenopathy, autoimmunity (notably Coombs positive hemolytic anemia), or chronic liver disease.
Adenosine deaminase deficiency (choice A) is a cause of a form of severe combined immunodeficiency that usually presents (often with thrush) in the first three months of life.

Bruton's agammaglobulinemia (choice B), also known as x-linked agammaglobulinemia, is characterized by markedly decreased B cell numbers, and low values of all of the immunoglobulins, particularly IgG.

IgG subclass deficiency (choice C) is characterized by markedly decreased levels of a single IgG subclass in the setting of normal total IgG levels.

Selective IgA deficiency (choice E) is very mild, and is usually clinically significant only because of a tendency to anaphylaxis if given IgA-containing blood products.
A 19-yr-old college freshman presents to the university health clinic because of recurrent episodes of wheezing during basketball practice. He has been a starting shooting guard for this team and is usually been hampered by shortness of breath shortly after beginning practice and in the games. Symptoms are accompanied by a non-productive cough and chest tightness. He has no symptoms at rest. The symptoms occur whether the practices are indoor or outdoor. On physical examination he is comfortable and denies any symptoms. His physical examination is unremarkable. Which of the following cells are most likely to mediate his symptoms.

A. Eosinophils.
B. Lymphocytes.
C. Mast cells.
D. Monocytes.
E. Neutrophils.

EXPLANATION

The correct answer is C. This patient has symptoms of exercise-induced asthma. Unsurprisingly, he appears normal while in the office. The symptoms of exercise-induced asthma are due to mast cell release of histamines, which degranulate with the initiation of exercise. These symptoms can be prevented with the pre-exercise use of inhaled cromolyn, which will act to stabilize the mast cells. It is less effective once exercise has begun. Once bronchoconstriction has occurred, symptomatic therapy can be provided with a beta-agonist inhaler.

Eosinophils (choice A) are involved in allergen-induced asthma.

Lymphocytes (choice B), monocytes (choice D), and neutrophils (choice E) are involved with inflammation, but do not mediate the process of asthma.
Q-144
A 71-yr-old retired physician complains of increasing calf pain when walking uphill. Symptoms have gradually increased over the past month. Past medical history is significant for an uncomplicated myocardial infarction two-years earlier and a transient ischemic attack six-months ago. Over the past month his blood pressure has worsened despite previous control with diltiazem, hydrochlorothiazide and propranolol. His other medication is isosorbide dinitrate and aspirin. On physical examination his blood pressure is 152/90 and his pulse is 66/min. There is a right carotid bruit. His lower extremities are mildly cool and have diminished pulses at dorsalis pedis. Which of the following is most appropriate in his leg pain.

A. Decrease diltiazem dose.
B. Decrease hydrochlorothiazide dose.
C. Decrease propranolol dose.
D. Increase aspirin dose.
E. Increase isosorbide dinitrate dose.

EXPLANATION

The correct answer is C. Propranolol is considered to be relatively contraindicated in patients with peripheral claudication. Although beta-blockers are excellent medications in patients with hypertension and a history of myocardial infarction, the beta blockade may predispose to arterial vasoconstriction peripherally. The dose of beta-blockers in this patient should therefore be reduced or gradually eliminated.

Decreasing diltiazem (choice A) would not be of value since calcium channel blockers, such as diltiazem, tend to cause arterial vasodilation.

The decreased use of hydrochlorothiazide (choice B) would have no effect on arterial vasodilation.

Increasing aspirin (choice D) does not reduce the symptoms of claudication.

Increasing isosorbide dinitrate (choice E) would increase venodilation but would not have an influence on the arterial vascular bed.
Q-145
A male infant born at term is found to have bilateral colobomas, ear anomalies, choanal atresia and cryptorchidism. There is no maternal drug history, or history of alcohol abuse during pregnancy. There is no family history of similar congenital defects. Which of the following is the most appropriate test to exclude any associated anomalies.

A. Barium swallow.
B. Echocardiography.
C. Fiberoptic bronchoscopy.
D. Renal ultrasonography.
E. Skeletal survey.

EXPLANATION
The correct answer is B. The infant in this clinical vignette likely has the CHARGE syndrome, which includes colobomas, heart defects, choanal atresia, retardation, genitourinary abnormalities, and ear anomalies. With the presence of four anomalies, an echocardiogram is the logical next step to detect any associated heart defect. The etiology of the CHARGE syndrome is unknown, but it may involve altered morphogenesis during the second trimester of pregnancy. It is not genetically transmitted and is not associated with a teratogenic effect of any substance.
A 19-yr-old student is admitted to the psychiatry inpatient with the working diagnosis of first break psychosis. Because of combativeness and threats to others he is put in seclusion. At first he refused to take medication by mouth however after attacking a nurse he was given haloperidol IM on two occasions. He has now developed acute torticollis and twitching of mouth on that side. The family is furiously standing that the treatment has caused seizures. Which of the following reactions did the patient most likely had.

A. Acute dystonia.
B. Akathesia.
C. Asterexis.
D. Lennox-gastaut syndrome.
E. Pseudoseizures.

EXPLANATION

The correct answer is A. Acute dystonia is an involuntary spasm of a particular group of muscles that can involve the neck, jaw, tongue, eyes, or the entire body. It can be an early adverse effect of antipsychotics, and it is more common in younger men. It is more common with typical antipsychotics. The treatment of choice is parenteral administration of anticholinergics.

Akathisia (choice B) is a subjective feeling of muscle discomfort and restlessness that can cause agitation, pacing, anxiety, and dysphoria. It is related to the use of antipsychotics and can appear any time during treatment. It is treated by antipsychotic dose reduction, propranolol, or benzodiazepines.

Asterixis (choice C) consists of coarse arrhythmic lapses of sustained posture. It is related to metabolic disorders and is most easily seen when the patient’s arms are outstretched. Asterixis occurs bilaterally.

Lennox-Gastaut syndrome (choice D) is a variant of petit mal epilepsy and consists of intellectual impairment, distinctive slow spike and wave pattern, and atonic postural lapses followed by minor tonic-clonic spasms.

Pseudoseizures (choice E) are part of conversion disorder and are not directly related to the use of antipsychotics. They are very much like real seizures except that there is no aura and no EEG abnormalities. The movements are asynchronous and non-stereotyped, and they occur when the person is awake.
A 35-yr-old woman gravida 4, para 3 at 38 weeks gestation comes to the labor and delivery ward after a gush of clear fluid from vagina. After the gush of fluid she has had increased uterine contractions. Sterile speculum examination reveals a pool of clear fluid in the vagina that is nitrazine positive. Cervical examination shows that the patient is 5-cm dilated with the fetal face presenting in the mentum anterior position. External uterine monitoring shows that the patient is contracting every two minutes. External fetal monitoring shows that the fetal heart rate is in 140s and reactive. Which of the following is the most appropriate next step in management.

A. Expectant management.
B. Oxytocin augmentation.
C. Forceps delivery.
D. Vacuum delivery.
E. Cesarian section.

EXPLANATION

The correct answer is A. This patient has a face presentation. Typically, a fetus in labor is as an occiput presentation. In certain rare instances (roughly 1 in 500 deliveries), however, the fetus is in a face presentation. Causes of face presentation include an anencephalic fetus, pelvic contraction, and high parity. A vaginal delivery is possible when the fetus is in a mentum anterior position (i.e., the fetal chin is oriented toward the maternal pubic symphysis.) The fetus can flex its head, thereby allowing delivery. This patient is in active labor with contractions every 2 minutes and 5 cm of cervical dilation. The fetus is in mentum anterior position. Therefore, expectant management is the most appropriate next step.

Oxytocin augmentation (choice B) is not indicated. This patient is in active labor on her own and therefore does not need oxytocin to augment it.

Forceps delivery (choice C) would not be indicated. Forceps are not used prior to full dilation of the cervix. Also, with a non-vertex presentation, forceps would be contraindicated.

Vacuum delivery (choice D) is not indicated. As with forceps, vacuum delivery is not performed prior to full dilation of the cervix. With a face presentation, vacuum delivery would be contraindicated.

Cesarean section (choice E) would not be indicated. Vaginal delivery is possible with face presentation.
Q-148

A young man sustains a gunshot wound at the base of his neck. He was shot point blank with a 0.38 caliber revolver. The entrance wound is above the left clavicle below the level of cricoid cartilage and just lateral to the sternoclidomastoid muscle. The exit wound is just above the spinous process of the right scapula. He has normal breath sounds on both sides, is awake and is talking in normal tone and voice, is neurologically intact and is hemodynamically stable. Portable x-ray films of neck and chest taken in the ER show some air in the tissue of the lower neck but are otherwise non-diagnostic. Which of the following is the most appropriate next step in management.

A. Observation for several hours.
B. CT-scan of the neck and chest.
C. Angiogram, esophagogram, esophagoscopy and bronchoscopy before surgical exploration.
D. Immediate surgical exploration of the lower neck through collar incision.
E. Immediate surgical exploration of the upper chest through median sternotomy.

EXPLANATION

The correct answer is C. Gunshot wounds to the base of the neck need exploratory surgery, but the exact approach and incision are determined by a more accurate knowledge of the location and extent of the injuries. Thus, if time permits, diagnostic studies should precede surgical intervention. The major vessels, the tracheobronchial tree, and the esophagus are the potential targets that have to be investigated.

Observation (choice A) might be appropriate for a stab wound in a completely asymptomatic patient. In gunshot wounds, we have to expect that injuries will exist, and they should not be neglected waiting for overt clinical signs.

CT scan (choice B) has done wonders for our assessment of closed head injuries and blunt abdominal trauma, but it is not the study that would tell us what has happened to the major vessels, the esophagus, or the tracheobronchial tree in a gunshot wound.

Immediate surgical exploration, either through the neck or the chest, or in combination, might be forced by a rapidly deteriorating situation. In the absence of such imperative, a decision to open the neck (choice D) or the chest (choice E) is premature at this point.
A patient is brought to the psychiatrist after being persuaded by her family to get help. She describes that she thought she was depressed, feels empty and guilty for not having any feelings for her family and children. She notices that mornings are worse, later in the day she is able to do some things. In the mornings she stays in the bed late and even though she has never been lazy she is unable to do anything, she falls asleep quickly at night but wakes up at 4:00 am and is unable to get back to sleep. She is sure that there is nothing that could cheer her up even for a short time. Which of the following is the most likely diagnosis.

A. Catatonia.
B. Cotard’s syndrome.
C. Dysthymia.
D. Major depression with atypical features.
E. Major depression with melancholic features.

EXPLANATION

The correct answer is E. Major depression with melancholic features is characterized by a depressed mood most of the time and a lack of reactivity to pleasurable stimuli during episodes. In addition, three or more of the following criteria must be met: distinct quality of depressed mood, worse depression in the morning, early morning awakening, psychomotor retardation or agitation, weight loss, and inappropriate guilt.

Catatonia (choice A) can be applied to any of the episodes of major depressive or bipolar disorder. In the clinical picture, the most dominant feature is motoric immobility, as evidenced by waxy flexibility, excessive motor activity, extreme negativism, peculiar voluntary movements, and echolalia or echopraxia.

Cotard’s syndrome (choice B), or nihilistic delusional disorder, is diagnosed when patients complain of not only having lost their possessions, status, or strength but also their inner organs. It can be seen in schizophrenic or depressive episodes.

Dysthymia (choice C) involves depressed mood for most of the time in the past 2 years and the presence of two or more of the following: changes in appetite, changes in sleep, fatigue, low self-esteem, poor concentration, and feelings of hopelessness. The symptoms do not meet the criteria for major depressive episode.

Major depression with atypical features (choice D) can be applied when, in the most recent 2 weeks, there is mood reactivity (the patient brightens to positive events) and two or more of the following are present: weight gain or increased appetite, hypersomnia, leaden paralysis, and sensitivity to rejection from others.
Q-150
A patient with a history of hypertension calls his physician's office for advice. He has a long history of heartburn and recently consulted a gastroenterologist. He underwent endoscopy and was told that Barrett's mucosa was found by biopsy. The patient read in a newspaper that people with this condition develop esophageal cancer. Which of the following is the most appropriate response to this concern.

A. Your concerns are ungrounded.
B. It is foolish to worry because this type of cancer is unlikely to develop and would occur many years later.
C. You should chew food very carefully to avoid mechanical obstruction.
D. Only a small minority of patients with Barrett's esophagus would develop esophageal cancer and you should undergo endoscopic surveillance.
E. You should concern an oncologist regarding esophageal cancer prevention studies.

EXPLANATION

The correct answer is D. Barrett’s esophagus may occur in a small number of patients who have gastroesophageal reflux disease (GERD). This condition is a metaplasia of the normal squamous mucosa of the esophagus to a columnar (glandular) type of epithelium, and is usually seen as a response to repeated acid exposure to the distal esophagus. Tobacco and alcohol use are also thought to contribute to the process. The significance of Barrett’s esophagus is that it may lead to the development of low-grade dysplasia, high-grade dysplasia, or esophageal adenocarcinoma. However, this is a very infrequent occurrence when considering the large number of patients with GERD and even those with Barrett’s esophagus. Barrett’s esophagus usually does not resolve with either medical or surgical therapy. Endoscopic surveillance (with multiple small biopsies, since dysplasia cannot be reliably evaluated by endoscopic appearance alone) every 1-2 years has been often recommended, but some studies suggest that it may not be cost-effective.

It is not factually true to inform the patient that his concerns are "ungrounded" (choice A), because there is in fact a small risk of adenocarcinoma.

It is never appropriate to belittle a patient’s concerns and inform him that his worries are "foolish" (choice B).

Barrett’s esophagus is a histologic change and, unless accompanied by a stricture, does not produce symptoms of mechanical dysphagia (choice C).

It is inappropriate to refer the patient to a cancer specialist (choice E) for the prevention of a very unlikely development of cancer; furthermore, preventive strategies should include instructions to avoid factors that exacerbate GERD and should be delivered to the patient by the primary care physician.
A 44-yr-old man is brought unconscious to the ER, five-hours after a motor vehicle accident in which he was ejected out of the car and hit his head on a pavement. He lost consciousness three-hours following the trauma. On admission the patient is unresponsive to verbal and painful stimuli and his left pupil is fixed and dilated. Xray film of his head shows a closed left clavicular fracture. CT-scan demonstrates evidence of intra-cranial bleeding. In which of the following compartments the bleeding is most likely to develop.

A. Epidural space.
B. Subdural space.
C. Subarachnoid space.
D. Intracerebral.
E. Intraventricular.

EXPLANATION

The correct answer is A. The clinical history and imaging findings are consistent with bleeding within the epidural space. Epidural hemorrhage is traumatic in origin in most cases and usually associated with fractures of the calvarial wall. This results in tearing of one of the epidural arteries (most commonly the middle meningeal artery), with rapid accumulation of blood between the calvarial bone and the underlying dura. Brief loss of consciousness is often followed by a lucid period, which may last for a few hours. The patient relapses into coma because of the enlarging hematoma that displaces the brain and causes uncal herniation. A fixed dilated pupil is the result of the herniated uncus compressing the ipsilateral oculomotor nerve.

Hemorrhage within the subdural space (choice B) is usually due to tearing of the so-called bridging veins. It is usually of traumatic origin, but cerebral atrophy is an important predisposing condition. Thus, this form of bleeding develops most commonly in elderly patients, often after minimal trauma.

Bleeding in the subarachnoid space (choice C) manifests with headache of sudden onset (thunderclap headache) and nuchal rigidity. Rupture of berry aneurysms in the circle of Willis is the most common cause.

Intracerebral hemorrhage (choice D) has a wide range of etiologies, hypertension being one of the most common. Other causes include trauma, infections, vascular malformations, bleeding diathesis, neoplasms, and amyloid angiopathy. Clinical manifestations vary, depending on the location and extent of the bleeding.

Intraventricular bleeding (choice E) is usually due to an extension from subarachnoid or intracerebral bleeding and is thus due to the same underlying conditions as the ones mentioned above.
Q. 152
A 68-yr-old Latin female is admitted to the medical service for evaluation of a difficult to control hypertension. She has been treated for hypertension for three-years by her primary care physician. She has a documented intolerance to ACE-inhibitors manifested by a rapid decline in her renal function. She also had two episodes of acute pulmonary edema in the past. She has ceased smoking, has altered her diet and claims that she is compliant with medications. At her last office visit to the hospital serum creatinine was 1.2mg/dl which was mildly elevated as was microscopic hematuria. Physical examination is remarkable for blood pressure of 180/100, prominent apical impulse and abdominal bruit to the right of the midline and 2+ dorsalis pedis and radial impulses. Lab studies are as follows: Hematocrit 38%, leukocyte count 5,800/mm³, sodium 144 Meq/L, potassium 3.6 Meq/L, bicarbonate 28 Meq/L, BUN 22mg/dl, creatinine3.1 mg/dl. Which of the following is the most likely cause of this patient's hypertension.

A. Aldosterone secreting tumor.
B. Coarctation of aorta.
C. Essential hypertension.
D. Pheochromocytoma.
E. Renal artery stenosis.

EXPLANATION
The correct answer is E. Although essential hypertension is the most common cause of hypertension, accounting for approximately 91% of all hypertensive diagnoses, in this case, there are signs and symptoms suggestive of another diagnosis. For this patient, her sensitivity to ACE inhibitors, her elevated creatinine and her congestive heart failure all strongly suggest some degree of renal artery stenosis.

A aldosterone secreting tumor (choice A) is incorrect, since for this to be diagnosed, serum sodium would be quite elevated and serum potassium quite low.

Coarctation of the aorta (choice B) is not likely since pulses are equal and symmetrical, and because she is 68 years old. Most of these patients die at a young age if the defect is not corrected in childhood.

Essential hypertension (choice C) is the most common cause for hypertension in the United States. As reflected by its name, the etiology of the hypertension is not yet clear. Although by definition this is a diagnosis of exclusion, most patients are assumed to have essential hypertension, and secondary causes seriously investigated only if the BP is very difficult to control.

A pheochromocytoma (choice D) is a very uncommon cause for hypertension. The classic presentation is with "paroxysms" of autonomic activity. This patient has no evidence for this.
Q-153
A 25-yr-old woman comes to the physician for a facial rash, fatigability, joint and muscle pain and temperature up to 38.5 °C (101 °F) for two-weeks. Her temperature is 37 °C (98 °F), blood pressure of 120/80, pulse is 80 and respirations are 20. She does not take any medications. Physical examination reveals a bilateral malar rash, tenderness to palpation of knees and wrists and a pleuritic rubbing sound on chest auscultation. Lab studies show hemoglobin of 8.5gm/dl, leukocyte count of 3,800 /mm$^3$, Platelets of 1,10,000/mm$^3$, urinanalysis negative for glucose and protein, antinuclear-antibody titer elevated, antiphospholipid antibody positive. Which of the following is the most appropriate next step in diagnosis.

A. Essay for anti-centromere antibodies.
B. Essay for anti-double stranded DNA and anti-smith antibody.
C. Essay for anti-neutrophil cytoplasmic antibody.
D. Essay for rheumatoid factor.
E. X-ray studies of affected joints.
F. Skin biopsy.

EXPLANATION

The correct answer is B. The manifestations are highly suggestive of systemic lupus erythematosus (SLE). This immune-related connective tissue disease has a predilection for women of childbearing age. Joint pains, low-grade fever, weight loss, fatigability, and rash over sun-exposed areas are among the most frequent early signs. Often, physical examination reveals evidence of fibrinous pleuritis or pericarditis. Antinuclear antibodies (ANAs) are highly sensitive but not specific, and thus elevated levels of ANA confirm the clinical suspicion of SLE but do not establish a definitive diagnosis. Anti-double stranded DNA and anti-Smith antibodies are most specific of SLE and are thus extremely useful to confirm the diagnosis. Anti-double stranded DNA antibodies also reflect disease activity, while anti-Sm antibodies do not. Note also that antiphospholipid antibodies are positive, which is often the case with SLE. Mild-to-moderate anemia, low leukocyte count, and low platelet counts are frequently found in SLE patients. Occasionally, anemia is due to autoantibodies to red blood cells.
Anticentromere antibodies (choice A) are virtually pathognomonic of the CREST variant of scleroderma, manifesting with calcinosis, Raynaud phenomenon, esophageal dysmotility, sclerodactyly, and telangiectasia.

Assay for anti-neutrophil cytoplasmic antibodies (ANCAs) (choice C) would aid in the investigation of the possibility of certain forms of vasculitis syndromes, such as Wegener granulomatosis, Churg-Strauss syndrome, and microscopic polyangiitis.

Assay for rheumatoid factor (choice D) is not useful in this situation. Rheumatoid factor is often positive not only in rheumatoid arthritis, but also in other collagen vascular conditions, including SLE.

X-ray studies of affected joints (choice E) would yield nonspecific results. Arthritis in SLE is usually not associated with destructive or deforming changes of the joints.

Skin biopsy (choice F) may be helpful in supporting a diagnosis of SLE in uncertain cases, especially when dermatologic manifestations are the predominant signs.
Q-154

A 41-yr-old man is brought to the ER by paramedics after being found conscious at the site of motor vehicle accident. He had a passenger in a high-speed vehicle and was thrown to a distance of 20-feet through the front windshield. Evaluation reveals fractures of both femurs, the pelvis, the left tibia and the left humerus. The patient is admitted to the I.C.U. for observation. 24-hours later he becomes confused and markedly dyspneic. 100% oxygen is administered by a facemask but he remains with a $PO_2$ of 44 mmHg. Numerous petechiae have also developed diffusely on all four extremities and his trunk. Which of the following is most likely responsible for the patient's condition.

A. Aspiration pneumonia.
B. Cardiogenic pulmonary edema.
C. Fat embolism.
D. Pulmonary embolism.
E. Tension pneumothorax.

EXPLANATION

The correct answer is C. The findings of petechiae, alteration in mental status, and refractory hypoxemia in a patient with multiple bone trauma should suggest the diagnosis of fat embolism. This is usually seen 1-3 days after the initial trauma. Fat globules will be released from the fractured bones and obstruct pulmonary vessels. An altered sensorium and petechiae are also typical of fat embolism.

Although an aspiration pneumonia (choice A) can develop in a patient who has an altered mental status, this patient was alert and oriented until the sudden and acute deterioration.

There is no evidence here for any decompensation of left ventricular function (choice B).

Although a pulmonary embolus (choice D) is possible in a patient who is immobilized, it would not explain his petechiae. Furthermore, the patient has been immobilized only for the past 24 hours.

A tension pneumothorax (choice E) might cause hypoxia but would not cause petechiae.
Q-155
A previously healthy 22-yr-old woman comes to the medical attention because of mild jaundice, low-grade fever, arthralgias, malaise and amenorrhea for 3-months. She does not drink alcohol or smoke. She does not take any medication except oral contraceptives. Serum chemistry studies show elevated levels of AST, ALT and hypergammaglobulinemia and high titers of circulating anti-smooth muscle and anti-nuclear autoantibodies. Serologic studies of antibodies to hepatitis viruses are as follows:
HAV -ve.
HBV -ve.
HCV +ve by enzyme immunoessay.
HCV -ve by recombinant immunoblast essay.
A liver biopsy demonstrate lymphocytic portal inflammation with early bridging necrosis. Which of the following is the most likely diagnosis.

A. Autoimmune hepatitis.
B. Chronic hepatitis C.
C. Hepatic adenoma.
D. Non-alcoholic steato-hepatitis.
E. Primary biliary cirrhosis.

EXPLANATION
The correct answer is A. Clinical symptomatology and laboratory findings are consistent with chronic "autoimmune" hepatitis (AH). The biopsy findings support this diagnosis, demonstrating portal inflammation with lobular damage resulting in bridging necrosis. The young age of the patient and presence of hypergammaglobulinemia are also common in this condition. There are two major types of AH. Type I, or the classic type, is the most frequent; it is associated with antinuclear and anti-smooth muscle autoantibodies. Type II, which is more common in women of Western European descent, is associated with autoantibodies to circulating liver-kidney microsomes. The onset is usually insidious, and a history of amenorrhea is frequently present.
Chronic hepatitis C (choice B) develops in 80% of cases of hepatitis C virus infection. It may manifest years after the often-asymptomatic acute infection with signs and symptoms of chronic hepatitis or liver failure. The diagnosis is confirmed by positive enzyme immunoassay test for HCV-antibodies. However, this test may be falsely positive in situations with hypergammaglobulinemia. In such cases, positivity should be confirmed by a more specific RIBA. In this case, RIBA was negative, ruling out hepatitis C.

Hepatic adenoma (choice C) is a benign hepatocellular neoplasm associated with use of oral contraceptives or anabolic androgens. It is usually clinically silent but may occasionally manifest with life-threatening peritoneal bleeding.

Nonalcoholic steatohepatitis (choice D) mimics alcoholic hepatitis both clinically and histopathologically. It is characterized by fatty change of the liver with associated laboratory signs of hepatocellular injury. Obesity and diabetes are the most common predisposing conditions.

Primary biliary cirrhosis (choice E) has a predilection for middle-aged women. It manifests with progressive signs of cholestasis, in which pruritus and xanthomas are often the earliest signs. Antimitochondrial autoantibodies are found in 90% to 95% of these patients.
Q-156
A 9-yr-old boy is brought to the pediatric clinic by his mother who noticed that left side of his moth has started to droop over the past few-days. In addition he is unable to close his left eye completely and complains of it's burning. Review of systems reveals a cold approximately two-weeks ago and recent decrease in taste sensation. Physical examination reveals a well-nourished male with normal vital signs. There is left eye ptosis and mild erythema of left conjunctiva. His smile is asymmetrical on the left. Lab studies including complete blood count and serum chemistries are normal. Which of the following infections is most closely associated with patient's condition.

A. Epstein-barr virus.
B. Group A streptococcus.
C. Human immunodeficiency virus.
D. Influenza.
E. Measels.

EXPLANATION

The correct answer is A. This patient has Bell palsy, a postinfectious allergic or immune demyelinating facial neuritis. Epstein-Barr virus is the preceding infection in approximately 20% of cases. 85% of patients have their symptoms resolve on their own over a period of several weeks. 10% retain mild facial weakness and 5% have permanent severe facial weakness. Therapeutic intervention should include daily and nocturnal eye lubricants to protect the cornea from drying.

Group A Streptococcus(choice B), HIV (choice C), and influenza (choice D) are not associated with Bell palsy. However, herpes simplex virus, Lyme disease caused by Borrelia burgdorferi and mumps have been associated with Bell palsy.

Measles (choice E) is associated with subacute sclerosing panencephalitis, a chronic encephalitis of the central nervous system manifested by progressively bizarre behavior and decline in cognitive function.
Q-157
A 28-yr-old man is brought to the ER by his family because of a two-day history of confusion. Over the past 8-hours he has been sitting in a chair with stiff posture not speaking. When questioned he was released from the hospital two-weeks prior for third episode of schizophrenia, catatonic type and he has been taking haloperidol 10mg q.H.S. On evaluation the patient seems confused and sleepy. His temperature is 39.6 C (103.2 F), blood pressure is 145/100, pulse is 109 and respirations are 22. Neurological examination reveals rigidity in his extremities. Lab analysis reveals creatinine phosphokinase to be five times above the normal limit. Which of the following is most likely account for patient’s presenting condition and physical findings.

A. Lethal catatonia.
B. Neuroleptic induced acute dystonia.
C. Neuroleptic induced parkinsonism.
D. Neuroleptic malignant syndrome.
E. Schizophrenia, catatonic type.

EXPLANATION
The correct answer is D. Neuroleptic malignant syndrome (NMS) is a life-threatening complication of antipsychotic medications. Signs and symptoms include: muscle rigidity, elevated temperature, autonomic instability, altered mental status, diaphoresis, incontinence, elevated creatine phosphokinase, tremor, mutism, leukocytosis, and myoglobinuria. Cessation of the antipsychotic agent and supportive care (often in an intensive care setting) are the mainstays of treatment, though dantrolene, bromocriptine, amantadine, and lorazepam are also often used. Catatonia may be a risk factor for NMS.

Lethal catatonia (choice A) is a syndrome with the same clinical features as NMS, but without a recent history of antipsychotic use. Given this patient’s history of catatonia, lethal catatonia must be considered. However, due to his use of a high-potency neuroleptic agent, his symptoms are presumably related to the haloperidol.

Neuroleptic-induced acute dystonia (choice B) is a contraction of a muscle or muscle group associated with the use of antipsychotic agents, especially high-potency conventional antipsychotics such as haloperidol. Examples of this form of extrapyramidal side effect include oculogyric crisis, tongue protrusion, trismus, torticollis, and dystonic postures of the limbs or trunk. Treatment involves immediate administration of an anticholinergic agent intramuscularly.

Neuroleptic-induced parkinsonism (choice C) is characterized by resting tremor, rigidity, and bradykinesia. Parkinsonism would not cause the autonomic instability, hyperthermia, altered level of consciousness, or laboratory values seen in this patient.

Schizophrenia, catatonic type (choice E) is associated with catatonic episodes, but would not be associated with this degree of impairment, unless lethal catatonia is present.
A 31-yr-old woman gravida 1, para 0 at 36-weeks gestation with twins comes to the physician for a prenatal visit. The patient had no contractions, bleeding from vagina or loss of fluid and the babies are moving well. Ultrasound, which was performed today shows that the presenting fetus is vertex and the non-presenting fetus is breech. Both fetuses are approximately grown greater then 2000gm. Patient wants to know that she should have a vaginal or cesarian delivery. Which of the following is the proper counseling for the patient.

A. Both vaginal and cesarian deliveries are acceptable.
B. Cesarian delivery is mandated because fetuses are both greater then 2000gm.
C. Cesarian delivery is mandated because the second twin is breech.
D. Vaginal delivery is mandated because the fetuses are greater then 2000gm.
E. Vaginal delivery is mandated because the presenting twin is vertex.

EXPLANATION

The correct answer is A. Mode of delivery with twin gestations is an area that has generated controversy over time. Patients with vertex-vertex twins are generally allowed to have a vaginal delivery. Patients with a presenting twin that is non-vertex are generally advised to have a cesarean delivery. Patients with the presenting twin vertex and the non-presenting twin non-vertex may decide which mode of delivery they would prefer. Once the presenting (vertex) twin has delivered, there are essentially 2 options for delivery of the second (non-vertex) twin. The first option is an external cephalic version, in which the head of the second twin is guided into the pelvis so that it becomes a vertex presentation. The second option is a breech extraction of the second twin. Breech extraction may be performed so long as there is an adequate pelvis, a fetal weight greater than 2,000g, an experienced physician, a flexed fetal head, and available general anesthesia.

To state that cesarean delivery is mandated because the fetuses are > 2000g (choice B) is incorrect. The fact that the fetuses are > 2000g makes a vaginal delivery with a non-vertex second twin possible.

To state that cesarean delivery is mandated because the second twin is breech (choice C) is incorrect. As explained above, vertex-nonvertex twins may be delivered vaginally so long as certain criteria are met.

To state that vaginal delivery is mandated because the fetuses are > 2000g (choice D) is incorrect. Vaginal delivery is possible because the fetuses are > 2000g, but the mother may still choose to have a cesarean delivery.

To state that vaginal delivery is mandated because the first twin is vertex (choice E) is incorrect. With the first twin vertex, vaginal delivery is possible, but with a non-vertex second twin, cesarean delivery would also be entirely appropriate.
Q-159
A 57-yr-old alcoholic man is being treated for acute hemorrhagic pancreatitis. He was in the intensive care unit for one week where he required chest tube for pleural effusion and was on a respirator for several days. Eventually he improved sufficiently to be transferred to the floor. Three-days after leaving the unit and about two-weeks after the onset of disease, he spikes a fever and develops leukocytosis. Which of the following developments do these new findings suggest.

A. Chronic pancreatitis.
B. Pancreatic abscess.
C. Pancreatic pseudocyst.
D. Pelvic abscess.
E. Subphrenic abscess.

EXPLANATION

The correct answer is B. A very common complication of hemorrhagic pancreatitis, and often the reason for the demise of the patient, is the development of a pancreatic abscess. The timetable is usually about 10-14 days from the onset of the disease, and the initial manifestations are fever and leukocytosis.

Chronic pancreatitis (choice A) develops after several years of recurrent attacks of pancreatitis, and is characterized by steatorrhea, diabetes, and constant pain.

Pancreatic pseudocyst (choice C) is another potential complication of pancreatitis, but the manifestations are related to pressure symptoms from the fluid collection, there is no fever or leukocytosis, and the timetable for development is about 6 weeks from the onset of the disease.

Pelvic abscess (choice D) and subphrenic abscess (choice E) are indeed in the differential diagnosis, as they also show up with fever and leukocytosis some 10-14 days from the original problem. But, the original problem for these patients is usually an infectious process in the abdomen, e.g., a ruptured appendix or a perforated viscus. If the problem began with pancreatitis, and then there are signs of sepsis, the pancreas is the logical place to harbor the pus.
Q-160
A 15-yr-old boy is referred to a psychiatrist by his school counselor and is brought in by his mother for increasing hostility and augmentativeness with his teacher and toward his parents over the last school year. He often loses his temper and blames his classmates for his misbehavior which causes him to receive punishment in the class. He had done well previously with his school work. He has no history of theft, destruction of property or physical violence. Which of the following is the most likely diagnosis.

A. Attention deficit hyperactivity disorder.
B. Conduct disorder.
C. Dysthymic disorder.
D. Mental retardation.
E. Oppositional defiant disorder.

EXPLANATION

The correct answer is E. Oppositional defiant disorder is a pattern of negativistic, hostile, or defiant behavior lasting at least 6 months, characterized by losing one’s temper, arguing with adults, and the deliberate annoyance of people or blaming of others for mistakes or misbehavior. It occurs in the absence of conduct disorder (choice B), which is characterized by the breaking of age-appropriate social norms, with associated destruction of property, physical violence, and theft.

Attention deficit/hyperactivity disorder (ADHD) (choice A) is characterized by attention deficit and restlessness. It is an unlikely new diagnosis in a 15-year-old who has previously done well in school.

Dysthymic disorder (choice C) is a disorder of depressed mood, more often than not, over the course of at least 2 years.

Mental retardation (choice D) is a disorder requiring psychological testing to make a diagnosis. It is not supported by this patient’s previous academic record.
Q-161
An elderly diabetic consults a physician because of severe and persistent earache. Otoscopic examination demonstrates foul smelling purulent otorrhea and a red mass lesion of the external ear canal. Biopsy of the mass demonstrates granulation tissue rather than tumor. Which of the following is the most likely organism.

A. E.coli.
B. Haemophilus influenzae.
C. Proteus vulgaris.
D. Pseudomonas aeruginosa.
E. Staphylococcus aureus.

EXPLANATION

The correct answer is D. External otitis, or infection of the external ear canal, can be caused by a variety of organisms, notably including Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, and Staphylococcus aureus. There is, however, a severe subtype of external otitis, malignant external otitis, of which you should be aware. This form is specifically caused by Pseudomonas aeruginosa, and tends to affect elderly diabetics and AIDS patients, causing the findings illustrated in the question stem. It is particularly worrisome both because the Pseudomonas organism is so tissue destructive and because it is often highly resistant to most intravenous antibiotics. (Consult your local microbiology or pharmacology departments for advice about local sensitivities if you encounter the condition.) Complications can be devastating, including deafness, facial nerve paralysis, osteomyelitis, and meningitis.

Escherichia coli(choice A) can cause both external otitis and acute otitis media, but does not usually cause malignant external otitis.

Haemophilus influenzae(choice B) is an important cause of acute otitis media.

Proteus vulgaris(choice C) can cause external otitis, but does not usually cause the malignant form.

Staphylococcus aureus(choice E) can cause external otitis, but does not usually cause the malignant form.
An 11-yr-old boy presents with fever and sore throat. A rapid strep test confirms streptococcal pharyngitis, he is leaving for a summer camp in two-days. In the past he has had problems finishing the whole course of antibiotic treatment. Which of the following is the best treatment for his streptococcal pharyngitis.

A. A single dose of benzathine penicillin G intramuscularly.
B. A single dose of ceftriaxone intramuscularly.
C. A single dose of procaine penicillin G intramuscularly.
D. Erythromycin orally for five-days.
E. Penicillin V orally for five-days.

**EXPLANATION**

The correct answer is A. The treatment of choice for streptococcal pharyngitis is oral penicillin V for 10 days. However, the child in this clinical vignette is leaving town for a summer camp in 2 days. There is no way to monitor his compliance to the regimen if he is not with the family. Also, he has had a problem finishing his medicine in the past. A better regimen for him this time might be a single dose of an appropriate antibiotic agent. Among the above three choices, only benzathine penicillin G is the appropriate treatment for streptococcal pharyngitis. Benzathine penicillin G can be given as a single dose intramuscularly. It is a long-acting antibiotic and can complete the treatment.

Intramuscular ceftriaxone (choice B) does not effectively eradicate streptococcal infection in the throat. Intramuscular procaine penicillin (choice C) is a short-acting penicillin. One dose of it does not eradicate streptococcal pharyngitis.

Oral treatment for streptococcal pharyngitis requires a total regimen of 10 days. Both erythromycin (choice D) and penicillin V (choice E) are appropriate drugs. But again, a single intramuscular antibiotic is a better treatment for this patient.
A 28-yr-old man presents to his primary care physician for his yearly physical examination. He currently smokes approximately 1-pack of cigarettes a day and is interested in quitting. He has no significant past medical history and has no allergies. He is interested in smoking cessation classes but would like additional help. Which of the following medication would be most appropriate agent for treating nicotine dependence in this patient.

A. Bupropion.
B. Buspirone.
C. Clonazepam.
D. Fluoxetine.
E. Nefazodone.

EXPLANATION

The correct answer is A. Bupropion was approved by the U.S. Food and Drug Administration in 1996 as a treatment for nicotine dependence. The specific mechanism of action is unclear, but is thought to relate to reducing craving for nicotine as well as reducing withdrawal symptoms after cessation.

Buspirone (choice B) and fluoxetine (choice D) are also used in conjunction with behavioral modification techniques in smoking cessation, but they are not approved as specific treatments for nicotine dependence.

Clonazepam (choice C) is a benzodiazepine used to treat anxiety and withdrawal symptoms and is not indicated for use in smoking cessation.

Nefazodone (choice E) is an antidepressant medication that does not have demonstrated efficacy in aiding smoking cessation.
A 38-yr-old woman comes to the physician for an annual examination and a pap smear. She has no complaints. She has a regular period every month. She is sexually active with her husband. She has migraine headaches and is status post tubal-ligation. She states that she uses numerous alternative medications for mood, sleep and disease prevention. Examination include pelvic and breast examination that is unremarkable. Which of the following is the appropriate question to ask this patient.

A. Does your husband know that you are using these alternative medications.
B. Do you realize how dangerous the alternative medications are.
C. Which alternative medications do you use.
D. Why don't you stick to the traditional medication.
E. Why have not you revealed your use of alternative medications before.

EXPLANATION

The correct answer is C. Some estimates indicate that roughly 50% of Americans use some forms of complementary and alternative medicine (CAM). The categories of these include mind-body interventions, such as yoga, alternative systems of medical practice such as Chinese medicine, pharmacologic treatments such as medicinal plants, herbal medicine such as St. John’s wort, diet therapies such as vegetarianism, manual healing methods such as massage, and bioelectromagnetic applications such as magnets for musculoskeletal pain. It is essential for the physician to work with the patient regarding the use of CAM. The first step is to find out which methods the patient uses. This patient has told the physician that she uses alternative medications. Many patients do not offer this information, assuming that the usual physician will not support CAM. It is therefore important to ask the patient whether she is using, or considering using, CAM. Because the field of CAM is so broad, it is essential to ask which types of CAM the patient uses. One cannot assume that all alternative therapies are equivalent. Thus, the most appropriate question to ask this patient is “Which alternative medications do you use?” This is a non-threatening question that will allow her to further detail her use.
To ask, "Does your husband know you are using these alternative medications?" (choice A) is inappropriate. The physician’s role is to care for the patient. Whether the patient reveals her use of alternative medicines to her husband is not the prime concern to the physician. This question is more likely to create conflict than reveal needed information for the physician.

To ask, "Do you realize how dangerous alternative medicines are?" (choice B) is incorrect. This question is confrontational and judgmental. Many alternative therapies are safe and effective.

To ask, "Why don’t you stick with traditional medicines?" (choice D) is inappropriate. If a patient has a condition and there is a remedy from the conventional medical system (known as allopathy in North America) available, then it is reasonable to offer this remedy as a possibility for the patient. However, inquiring as to why the patient doesn’t "stick" with traditional medicine is likely to cause confrontation and a worsening of the patient-doctor relationship.

To ask, "Why haven’t you revealed your use of alternative medications before?" (choice E) is also somewhat challenging and confrontational. Perhaps the patient did not think a conventional physician would be accepting of CAM. The important step at this point is to identify the medications and discuss their risks, benefits, and side effects with the patient, as one would with traditional medications.
Q-165

A young man is shot with a .45 caliber revolver point-blank in the lower abdomen just above the pubis. The entrance wound is in the mid-line and there is no exit wound. The x-ray of the abdomen shows that the bullet is embedded in the sacral promontory to the right of the mid-line. Digital rectal examination and proctoscopic examination are negative but he has gross hematuria. He is hemodynamically stable. Which of the following is the most appropriate next step in management.

A. CT-scan of the abdomen.
B. IV pyelogram.
C. Retrograde cystogram.
D. Diagnostic peritoneal lavage.
E. Exploratory laparotomy.

EXPLANATION

The correct answer is E. He has an obvious indication for exploratory laparotomy: a gunshot wound to the abdomen. He also has evidence of injury to the urinary bladder, but that will be dealt with at the same time that other intraabdominal injuries are found and repaired.

CT scan (choice A) would not change the surgical approach and the surgical indication. CT scan is called for in cases of blunt trauma to diagnose intraabdominal bleeding and to identify intraabdominal injuries.

Intravenous pyelogram (choice B) would indeed show the bladder injury, as would a retrograde cystogram (choice C). However, we already know clinically that there is a bladder injury: we know the trajectory of the bullet and we have blood in the urine.

Diagnostic peritoneal lavage (choice D) is used to diagnose intraabdominal bleeding in blunt trauma, when the patient is not stable enough to be taken to the CT scanner. In many centers the diagnostic peritoneal lavage has been replaced by sonogram done in the emergency department by the trauma team.
Q-166

A 48-yr-old man presents to his primary care physician because of one-week history of symptoms consistent with pneumonia. Since this is the patient's first visit to the clinic the physician gathers a full history for new patients assessment. The patient has no significant past medical, surgical or psychiatric history. Family history is significant for a brother and an uncle with paranoid schizophrenia. Social history reveals that the patient lives alone, has minimal contact with the family and describes no real social activity and friends. When questioned about that he states that he has never been interested in his family and people around him. He has worked delivering newspapers for the past fifteen years. He has not dated since having a girl friend in the eleventh grade. During interview, though he seems emotionally detached he denies depressive or psychotic symptoms. Which of the following is the most appropriate psychiatric diagnosis.

- A. Avoidant personality disorder.
- B. Psychotic disorder not otherwise specified.
- C. Schizoid personality disorder.
- D. Schizophrenia undifferentiated type.
- E. Social phobia.

EXPLANATION

The correct answer is C. Schizoid personality disorder is a cluster A personality disorder (paranoid, schizoid, schizotypal). These disorders are more common in the biological relatives of patients with schizophrenia than among control groups. Schizoid individuals are characterized by a pervasive pattern of detachment from social relationships and a restricted range of emotional expression. Such people usually neither desire nor enjoy relationships with family or friends, choose solitary activities, have little interest in sexual experiences with another person, take pleasure in few (if any) activities, appear indifferent to praise or criticism of others, and show emotional detachment.
Avoidant personality disorder (choice A) is a cluster C personality disorder (avoidant, dependent, obsessive compulsive) characterized by a high anxiety level. These individuals have a pervasive pattern of social inhibition, feelings of inadequacy, and hypersensitivity to a negative evaluation. They avoid occupational activities that involve significant interpersonal contact because of fears of criticism or disapproval. Avoidant individuals are hesitant in relationships because of fears of being shamed or ridiculed and view themselves as socially inept, personally unappealing, or inferior to others. Unlike in schizoid personality disorder, avoidant individuals strongly desire closer relationships, but are very anxious about them.

Psychotic disorder, not otherwise specified (choice B) is a diagnosis that indicates psychotic symptoms (delusions, hallucinations, disorganized speech, grossly disorganized or catatonic behavior) about which there is inadequate information to make a specific diagnosis.

Schizophrenia, undifferentiated type (choice D) is a diagnosis used to classify individuals who meet criteria for schizophrenia, but do not clearly fit into one of the other types (catatonic, disorganized, paranoid, residual). This patient does not have known psychotic symptoms.

Social phobia (choice E) is a primary anxiety disorder that has many features in common with avoidant personality disorder. It is characterized by a marked and persistent fear of social situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing.
Q-167
A 44-yr-old HIV-positive man has been treated for pneumocystis carinii pneumonia in the hospital. He has a prior history of depression and was treated with paroxetine which was continued in the hospital. While in the hospital he became delirious and had visual hallucinations. The psychiatric consult team started him on olanzapine. The patient’s delirium gradually resolved but prior to discharge he complained of his urine stream becoming weak and his bladder felt full. On examination the physician confirmed lower abdominal distention. Which of the following is the most effective treatment.

A. Benztropine.
B. Bethanechol.
C. Furosemide.
D. Lorazepam.
E. Physostigmine.

EXPLANATION
The correct answer is B. Bethanechol is direct-acting cholinergic stimulant effective in reducing the peripheral anticholinergic effects of some psychotropic medications. It can be administered intramuscularly, orally, or subcutaneously to efficiently relieve the symptoms of urinary retention.

Benztropine (choice A) is an antiparkinsonian drug with anticholinergic properties. It would only worsen the symptoms in the case described.

Furosemide (choice C) is a loop diuretic with a target action on the kidneys and thus has no effect on the cholinergic system.

Lorazepam (choice D) is a short-acting benzodiazepine; it is not used to counteract peripheral anticholinergic effects.

Physostigmine (choice E) produces cholinergic stimulation by inhibiting cholinesterase. It is useful for relieving CNS symptoms (delirium, confusion) produced by anticholinergic medications. Because this patient’s symptoms are peripheral in nature rather than central, bethanechol would be the drug of choice.
A 24-yr-old graduate student and teaching assistant comes to the student’s health center after being instructed by his college dean to see counseling. According to the collateral history obtained from the patient’s roommates and instructors the man possesses abnormally grandiose behavior, is frequently demanding of his peer’s admiration and has had to be reprimanded for treating his undergraduate students without empathy or understanding in demanding that there work should be submitted in two different forms for each assignment. Given this history which of the following is the most likely diagnosis.

A. Borderline personality disorder.
B. Narcissistic personality disorder.
C. Paranoid personality disorder.
D. Passive-aggressive personality disorder.
E. Schizotypal personality disorder.

EXPLANATION

The correct answer is B. Narcissistic personality disorder patients frequently demand constant attention and admiration, and they are often indifferent to criticism. They frequently exhibit grandiosity in behaviors or fantasies, show lack of empathy, often exhibit a sense of entitlement, and frequently exploit whatever interpersonal relationships they have developed.

Borderline personality disorder (choice A) is distinguished by instability in self-image, mood, and interpersonal relationships.

Paranoid personality disorder (choice C) is marked by rigidity, unwarranted suspicion, envy, and a tendency to blame and attribute evil motives to others.

Passive-aggressive (choice D) personality disorder requires the manifestation of aggressive behavior in passive ways such as intentional inefficiency or stubbornness.

Schizotypal personality disorder (choice E) is exemplified by eccentric behavior or communication with associated defects in the ability to form social relationships.
A 35-yr-old woman consults a physician about a changing mole on her neck. The lesion is a mostly flat, 2-cm diameter patch with varying colors from red to brown to black. In several areas small nodules are seen within the patch. Much of the peripheral circumference has a poorly defined feathery edge. Biopsy demonstrates a malignant tumor of melanocytes. Lesion is resected with a wide resection margin and then examined pathologically. Which of the following is the most important prognostic indicator in this lesion.

A. Area of the involved skin.
B. Degree of atypia of the tumor cells.
C. Degree of color variation.
D. Depth of invasion.
E. Percentage of circumference involved with feathering.

EXPLANATION

The correct answer is D. The patient has a malignant melanoma. Melanomas that have not yet metastasized can be simply treated with wide-surgical excision, while melanomas that have metastasized are typically fatal because our therapeutic modalities are usually unsuccessful. You should be aware (it is a favorite point among test question writers) that the single most important prognostic factor for melanoma is the depth of the invasion into the dermis. This is because of a feature of the morphology of the skin: the very most superficial layer of the dermis is relatively free of lymphatics, while a very rich lymphatic bed is found slightly deeper. Melanomas greater than 1 mm in depth are very likely to have penetrated this lymphatic bed and potentially metastasized.

Area of involved skin (choice A), degree of atypia of the tumor cells (choice B), degree of color variation (choice C), and percentage of circumference involved with "feathering" (choice E) are only indirectly important as they may contribute to the local aggressiveness of the tumor and thus increase the chance of deeper tumor penetration.
Q-170
A 55-yr-old man with no cardiac history presents to the ER complaining of crushing substernal chest pressure that started 20-minutes prior to his arrival. He took sildenafil (Viagra) earlier in the evening prior to sexual intercourse. His past medical history is significant for bilateral inguinal hernia repairs 6-weeks ago, remote peptic ulcer disease and prior cocaine and heroine addiction. On examination he appears diaphoretic and anxious, blood pressure is 150/75 with a pulse of 100. An ECG obtained while he has had severe chest pain reveals tall positive T waves (hyperacute T waves) and 1-mm elevation of ST-segment in leads V2 through V5. Serum CK drawn on presentation returned at 85 U/L (normal < 250U/L). Which of the following is the most likely diagnosis.

A. Aortic dissection.
B. Myocardial infarction.
C. Pulmonary embolus.
D. Spontaneous pneumothorax.
E. Stable angina.

EXPLANATION
The correct answer is B. The combination of substernal chest pressure with ECG findings of hyperacute T waves and ST elevation in this clinical setting suggests early anterior myocardial infarction. The myocardial damage causes time-dependent effects on the electrical properties of the myocardial cells. The earliest electrical evidence of myocardial injury is often development of hyperacute T waves, followed by elevation of the ST segments, inversion of the T wave, return of the ST segments to normal, and, finally, the development of Q waves. It does not matter that the CK, a marker of myocardial injury, is not elevated, as it takes several hours for the CK to appreciably rise after myocardial damage has occurred. In this case, his prior cocaine use may have contributed to premature coronary artery disease.

Aortic dissection (choice A) is often a missed diagnosis and therefore always important to think about, even in relatively young patients. The fact that the patient is experiencing chest pressure, in distinction to pain, and has ECG changes reflecting myocardial injury makes an MI more likely. Having said that, aortic dissection can cause MI by dissecting the coronary arteries (usually the right coronary artery). The patient should have his blood pressure checked in both arms looking for a discrepancy and get a chest x-ray looking for widened mediastinum, two classical findings of acute aortic dissection.
PE (choice C) should always be a consideration of patients with chest pain, as it too is often a missed diagnosis. Usually, however, there will be some complaint of dyspnea with PE and the ECG findings are of right heart strain, not anterior myocardial injury. Classic EKG findings of PE include new right bundle branch block, sinus tachycardia and right axis deviation.

Patients with spontaneous pneumothorax (choice D), similar to those with PE, will often have pleuritic chest pain, and pneumothorax is typically not associated with hyperacute T-waves.

Differentiating unstable angina from MI may be difficult at times, and sometimes the distinction cannot be made until the cardiac enzymes are measured over a period of 24 hours. However, acute chest pressure with ST elevations suggests an acute coronary syndrome that is distinct from the chronic angina (choice E) that some cardiac patients experience with exertion. ST elevation is a sign of acute, active myocardial injury and necrosis.
Q-171
The parents of a 5-yr-old boy come to a physician concerned about their child's recurrent leg pain. The boy has been complaining for several weeks about pain in both legs occurring usually soon after going to bed. He derives relief by rubbing his legs. He does not limp and is able to participate in sports activity. Which of the following is the most likely diagnosis.

A. Growing pains.
B. Juvenile rheumatoid arthritis.
C. Osgood-schlatter disease (Osteonecrosis of the tibial tuberosity).
D. Osteoid osteoma.
E. Osteosarcoma.
F. Stress fracture.

EXPLANATION
The correct answer is A. The clinical history provided by the parents is consistent with "growing" pains. Although such pains are most likely unrelated to growth, they do affect children between 3 and 10 years. Growing pains are most commonly bilateral, involve the lower leg and knees, manifest with pain during rest (usually at bedtime), and are relieved by massaging or rubbing. Children awaken the next morning feeling fine. Physical activity is not impaired. Limb pains produced by organic disease will usually be unilateral (except for rheumatoid arthritis) or associated with physical signs (swelling, warmth, etc.). The child with physical injuries or disease cannot bear to have the affected area touched. Growing pains often have a familial predisposition.

Juvenile rheumatoid arthritis (choice B) is one of the most common connective tissue disorders of childhood. It affects large joints (< 5 joints in the oligoarticular form, > 5 in the polyarticular form). Affected joints become warm and swollen. Antinuclear antibodies are often present.

Osgood-Schlatter disease (osteonecrosis of the tibial tuberosity) (choice C) affects children between 4 and 12 years of age. It is due to osteonecrosis (aseptic necrosis) of the tibial tuberosity. The patient limps and experiences pain during physical activities. The condition is self-limiting, but activities such as jumping, football playing, and running should be discontinued for 2-3 months.
Osteoid osteoma (choice D) is a small benign tumor of the bone that frequently affects the tibia. The tumor is usually unilateral and manifests with nocturnal pain, which awakens the child and is promptly relieved by aspirin or NSAIDs.

Osteosarcoma (choice E) is a malignant bone tumor affecting children and adolescents. Unilateral bone pain in the segment involved (usually proximal tibia or distal femur) or pathologic fracture is the usual mode of presentation.

Stress fractures (choice F) affect small bones that normally have a thin cortical bone. When subjected to repeated mechanical stress, such as marching, skiing, ballet dancing, etc., the bone accumulates microfractures that eventually result in chronic pain and swelling. Metatarsal bones are the most frequently affected.
Q-172

An inner city family has been using a neighbor to care for their 3-yr-old child while they work. The neighbor is diagnosed with pulmonary tuberculosis. PPD test of the 3-yr-old is negative. Which of the following is indicated for the 3-yr-old.

A. Ethambutol chemoprophylaxis.
B. Isoniazid chemoprophylaxis.
C. Rifampicin chemoprophylaxis.
D. Streptomycin chemoprophylaxis.
E. No chemoprophylaxis.

EXPLANATION

The correct answer is B. You are likely to be tested about the criteria for prophylaxis of tuberculosis. The usual agent chosen, unless a resistant strain of tuberculosis is clinically suspected, is isoniazid. The chemotherapeutic dose is given for 6 to 9 months and is 300 mg/day for adults or 10/mg/kg/day for children. Chemoprophylaxis is indicated in the following groups: 1) persons whose tuberculin skin test has converted from negative to positive within the previous 2 years; all small children (<4 years of age) who are either exposed by known close contact to a person with untreated tuberculosis or who have a positive PPD; all HIV patients with positive PPD; elderly patients with a definite conversion of PPD; PPD positive persons with apical scars; and PPD positive persons with significant risk of recurrence due to diabetes mellitus, prolonged corticosteroid therapy, gastrectomy, end-stage renal disease, or gastric stapling. In young children, such as in this case, it is particularly important not to delay chemoprophylaxis until the PPD test becomes positive, because these children sometimes have very rapid progression of tuberculosis, and may be very ill by the time that the PPD is repeated.

Ethambutol (choice A) is usually used in treatment regimens when isoniazid resistance is suspected.

Rifampin (choice C) is added to isoniazid for initial treatment of tuberculosis and can also be a component in retreatment regimens.

Streptomycin (choice D) is usually used as part of retreatment regimens.

No chemoprophylaxis (choice E) would be potentially dangerous in this child, who is in a population that tends to have rapidly progressive tuberculosis.
Q-173

A 29-yr-old carpenter presents to the ER with his third episode of upper gastrointestinal bleeding in the past year. On both of the prior occasions he was found to be bleeding from duodenal ulcer and the bleeding was controlled endoscopically. He also reports having ulcers in distal duodenum, jejunum and additional ulcers twice in the past four-years. He does not take any non-steroidal anti-inflammatory drug and has tested negative for helicobacter pylori. Which of the following is the most likely cause of his symptoms.

A. Autoimmune destruction of the parietal cells.
B. Autonomous production of gastrin.
C. Autonomous production of somatostatin.
D. Impaired production of the mucous, bicarbonate layer in the stomach.
E. Inhibition of the parietal cell secretion.

EXPLANATION

The correct answer is B. This patient has a history of severe peptic ulcer disease, as manifested by multiple ulcers, ulcers in unusual sites such as jejunum, and ulcers complicated by bleeding. He is not taking nonsteroidal anti-inflammatory drugs (NSAIDs), and he does not have Helicobacter pylori colonization in the stomach. This suggests that he really does have very high acid secretion by the stomach, which should raise the possibility that he has a gastrin-secreting neuroendocrine tumor that is triggering the high level of acid release. The tumors are most likely to be in either the pancreas or the proximal small bowel. The combination of a gastrin-secreting tumor and severe peptic ulcer disease is sometimes called Zollinger-Ellison syndrome, and surgical resection of the tumor (which may be small and hard to find) usually permits cure of the peptic ulcer disease.

Autoimmune destruction of the parietal cells (choice A) causes the disease known as pernicious anemia, which is associated with atrophic gastritis.

Somatostatin (choice C) inhibits gastrin production and acid secretion, and so excess somatostatin would not be expected to cause peptic ulcer disease.

Impaired production of the mucous bicarbonate layer in the stomach (choice D) is the mechanism whereby NSAIDs cause gastric and duodenal ulcers, but this patient is not on these medications.

Inhibition of parietal cell secretion (choice E) would actually reduce ulcer tendencies.
Q-174
A 5-week-old infant is brought to the clinic for a 4-week history of noisy breathing that has not improved. She has been otherwise healthy except for a current upper respiratory infection for the past 4-days, which according to the parents has worsened the noisy breathing. On examination she has inspiratory stridor. Noisy breathing improves when the patient is asleep. Which of the following is the most likely diagnosis.

A. Bronchoalveolar carcinoma.
B. Foreign object obstruction.
C. Laryngomalacia.
D. Bacterial pneumonia.
E. Tuberculosis.

EXPLANATION

The correct answer is C. The patient has stridor on examination. This is an inspiratory obstruction that is sensitive to airflow changes. In children, the most common cause of stridor is laryngomalacia.

Bronchoalveolar carcinoma (choice A) may cause stridor in an adult with an extensive smoking history but should not be seen in someone this young.

Foreign object obstruction (choice B) should be acute in onset and cause severe distress.

Pneumonia would be notable for a fever and productive sputum. Stridor would not be present (choice D).

Tuberculosis (choice E) would be associated with systemic symptoms of fever, weight loss, sweats, and hemoptysis.
Q 175
A 12-yr-old boy is brought to the physician because of pattern of behavior that has been worsening over the past year. His mother states that he has been bullying other boys at school, staying out late without permission, setting small fires at abandoned lots and physically abusing neighborhood cats. During the examination the speculum of the examination drawer fell out from underneath his shirt. Which of the following is the most likely diagnosis.

A. Antisocial personality disorder.
B. Attention deficit hyperactivity disorder.
C. Conduct disorder.
D. Oppositional defiant disorder.
E. Tourette syndrome.

EXPLANATION
The correct answer is C. This patient has conduct disorder. The diagnosis requires a pattern of behavior that violates societal rules and the basic rights of others. Common features include lying, stealing, running away, staying out without permission, setting fires, truancy, vandalism, cruelty to animals, bullying, physical aggression, and sexual aggression. At least three of these features must be present to make the diagnosis. Twenty-five to fifty percent of these patients go on to have antisocial personality disorder as an adult.

Antisocial personality disorder (choice A) is characterized by a repetitive disregard for the rules and laws of society. These patients rarely experience remorse. It is more common in men. More than half of these men have been arrested. It is the adult equivalent of conduct disorder.

ADHD (choice B) is a pattern of hyperactivity, impulsiveness, inattention, and distractibility before age 7. Methylphenidate is the first-line pharmacologic treatment. Side effects include weight loss, tachycardia, insomnia, hypertension, and diaphoresis.

ODD (choice D) is used to describe children with behavioral problems that do not meet the criteria for conduct disorder. It is characterized by annoying, difficult, disruptive behavior that is a less severe form of conduct disorder.

Tourette syndrome (choice E) involves multiple involuntary vocal and motor tics. It is associated with obsessive compulsive disorder. It is more common in males.
Q-176

A 38-yr-old woman gravida 4, para 4 comes to the physician 8-days after caesarian delivery complaining of pain and redness at the left most aspect of her incision. Her caesarian delivery was performed secondary to a non-reassuring fetal heart rate tracing. She was feeling well after the operation until four days ago when she developed pain and redness around her incision. Temperature is 37°C (98.6°F), blood pressure is 118/78, pulse is 88 and respirations are 12. There is marked edema and induration around the incision. At the left margin of the incision there is a fluctuant mass. Which of the following is the most appropriate next step in management.

A. Expectant management.
B. Oral antibiotics only.
C. IV antibiotics only.
D. Incision and drainage.
E. Laparotomy.

EXPLANATION

The correct answer is D. This patient most likely has a wound abscess. When antibiotic prophylaxis is used, wound infections occur at a rate of approximately 1% after cesarean deliveries. However, this patient appears to have more than a cellulitis. The fluctuant mass at the leftmost aspect of the incision is highly likely to be an abscess. The proper treatment for a wound abscess is with incision and drainage.

This patient is unlikely to improve with expectant management (choice A). An abscess almost always requires incision and drainage for cure. Expectant management may lead to worsening of the infection, with the possibility of spread to adjacent structures (e.g., fascia) or to bacteremia and sepsis.

Oral antibiotics only (choice B) or IV antibiotics only (choice C) may not resolve the abscess. Antibiotics often do not penetrate the abscess cavity.

Laparotomy (choice E) is probably not necessary for this patient. She has a wound abscess that should be addressed with incision and drainage. In the process of the incision and drainage, the fascia should be checked to ensure that it is intact. As long as the fascia is intact and there is no intra-abdominal process, there is no need for laparotomy.
A pedestrian is hit by a car and is unconscious. Within a few minutes he starts to move around and moan. When the ambulance arrives he is moving all four extremities and is mumbling that his neck hurts, shortly thereafter he lapses again into deep coma. In the ER it is noted that his left pupil is fixed and dilated and clear fluid is dripping from his left ear. The trauma team intubates him nasally over a fiberoptic bronchoscope and does a quick initial survey that there is no other abnormality. He is hemodynamically stable.

Which of the following is the most appropriate next step in management.

A. Antibiotics and high dose corticosteroids.
B. Cervical spine x-ray films.
C. CT-scan of the head extended to include cervical spine.
D. Otoscopic examination and laboratory studies of the fluid.
E. Ear surgery to stop leakage of CSF.

EXPLANATION

The correct answer is C. Clinically, this man has a life-threatening head injury, with a high probability that he may have an intracranial hematoma that has to be drained. CT scan is the only study that will show such a hematoma. Furthermore, we know that the head trauma was severe enough to produce a fracture of the base of the skull (cerebrospinal fluid dripping from the ear); thus, it may well have produced injury of the cervical spine as well. This is likely since he was complaining of neck pain, and it is imperative that it be diagnosed to protect his cord, which is probably still intact (when he was last awake he still was moving all four extremities). The most expedient way to do it is to extend the CT scan to include the neck.

Antibiotics and steroids (choice A) are not indicated. The former used to be given for cerebrospinal fluid leaks, but is no longer considered appropriate. Steroids are used if the cord is injured, but we have reason to believe that it is still intact.

Cervical spine x-ray films (choice B) are a good idea, but skull x-ray films are not. If his only problem were the cervical spine, we would indeed go for the x-rays. But we also have to check his head, for which we need the CT. Let the CT take care of both issues.

The same is true of choice D. We do not need to look into the ear or to study the fluid. The CT will show the fracture to the base of the skull, at the same time that it will tell us if an intracranial hematoma has to be drained.

Cerebrospinal fluid leaks caused by fractures to the base of the skull typically stop spontaneously. Surgery is rarely needed for them. When it is needed, it is not an emergency and would not be done through the ear. Thus, choice E is wrong on all counts.
Q-178
A 39-yr-old woman with a history of hypomanic episodes in the past presents to the physician with several symptoms of a major depressive illness. Given this history, which of the following is the most likely diagnosis.

A. Bipolar I disorder.
B. Bipolar II disorder.
C. Cyclothymic disorder.
D. Major depressive disorder.
E. Substance abuse.

EXPLANATION

The correct answer is B. Bipolar II disorder is characterized by the presence or history of one or more depressive episodes and one or more hypomanic episodes. Hypomania is defined as a distinct period of persistently elevated, expansive, or irritable mood, lasting at least 4 days, but not severe enough to cause marked impairment in social or occupational functioning or to necessitate hospitalization.

Bipolar I disorder (choice A), requires the presence or history of at least one episode of full blown mania, with accompanying grandiosity, irritability, and impulsivity.

Cyclothymic disorder (choice C) is a diagnosis that requires, for at least 2 years, the presence of numerous periods of hypomanic symptoms and numerous periods with depressive symptoms that do not meet the criteria for a major depressive episode.

Major depressive disorder (choice D) is excluded as the most likely diagnosis because of the presence of hypomania.

Substance abuse (choice E) is not supported as a diagnosis in this patient without further information.
A 23-yr-old medical student returns from summer vacations in the Caribbean where he worked as a volunteer in a local emergency department. Last week in Jamaica he developed watery diarrhea and mild abdominal cramping. The symptoms have persisted since his return to the U.S. At present he reports that he is having up to 10 watery, non-bloody movements/day and poorly localized abdominal discomfort. On physical examination he is afebrile and there is no abdominal tenderness with stool of light brown color and is guaic negative. Which of the following is the most likely explanation for his symptoms.

A. Enteroinvasive E.coli.
B. Enterotoxigenic E.coli.
C. E.coli 0157:H7.
D. Tropical sprue.
E. Vibrio cholera.

EXPLANATION

The correct answer is B. This patient presents with the typical findings of a secretory diarrhea caused by an ingested toxin. In this case, enterotoxigenic Escherichia coli is the most common cause of traveler’s diarrhea. It rarely requires antibiotics, and patients will generally respond to conservative management.

Enteroinvasive E. coli(choice A) produces a bloody diarrhea with fevers and findings of abdominal tenderness. In these patients, the E. coli causes mucosal ulceration, resulting in the bloody diarrhea and mucopurulent stools often seen.

E. coli 0157: H7 (choice C) presents with the appearance of severe toxicity and symptoms of hemolysis and uremia, i.e., the hemolytic uremia syndrome. It is usually found as part of an epidemic after ingestion of contaminated beef.

Tropical sprue (choice D) may occur in patients returning from the Caribbean but will generally present with signs and symptoms of malabsorption, particularly B12, which are not described here.

Vibrio cholerae(choice E) can produce a clinical picture identical to infection with enterotoxigenic E. coli, but it does not occur in the Caribbean. Instead, it is far more common on the Indian and African continents. Rare cases are found along the Gulf Coast of the U.S.
Q-180
A 12-yr-old boy is brought to the clinic because several month history of strange behavior. According to the parents the boy occasionally will start staring and not respond, he will also have tears in his eyes and these episodes lasts several seconds and then he returns to his baseline. He has not sustained any head trauma and he is on no medications. Which of the following is the most appropriate therapy.

A. Diazepam.
B. Diphenhydramine.
C. Ethosuximide.
D. Phenobarbital.
E. Phenytoin.

EXPLANATION

The correct answer is C. The patient is having absence or petit mal seizures, and the drug of choice is ethosuximide or valproic acid.

Diazepam (choice A) is effective in treating status epilepticus but is not used in treating petit mal seizures.

Diphenhydramine (choice B) is an antihistamine and would not be of benefit in treating this illness.

Phenobarbital (choice D) and Phenytoin (choice E) are anticonvulsants, but are not used for absence seizures.
Q-181
A 21-yr-old woman comes to the physician because of abdominal pain. She states that is in her right lower quadrant and has been getting worse over the past three-months. She has no other complains and has a normal appetite. Examination shows mild right lower quadrant abdominal tenderness. Pelvic examination reveals mild right adnexal enlargement and tenderness. Urine human chorionic gonadotrophin is negative. Pelvic ultrasound demonstrates a 4-cm, heterogenous, hyperechoic lesion in the right adnexa with cystic areas. On trans-vaginal ultrasound hair and calcifications are demonstrated within the cystic areas. Which of the following is the most likely diagnosis.

A. Appendicitis.
B. Benign cystic teratoma (dermoid).
C. Corpus luteum cyst.
D. Ectopic pregnancy.
E. Tubo-ovarian abscess.

EXPLANATION
The correct answer is B. This patient has a presentation and findings that are most consistent with a benign cystic teratoma (dermoid). Cystic teratomas are, by far, the most common type of ovarian neoplasm: cystic teratomas account for 25 to 40% of all ovarian neoplasms. They are a type of ovarian germ cell tumor, which can range in size from small masses that are noted incidentally on ultrasound and cause no symptoms to larger cysts that cause pain and pressure, as this patient has. A single germ cell gives rise to a teratoma. Because the germ cell is totipotential, the dermoid is characterized by all three germ cell layers: ectoderm, mesoderm, and endoderm. Gross examination of a dermoid will often reveal skin, bones, hair, and teeth, which can often be seen on ultrasound. The part of the dermoid that contains the largest number of different tissues is called Rokitansky’s protuberance. Laparotomy is usually the most appropriate management of a patient with a dermoid because, as adnexal masses enlarge, the risk of ovarian torsion increases. Also, dermoids may cause symptoms of pain and pressure and, on that basis, should be removed. At the time of surgery, close examination should be made of the other ovary because dermoids may be found bilaterally in more than 10% of cases.
Appendicitis (choice A) is usually not a chronic process slowly developing over 3 months. Also, patients with appendicitis typically have anorexia and appear ill.

A corpus luteum cyst (choice C) is a common cause of a complex adnexal mass in a young woman. However, this patient has a presentation and a mass with ultrasound characteristics that are classic for dermoid.

Ectopic pregnancy (choice D) should always be considered when a woman of childbearing age presents with abdominal pain. A negative urine hCG effectively rules out ectopic pregnancy.

Patients with a tubo-ovarian abscess (choice E) usually have fevers, significant abdominal and pelvic tenderness, and appear ill.
Q-182
A 70-yr-old woman presents with cough, dyspnea, chest pain and ankle swelling. She is ill appearing and cachectic. Her blood pressure is 100/70 with no inspiratory decrease and her pulse is 100. She has absent rales on examination and has jugular venous distension with a decline during examination. Apical cardiac impulse is decreased, she has an early third heart sound and her liver is enlarged. An ECG reveals low QRS voltage. A chest x-ray film is clear, cardiac silhouette is enlarged. Which of the following findings will most likely appear on an echocardiogram.

A. Collapsed right ventricle in diastole.
B. Enlarged right ventricle.
C. Pericardial effusion.
D. Thick myocardium.
E. Thick pericardium.

EXPLANATION

The correct answer is E. This patient has constrictive pericarditis. Filling is reduced abruptly when the elastic limit of the pericardium is reached. Such patients often appear to have a chronic illness. They have a positive Kussmaul’s sign in which venous pressure declines in inspiration. The apical pulse is reduced. A pericardial knock is heard. QRS is low in voltage. The condition occurs because of the healing of a former acute pericarditis or a chronic pericardial effusion with obliteration of the pericardial cavity.

Collapsed right ventricle in diastole (choice A) is seen in acute pericardial tamponade because of an obstruction to cardiac filling and concomitant elevated right-sided pressure. The accumulation of fluid in the pericardium is sufficient to cause a significant obstruction to inflow of blood to the ventricles.

A large right ventricle (choice B) is seen typically in conditions such as a right ventricular infarct. The heart will appear large on a plain chest x-ray film. Management of a right ventricular infarct involves aggressive fluid resuscitation.

A pericardial effusion (choice C) may result from accumulation of fluid in the pericardium. This may lead to cardiac tamponade. The effusion may be seen in patients with cancer or rheumatoid arthritis, or in those with conditions leading to bleeding into the pericardial space.

A thick myocardium (choice D) is seen in restrictive cardiomyopathy. Abnormalities of the pericardium are not seen. This cardiomyopathy may result from amyloidosis, hemochromatosis, sarcoidosis, or scleroderma. It is characterized by the patient having a well-defined apical beat, left ventricular failure, S3, and bundle branch block.
Q-183
A 49-yr-old man with history of two episodes of painful swellings in the right toe presents with the third episode in past two months. Arthrocentesis reveals several polymorph nuclear cells and negatively birefringent needle shaped crystals. He used acetaminophen at home without any relief. Which of the following is the most appropriate next step in therapy.

A. Await culture results of the joint aspirate.
B. Start high dose oral ibuprofen.
C. Start high dose oral predisolone.
D. Initiate treatment with IV ceftriaxone.
E. Order a radio-nuclear bone scan.

EXPLANATION

The correct answer is B. This patient has findings that are pathognomonic for a gouty joint, as demonstrated by the negatively birefringent, needle-shaped crystals. Appropriate therapy is to start either high doses of oral nonsteroidal anti-inflammatory drugs (NSAIDs) or colchicine. However, colchicine in high doses is usually not well tolerated, so NSAIDs (such as oral ibuprofen) have emerged as the first-line therapy for prompt symptomatic relief.

There is no evidence of infection, so awaiting cultures (choice A) or initiating ceftriaxone therapy (choice D) is incorrect.

Although corticosteroids are sometimes injected into gouty joints, oral use of high-dose prednisone (choice C) would not be indicated.

There is nothing by history to suggest an osteomyelitis, so a radionuclear bone scan (choice E) is not warranted.
Q. 184
A 25-yr-old woman comes to the physician because of abdominal distension. She states that she always feels bloated and gets full quickly when eating. She has hypertension for which she takes an ACE inhibitor and has no other medical problem. On examination there is abdominal distension and positive fluid wave. Pelvic examination reveals a large non-tender right adnexal mass. Abdominal CT-scan demonstrates masses on both ovaries, ascites and omental caking. CA-125 levels are significantly elevated. Alpha fetoprotein and HCG are negative. Which of the following is the most likely diagnosis.

A. Choriocarcinoma.
B. Cystic teratoma.
C. Embryonal carcinoma.
D. Epithelial ovarian cancer.
E. Sertoli stromal cell tumor.

EXPLANATION

The correct answer is D. The lifetime incidence of ovarian cancer is 1.4% (1 in 70 women). Unfortunately, there are no early symptoms of ovarian cancer: presenting symptoms have to do with increasing tumor mass. This patient has abdominal discomfort and early satiety, which are often associated with ovarian cancer. Other symptoms that may be seen are fatigue, urinary frequency, and shortness of breath. The most common finding on examination is a pelvic mass, as this patient has. Masses, ascites, and evidence of tumor spread may be seen on CT scan. Roughly 80% of all ovarian cancers are derived from ovarian epithelium. The other major categories of ovarian tumors are germ cell tumors, sex cord stromal tumors, and metastatic tumors. The fact that this patient is 75 years old, has what appears to be ovarian cancer, and has an elevated serum CA-125 level (seen in approximately 80% of women with epithelial cancers), makes epithelial ovarian cancer most likely.

Nongestational choriocarcinoma (choice A) of the ovary is extremely rare. Furthermore, in a patient with choriocarcinoma, the serum hCG should be elevated.

Cystic teratoma (dermoid) (choice B) accounts for 25 to 40% of all ovarian neoplasms. However, most teratomas are diagnosed in premenopausal women and they do not usually present as bilateral masses, ascites, and evidence of tumor spread with an elevated serum CA-125 level.

Embryonal carcinoma (choice C) is a rare germ cell tumor. Serum AFP and hCG are often elevated with this tumor.

Sertoli stromal cell tumor (choice E) is a rare sex cord stromal tumor that exhibits a male or testicular direction of differentiation.
Q-185

A 45-yr-old woman comes to the physician because of progressive weakness for several months. At first she became aware of increasing difficulty in climbing stairs and then lifting objects above head level. In the past week the muscles of the shoulder girdle have become sore. She has had fever up to 38.5°C (101.3°F). On examination proximal muscles of the upper and the lower extremities are somewhat tender to palpation but are not atrophic. There is periorbital edema and purple discoloration of the upper eyelids. Scaly erythematous patches are seen on dorsal aspect of hands and fingers. Lab studies show hemoglobin 13.2 gm/dl, leukocyte count of 9,300/mm³, creatinine kinase of 2,550 U/l, ESR 22 mm/hr, anti-nuclear antibody titer positive at 1:1280, rheumatic factor positive at 1:512. A biopsy of the deltoid muscle shows atrophy of the muscle fiber and interstitial lymphocytic infiltration. Which of the following is the most appropriate treatment at this time.

A. Azathioprine.
B. Methotrexate.
C. Non-steroidal anti-inflammatory drugs.
D. Plasma exchange.
E. Prednisone.

EXPLANATION

The correct answer is E. The clinical picture is diagnostic of dermatomyositis. Women are more frequently affected than men. Muscle weakness and pain, along with the characteristic periorbital edema and purple discoloration of the upper eyelids, suggest the diagnosis, which is confirmed by muscle biopsy. The patches on the dorsal aspects of interphalangeal and metacarpophalangeal joints are referred to as Gottron sign. Anti-nuclear antibodies (ANAs) are found in the majority of patients, and rheumatoid factor is positive in a minority. Corticosteroids provide rapid relief in most patients. Prednisone is administered at high doses (40-60 mg daily).

Azathioprine (choice A) and methotrexate (choice B) are both effective, but they may cause serious adverse effects. Thus, they should be used only in patients intolerant or unresponsive to corticosteroids.

NSAIDs (choice C) are not sufficient to control the disease. Often, patients with dermatomyositis experience exacerbations when corticosteroids are withdrawn.

Plasma exchange (choice D), as well as leukapheresis, is not effective in treating dermatomyositis.
Q-186
A 28-month-old female has been living with her mothering a shelter for homeless women and children. She is brought to the ER in status epilepticus which is stopped with IV lorazepam. She is placed on a cardiac monitor and a wide complex tachycardia is noted. The ventricular tachycardia reverts to sinus tachycardia after defibrillation is performed. Her temperature is 38.5 C (101.3 F), blood pressure is 120/80, pulse is 195 and respirations are 26. Physical examination reveals a lethargic, pale, toddler with dilate and reactive pupils, dry mucous membranes, shallow respirations, diaphoresis and brisk deep tendon reflexes. A urinary toxicology screen is most likely to detect which of the following substances.

A. Barbiturates.
B. Cocaine.
C. Heroine.
D. Marijuana.
E. PCP.

EXPLANATION
The correct answer is B. This patient’s clinical picture is consistent with acute cocaine ingestion. Cocaine is a CNS stimulant that causes increased heart rate, hypertension and hyperactive reflexes. Other substances of abuse can cause cardiac arrhythmias and seizures but of the answer choices, only cocaine causes mydriasis or dilated pupils. Treatment is supportive and may include anti-arrhythmics, anti-hypertensives, cooling blankets and sedatives.

Barbiturates (choice A) are CNS depressants and would cause hypotension, normal or constricted pupils and diminished reflexes. Other classic features of barbiturate overdose include ataxia, slurred speech and nystagmus.

Heroin (choice C) is an opiate and would produce symptoms of CNS depression (hypotension, diminished or absent reflexes, hypoventilation, hypothermia) and constricted pupils. Other symptoms of opiate intoxication include nausea, vomiting, euphoria, seizures and coma.

Marijuana (choice D) ingestion or inhalation causes relatively benign symptoms that include euphoria, hunger, tachycardia and injected conjunctivae. Pupils usually remain normal.

PCP (choice E) is a hallucinogen that causes CNS stimulation (hypertension, tachycardia, brisk reflexes, hyperthermia). Other hallucinogens such as LSD and mescaline cause dilated pupils but PCP has an effect of constricting pupils. Seizures and coma are more common with PCP and intracranial hemorrhages have been reported.
Q-187
A patient is talking to his psychiatrist about a conflict he has with his partner. They argue because the partner complains that the patient is inefficient and procrastinates doing things that are his responsibility. He never completes a task the way he was asked to do it but in his own way and usually much later. Which of the following types of defense mechanisms is this patient exhibiting.

A. Acting out.
B. Blocking.
C. Passive-aggressiveness.
D. Regression.
E. Splitting.

EXPLANATION

The correct answer is C. With passive-aggressiveness, aggression toward others is expressed indirectly, usually through procrastination, stubbornness, passivity, and forgetfulness. The manifestations usually affect others more than the person who is doing it.

Acting out (choice A) is a defense by which a person expresses an unconscious wish through action to avoid being conscious of the strong accompanying affect.

Blocking (choice B) is a transient inhibition of thinking that usually involves strong affects and impulses that are being inhibited.

Regression (choice D) is a defense mechanism in which a person returns to an earlier stage of libidinal development to avoid tension at the present level of development.

Splitting (choice E) is a defense mechanism by which external objects are divided into "all good" and "all bad." It is accompanied by abrupt shifting of an object from one category to the other.
Q-188

A 38-yr-old woman gravida 3, para 2 at 32-weeks gestation comes to the physician because of bleeding from vagina. She states that this morning she passed two quarter sized clots of blood from vagina, she is feeling well, otherwise. The baby is moving normally and she has no contractions or gush of fluids from vagina. Her obstetric history is significant for two low transverse cesarian deliveries for non-reassuring fetal heart rate tracings. An ultrasound is performed that demonstrates a complete placenta previa. For which of the following conditions is the patient at highest risk.

A. Dystocia.
B. Intrauterine fetal demise.
C. Placenta accreta.
D. Pre-eclampsia.
E. Uterine rupture.

EXPLANATION

The correct answer is C. Placenta previa is defined as a placenta located over the cervical os. There are 3 major types. Complete previa describes a placenta that completely covers the cervical os. Partial previa is a placenta that covers some of the cervical os, with the remainder of the os uncovered by the placenta. Marginal previa describes a placenta that is located at the edge of the cervical os. Three major risk factors for placenta previa are maternal age, minority race, and previous cesarean delivery. Placenta accreta describes the condition in which there is abnormal attachment of the placenta to the uterine wall. In this condition, the decidua basalis is absent and the placenta is attached to the myometrium (accreta) or invades into the myometrium (increta), or perforates through the myometrium (percreta). Patients with a placenta previa and no prior cesarean deliveries have a 5% risk of having a placenta accreta. Patients with a previa and one prior cesarean delivery have a 25% risk of having an accreta. And patients with a placenta previa and 2 or more prior cesarean deliveries have a greater than 50% risk of having a placenta accreta. Many patients with a previa and accreta will require a hysterectomy at the time of delivery. This patient, with a history of 2 prior cesarean deliveries and a placenta previa is at highest risk for placenta accreta.

This patient would not be considered to be at highest risk of dystocia (choice A) because, with a placenta previa, she would not be allowed to labor and, therefore, would not be at risk of dystocia.

There appears to be no strong association between placenta previa and intrauterine fetal demise (choice B) or preeclampsia (choice D).

Uterine rupture (choice E) is a concern in women who have had prior cesarean deliveries, and the risk of rupture does rise with the number of previous cesarean deliveries. It is of particular concern if the woman is in labor. This patient, with a placenta previa, however, will not be allowed to labor.
Q-189
A 44-yr-old homeless woman presents to the ER because she is bleeding from the breast. Physical examination shows huge, fungating, ulcerated mass that occupies the entire breast and is firmly attached to the chest wall and the right axilla is full of masses that are not movable either. Core biopsies of the breast are read as highly undifferentiated, infiltrating, ductal carcinoma. Essay for estrogen and progesterone receptors is negative. Which of the following is the most appropriate next step in management.

A. Local wound care but no specific anti-neoplastic therapy.
B. Tamoxifen therapy.
C. Radiation and chemotherapy.
D. Palliative mastectomy.
E. Radical mastectomy with extensive lymph node dissection.

EXPLANATION

The correct answer is C. Although this is an impressive, very advanced cancer with a poor prognosis, it can be expected to shrink significantly with local radiation plus systemic chemotherapy. It may do so to the point at which a palliative mastectomy becomes technically feasible, something that cannot be done at this time.

Taking care of the wound, and accepting defeat from the cancer (choice A), was the only available choice before chemotherapeutic agents and radiation therapy were developed. It would be entirely inappropriate at the present time.

Tamoxifen (choice B) would be the weakest systemic weapon in this case. She is premenopausal and receptor negative. Tamoxifen alone would not shrink this tumor to any appreciable extent.

Mastectomy, either simple (choice D) or radical (choice E), is not possible at this time. The description clearly depicts an inoperable tumor. We first need to make it operable.
Q-190
An 82-yr-old woman who's husband passed away 6-weeks ago after a long illness is admitted to the hospital for worsening of her cardiac problem. During a hospital stay a psychiatrist is invited at the request of her daughters. The daughters think that their mother is depressed because she is tearful, talks about her husband and says that she has heard his voice several times. She blames herself for not going with him on his last visit to his sister and she starts crying. She has never seen a psychiatrist before and has been strong all her life. Which of the following is the most likely diagnosis.

A. Depression secondary to general medical condition.
B. Dysthymia.
C. Grief reaction.
D. Major depressive disorder.
E. Psychoses not otherwise specified.

EXPLANATION

The correct answer is C. A normal or uncomplicated grief reaction after the loss of a beloved person may resemble depression in some ways (e.g., changes in sleep or appetite, sadness, withdrawal). However, as the loss becomes remote, the grief-stricken person is able to re-experience joy. Self-blame is focused on what was not done in relation to the deceased person. Illusions or hallucinations of the deceased person are common. The uncomplicated grief reaction can last several months, or longer, depending on the relationship to the deceased.

Depression secondary to a general medical condition (choice A) can be seen in association with cardiopulmonary disease, among other disorders; however, since the symptoms are related to the precipitating event, one would have to wait till the normal grief is resolved and then reassess the presence of symptoms of depression.

The main diagnostic criterion of dysthymia (choice B) involves milder symptoms of depression occurring every day for at least 2 years.

Major depressive disorder (choice D) can be precipitated by the loss of a beloved person, but it has a distinct quality even though some symptoms are the same. Suicidal ideation, guilt related to the person alone and not to the deceased person, and feelings of worthlessness are common. Significant functional impairment is typical.

Psychosis not otherwise specified (choice E) is reserved as a diagnosis for the presence of psychotic symptoms that do not meet all the criteria for a specific disorder and there is not enough information available to establish a more specific diagnosis.
A 24-yr-old graduate student is found to have acute myelogenous leukemia. Before undergoing a planned bone marrow transplant he begins aggressive multi-drug chemotherapy. However his tolerance of this regimen is severely limited by intractable vomiting with each chemotherapy cycle. Which of the following will most likely reduce vomiting in this patient.

A. Dopamine.
B. Erythromycin.
C. Omeprazole.
D. Ondansetron.
E. Opiates.

EXPLANATION

The correct answer is D. Ondansetron, a 5-hydroxytryptamine3 antagonist, is the most potent antiemetic available for chemotherapy-induced vomiting. It is safe and is available as an oral or IV medication. Ondansetron has greatly improved the prognosis of many patients who were previously unable to tolerate full-dose chemotherapy because of severe vomiting. It has side effects only infrequently, the most common being constipation.

Dopamine (choice A) is actually a pro-emetic compound. The common mediators of vomiting in the CNS are 5-hydroxytryptamine, dopamine, and acetylcholine.

Erythromycin (choice B) also tends to cause, not relieve, nausea and vomiting. It has motilin-stimulating properties in the stomach, leading to increased gastric motility. It is of therapeutic value in patients with diabetic gastroparesis.

Omeprazole (choice C) is of no value in inhibiting vomiting. It is a proton-pump inhibitor, which is effective in reducing or eliminating acid secretion.

Opiates (choice E) are commonly used in patients receiving chemotherapy but are actually pro-emetic because they stimulate the chemoreceptor trigger zone, which lies within the brain but outside the blood-brain barrier.
Q-192
A 50-yr-old woman presents to the ER complaining of the worst headache of her life. It began abruptly and had remained for 60-minutes. She is nauseous and lethargic. On examination her blood pressure is 240/130 and pulse is 62. There is nuchal rigidity but no focal neurological signs. Which of the following is the most appropriate next step in management.

A. Control her blood pressure with a nitroprusside drip.
B. Control her blood pressure with sublingual nifidipine.
C. Obtain a CT-scan of the brain with contrast.
D. Obtain a CT-scan of the brain without contrast.
E. Perform a lumbar puncture.

EXPLANATION

The correct answer is A. This patient may have a subarachnoid hemorrhage. Classically, these patients present with "the worst headache of their life." Controlling blood pressure is the treatment of choice, but the blood pressure should not be lowered too far. The systolic pressure should be in the range of 160-170 mm Hg. It should not be lowered more than this because some of the elevated pressure may represent a compensatory mechanism to maintain cerebral perfusion pressure in the face of increased intracranial pressure or cerebral arterial narrowing. IV nitroprusside is a good agent to use because it can be titrated with the blood pressure. If the pressure drops too low, the IV can be turned off.

Sublingual nifedipine (choice B) may be dangerous in this patient, because it can significantly drop the blood pressure very quickly.

A head CT with contrast (choice C) may be done only after one without contrast is done.

After improving her blood pressure, this patient should then have a head CT without contrast (choice D) to evaluate for blood.

Lumbar puncture (choice E) is an appropriate next step after lowering the patient’s blood pressure. Evidence for xanthochromia or meningitis is sought.
Q-193
A 15-yr-old boy comes to the physician for advice about his facial acne. On examination the patient has mild to moderate acne mostly consisting of open comedons, some closed comedons and a few pustules on the forehead and cheeks. Which of the following is the best advise to give to this patient.

A. Avoidance of chocolates and spicy foods.
B. Frequent face washing with strong soaps.
C. Tropical application of tretinoin and adapalene.
D. Treatment with antibiotics.
E. Oral treatment with isotretinoin.

EXPLANATION

The correct answer is C. Acne vulgaris affects the majority of adolescents and is more prevalent in males. Hormonal influences, abnormal keratinization of pilosebaceous units and colonization by bacteria (Propionibacterium acnes) are important pathogenetic elements. Treatment of acne depends on the severity of the condition. Topical application of comedolytic agents such as retinoids (tretinoin, adapalene, and the new yeast-derived agent azaleic acid) is effective for mild to moderate forms of non-inflammatory acne, characterized by open comedones. Daily application of these compounds will result in improvement within several weeks after starting treatment. Mild skin irritation and scaling may be minimized by starting with low-concentration creams, and then progressively increasing the concentration. Another side effect of retinoids is increased photosensitivity. The patient must be instructed to avoid prolonged exposure to the sun and to use a sunscreen.

Avoidance of chocolate and spicy foods (choice A) would have no beneficial effects on acne. It is well established that there is no correlation between acne and specific types of foods.

Frequent face washing with strong soap (choice B) will probably cause exacerbation of acne. This skin condition is not caused by dirt. Gentle face washing once or twice daily with mild soaps is recommended.

Treatment with oral antibiotic (choice D) is aimed at decreasing bacterial colonization. It is used for patients who fail to respond to topical treatments or have severe forms of inflammatory acne. The antibiotics of choice include tetracyclines and erythromycin.

Oral treatment with isotretinoin (choice E) is used for severe cases of acne not responding to topical comedolytics and antibiotics. This compound acts by decreasing sebum production. In addition to various types of side effects, isotretinoin is teratogenic. Female patients of childbearing age should be required to use effective means of contraception beginning one month before treatment to one month after treatment.
Q-194
In preparation for an inguinal hernia repair a 22-yr-old has a spinal anesthetic in place. The level of the sensory block turns out to be much higher then had been planned and shortly thereafter his blood pressure drops to 75/20. He looks warm and flushed and his central venous pressure is nearly zero. Which of the following should be included in the therapy.

A. Diuretics and fluid restriction.
B. Whole blood and clotting factors.
C. Inotropic agents and cardiac assist pump.
D. Vasoconstrictors and IV fluids.
E. Vasodilators and IV fluids.

EXPLANATION
The correct answer is D. A high spinal anesthetic can produce vasomotor shock by inducing widespread vasodilation. Vasoconstrictors are the appropriate therapy, but since the capacity of the vascular tree is also increased under these circumstances, filling it up with additional volume is also helpful.

Diuretics and fluid restriction (choice A) would compound the problem. The patient needs more fluid, not less.

Whole blood and clotting factors (choice B) are not needed. The volume can be increased with cheaper and safer IV fluids until proper vascular tone is restored. Coagulation factors have not been lost.

Inotropic agents and mechanical assistance to the circulation (choice C) are indicated in cardiogenic shock, which would be rare in a 22-year-old and would be identified, among other things, by a high central venous pressure.

Vasodilators and fluids (choice E) are sometimes a good combination when hypovolemia plus high peripheral resistance deprive tissues of proper perfusion. In this case, however, vasodilation already exists (and is the genesis of the problem).
Q-195
A 35-yr-old woman consults an ophthalmologist because of double vision and droopy eyelids. She has also complained of generalized muscle weakness. IV injection of edrophonium dramatically but only briefly reverses her symptoms. The patient’s probable disease has a pathophysiological basis that is close to which of the following condition.

A. Bullous pemphigoid.
B. Diabetes mellitus type I (some cases).
C. Idiopathic Addison’s disease.
D. Insulin resistance.
E. Systemic lupus erythematosus.

EXPLANATION

The correct answer is D. This patient has myasthenia gravis, which was suspected based on the woman’s clinical presentation and confirmed with the response to the short-acting anticholinesterase drug edrophonium. Myasthenia gravis is an autoimmune disease in which antibodies directed against the acetylcholine receptor of the muscle side of the neuromuscular junction block the ability of the receptor to bind to acetylcholine. Of the diseases listed above, only insulin resistance is produced by a similar mechanism, i.e. antibodies to insulin receptors block the receptors’ ability to bind to insulin.

Bullous pemphigoid (choice A) is caused by antibodies directed against the basement membrane of the skin, which damage the basement membrane and cause blister formation.

Some cases of diabetes mellitus type 1 (choice B) and idiopathic Addison disease (choice C) are characterized by humoral, and probably cell-mediated, reactions against the cells in the endocrine tissue.

Systemic lupus erythematosus (choice E) has circulating and locally generated immune complexes mediating the pathophysiology.
A 39-yr-old automobile mechanic presents with a new onset of wheezing. He is otherwise healthy and runs approximately 3-miles/day. He denies any nocturnal cough or wheezing. He has a history of chronic heartburn for which he takes ranitidine nightly. He also has history of hypertension which has been difficult to control. Over the past several months he is taking a combination of propranolol, enalapril and hydrochlorothiazide. His only other medication is pseudoephedrine for symptoms of allergic rhinitis. On physical examination he appears comfortable, his blood pressure is 134/88, pulse is 68 and respirations 16. On lung examination soft expiratory wheezes are heard throughout the lung field. Which of the following medications is most likely contributing to his wheezing.

A. Enalapril.
B. Hydrochlorothiazide.
C. Propranolol.
D. Pseudoephedrine.
E. Ranitidine.

EXPLANATION

The correct answer is C. Propranolol, like other nonspecific beta blockers, may cause bronchospasm by blocking the beta receptors in the bronchial tree. Beta stimulation in the lungs produces bronchodilation, and its blockade leads to bronchoconstriction. In fact, propranolol is contraindicated in patients with known asthma or chronic obstructive pulmonary disease (COPD).

Enalapril (choice A) may cause pulmonary symptoms, in that it may cause a nonproductive cough, but is not usually associated with wheezing.

Hydrochlorothiazide (choice B) and ranitidine (choice E) have no effect on airway responsiveness, although the patient’s underlying gastroesophageal reflux disease may lead to acid induced bronchoconstriction.

Pseudoephedrine (choice D) does not cause bronchoconstriction.
Q-197
A 47-yr-old homeless woman presents to the ER complaining of mid-epigastric pain over the past 24-hours. The pain began gradually and has been building in intensity. It is now radiating to back and is associated with vomiting of bilious material. She reports that she had three prior visits to the ER over the past year and she usually gets better after they put a tube in my nose and don't let me eat for a few days. On physical examination her temperature is 38.3 C (100.9 F), blood pressure is 104/62 and pulse is 102. On abdominal examination there is moderate tenderness to mild palpation in the mid-epigastrium. There is no costovertebral angle tenderness and no shifting dullness. Rectal examination reveals brown guaic negative stool. Lab studies reveal a WBC count of 12,300/mm$^3$, amylase of 412 U/L (normal < 120), lipase of 655 miu/ml (normal < 80).

Which of the following is the most likely diagnosis.

A. Acute bacterial cholangitis.
B. Acute cholecystitis.
C. Acute pancreatitis.
D. Hepatitis A.
E. Hepatitis B.

EXPLANATION
The correct answer is C. This patient has had multiple admissions for similar symptoms and is presenting to the emergency department with vomiting and mid-epigastric pain radiating to the back. This pattern of pain should always suggest the possibility of pancreatitis. Note that acute pancreatitis can mimic infection with mild fever, tachycardia, and modestly increased white count. However, amylase and lipase levels should be ordered in this clinical setting as elevation of these pancreatic enzymes can confirm the diagnosis. In this homeless patient, who has had several episodes of pancreatitis, either alcohol pancreatitis or gallstone pancreatitis may be responsible. However, appropriate care of gallstone pancreatitis would have resulted in a cholecystectomy, which should have prevented future episodes, leaving it most probable that her pancreatitis is related to alcohol use.

Acute bacterial cholangitis (choice A) typically presents with Charcot’s triad, consisting of right upper quadrant pain, fever, and jaundice.

Acute cholecystitis (choice B) generally presents as right upper quadrant pain, which may radiate to the interscapular area. The elevated amylase and lipase levels are far more suggestive of pancreatitis than acute cholecystitis.

Viral hepatitis due to hepatitis A or B (choices D and E) may cause epigastric pain, but more commonly presents with right upper quadrant pain and is unlikely to develop quite so abruptly. Furthermore, the recurrent nature of these episodes is atypical for viral hepatitis for hepatitis B and does not occur with hepatitis A.
Q-198
An 8-yr-old boy with a sickle cell disease presents with left leg pain and a high fever. He has been refusing to walk since yesterday. On physical examination his temperature is 39.8 C (103.6 F), blood pressure is 122/68, pulse is 102 and respirations are 20. His left femur is tender to palpation 3-cm above the left knee and there is a marked soft tissue swelling. A plain x-ray film of his leg is normal. Bone scan shows increased uptake around the metaphysis of left femur. Which of the following is the most likely pathogen.

A. E.coli.
B. Haemophilus influenzae.
C. Salmonella.
D. Staphylococcus aureus.
E. Streptococcus pneumoniae.

EXPLANATION
The correct answer is D. Osteomyelitis is a pyogenic infection of the bone. The pathogenesis of the disease is similar to septic arthritis, with the origin of infection occurring from hematogenous spread, direct extension of a local infection, or direct inoculation of bone either from trauma (e. g. , puncture wound or open fracture) or surgical manipulation. In children, the most frequent presentation is acute hematogenous spread. The most common location of osteomyelitis is the metaphysis of the distal femur and proximal tibia.

The most prevalent pathogens are the same as those seen in septic arthritis. Staphylococcus aureus is the most common pathogen, with group A beta-hemolytic streptococci a distant second. Neonates are at risk for group B beta-hemolytic streptococci. Haemophilus influenzae may occur in infants and young children, but it is not seen as frequently as in septic arthritis. In addition, children with H. influenzae osteomyelitis usually have fever and concomitant joint infection. Patients with puncture wounds of the foot are susceptible to Pseudomonas aeruginosa osteomyelitis. Patients with sickle cell disease are at risk for infection by Salmonella and other gram-negative bacteria, and patients in the 18- to 48-month age range are at increased risk for acute recurrent Salmonella osteomyelitis. Salmonella osteomyelitis frequently involves multiple sites and creates punched-out destructive lesions of the metaphysis and diaphysis. However, even in patients with sickle cell disease, Staphylococcus aureus is still the most common pathogen for osteomyelitis.
Most patients with osteomyelitis will present with a chief complaint of fever and bone pain. The pain is usually severe, constant, and aggravated by motion. The older the child, the more exquisite the point tenderness, because the bone has a thicker metaphyseal cortex with a dense fibrous periosteum. Localized swelling, warmth, and erythema are signs seen late in the infection, as the periosteum becomes more involved. Neonates can present with vague symptoms, consisting only of irritability and poor feeding, or can show signs of fulminant sepsis. The peripheral white blood cell count may be normal, or elevated with a left shift. The erythrocyte sedimentation rate (ESR) is usually elevated, and blood cultures are positive in approximately 60% cases. Bone cultures taken either surgically or by needle aspiration result in a culture yield of 80%. Plain radiographs may be normal for up to 2 weeks from the onset of illness, and the earliest signs on plain films are soft tissue swelling and displacement of muscle plane. Bony changes begin to appear by 7-10 days, starting with a hazy appearance of the metaphysis followed by irregular areas of trabecular necrosis and absorption. Eventually, subperiosteal new bone formation occurs as the infection spreads through the cortex. A bone scan usually diagnoses osteomyelitis as early as 24-48 hours from onset.

Treatment should begin with empiric parenteral antibiotics. The selection of antibiotic should include coverage of Staphylococcus aureus, as well as other organisms; the agent can probably be based on the patient’s age and history of illness. Surgical debridement may be necessary if pus is present on needle aspiration, or if evidence of either joint involvement or abscess is present.
Q-199

A 32-yr-old woman presents to a psychiatrist because she worries too much. She states that over the past seven months she has experienced extreme fatigue, muscle tension and irritability. She has difficulties falling asleep partly because of worrisome thoughts about her husband and children that something bad is going to happen to them. In the past month she had episodes of shortness of breath, dizziness and restlessness and has unable to go to work or do anything at home. Physical examination, lab studies and Ecg as well are unremarkable. Which of the following is the most likely diagnosis.

A. Avoidant personality disorder.
B. Generalized anxiety disorder.
C. Hypochondriasis.
D. Obsessive-compulsive disorder.
E. Panic disorder.

EXPLANATION

The correct answer is B. Generalized anxiety disorder is defined as unrealistic worry about life events for a period longer than 6 months, during which time a person is worried most days. It also includes at least six symptoms of the following types: easy fatigability, difficulties falling asleep, restlessness, difficulties concentrating, irritability, and muscle tension. The symptoms are not due to other psychiatric or medical conditions and they cause significant impairment in everyday functioning.

Avoidant personality disorder (choice A) is a pervasive pattern of social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluation as seen through at least four symptoms of the following type: self-image of social ineptitude, preoccupation with being disliked, avoidance of social activities for fear of being ridiculed, and feelings of inadequacy in interpersonal relationships.
Hypochondriasis (choice C) is defined as excessive concern with one’s health or diseases. It is present most of the time and is unjustified by the amount of physical pathology. It must be present at least 6 months and does not respond to reassurance. The main features include fear of disease, bodily preoccupation with somatic complaints, feelings of frustration toward doctors, and doctor-shopping. It causes significant impairment in functioning and is not due to other psychiatric or medical conditions.

Obsessive-compulsive disorder (choice D) is characterized by recurrent intrusive thoughts or impulses that cause stress. The person unsuccessfully attempts to ignore or neutralize through action the recurrent thoughts or impulses, even though he or she is aware that those thoughts are the product of his or her own mind. Compulsions are repetitive behaviors that the person needs to perform as a result of obsessions or to decrease the stress related to intrusive thoughts. The disorder causes significant impairment in everyday functioning and is not due to other psychiatric or medical conditions.

Panic disorder (choice E) is defined by recurrent panic attacks and persistent concern about having new attacks, worries about the implications of attacks, and significant changes in behavior related to attacks. The disorder is not due to any other medical or psychiatric conditions.
Q-200

A 24-yr-old woman comes to the physician because of burning with urination. She states that every time she urinates there is pain and a feeling that she constantly needs to urinate even though only a little comes out. She has never had similar symptoms before. She has no medical problem and no drug allergies. Examination is unremarkable. Urinalysis demonstrates that urine is positive for leukocytes, esterase and nitrites. Which of the following is the most appropriate pharmacotherapy.

A. IM ceftriaxone.
B. IV levofloxacin.
C. Oral levofloxacin for seven days.
D. Oral trimethoprim-sulfmethoxazole for three days.
E. Wait for culture results to institute therapy.

EXPLANATION

The correct answer is D. This patient likely has an uncomplicated urinary tract infection (UTI). Patients with UTIs often present with dysuria, frequency, and urgency. Physical examination is often unremarkable, although there may be some suprapubic tenderness if a cystitis is the predominant infection rather than a urethritis. Urine "dip" will often be positive for leukocyte esterase and nitrites. Microscopic urinalysis will often show the presence of white blood cells and red blood cells. Escherichia coli is the offending organism in about 80% of cases with Staphylococcus saprophyticus being the next most likely causative organism. Treatment of an uncomplicated urinary tract infection is with a 3-day course of oral antibiotics. Trimethoprim-sulfamethoxazole (Bactrim) has been shown to be safe, effective, and cost-effective in the treatment of uncomplicated UTIs.

Intramuscular ceftriaxone (choice A) is used for the treatment of gonorrhea. This patient has findings consistent with urinary tract infection and not gonorrhea, and therefore, a 3-day course of oral antibiotics is indicated, rather than intramuscular ceftriaxone.

Intravenous levofloxacin (choice B) can be used in cases of complicated urinary tract infections in patients that cannot take oral medications and oral levofloxacin (choice C) can be used when the patient is tolerating oral intake. Levofloxacin has roughly the same bioavailability when taken orally versus intravenously, so the route depends on the patient’s status. However, this medication is used when patients have complicated urinary tract infections (i.e. with Pseudomonas or Proteus species) or when the patient has underlying medical illness.

To wait for the culture results to institute therapy (choice E) would not be appropriate. The patient has symptoms and findings consistent with a UTI right now and therefore should be treated now. To wait 2 or more days for the culture results to come back would not be appropriate.
Q-201
A recent article in a prominent medical journal put the disparity of resource utilization between men and women. More men then women have cardiac procedures including catheterizations performed. This is because of which of the following reasons.

A. Fewer outcome studies have studied women with these studies.
B. The incidence of cardiovascular disease is lower in women.
C. Men have better health insurance.
D. Men receive too many cardiovascular procedures.
E. Provider attitudes have let to this situation.

EXPLANATION

The correct answer is E. Attitudes of physicians has been shown to have a significant effect on the delivery of health care. Health providers believe men to be more likely to have cardiac disease than women and this has guided practice, leading to a larger amount of cardiac procedures for men, compared with women.

Fewer outcome studies have studied women because of the belief that cardiac disease is more common in men (choice A).

The incidence of cardiovascular disease in women is similar to that in men (choice B) across the entire life-span.

There is a significant disparity between men and women in the use of cardiovascular interventions in the absence of financial (i.e., insurance) barriers (choice C).

One study has reported that women receive more appropriate cardiac services than men and that major interventions in men are over-utilized (choice D), but this does not explain the overall disparity.
A 4-week old boy is brought to the clinic by his mother because of one day history of labored breathing. His birth was uneventful and immunization is up-to-date. His mother reports that patient developed conjunctivitis on the fourth day of life. On examination he is breathing rapidly at 40 breaths per minute and is afebrile. His chest reveals bilateral inspiratory crackles and a slight wheeze. On chest x-ray bilateral pneumonia is evident. Leukocyte count is elevated at 15,000/mm$^3$ with 40% eosinophils. Which of the following is the most likely pathogen causing the patient symptoms.

A. Ascaris lumbricoides.
B. Chlamydia trachomatis.
C. Mycoplasma pneumonia.
D. Pneumocystis carinii.
E. Varicella zoster virus.

EXPLANATION

The correct answer is B. This patient presents with symptoms consistent with neonatal pneumonia due to Chlamydia trachomatis. This agent is transmitted from the mother’s vaginal secretions to the neonate at birth. The conjunctivitis precedes the pneumonitis. Tachypnea, hypoxemia, crackles, wheezing and eosinophilia are seen.

Ascaris lumbricoides(choice A) produce visceral larva migrans and can cause pneumonia and eosinophilia. However, this is caused by ingestion of Ascaris eggs passed by dogs and cats.

Mycoplasma pneumoniae(choice C) is the etiologic agent in atypical pneumonias in young people, but not in neonates.

Pneumocystis carinii(choice D) causes pneumonia in patients with acquired immune deficiency syndrome and other immunocompromised patients.

Varicella(choice E) pneumonia is accompanied by skin lesions. Furthermore, eosinophilia is not seen.
Q-203
A 32-yr-old woman with a history of panic disorder is brought to the ER by his husband after he found her heavily sedated and minimally responsive upon his arrival home from work. The husband tells the physician that his wife had been increasingly depressed for the past few weeks since the death of her mother. He states that her psychiatrist recently increased her dosage of alprazolam and sertraline due to increasing panic attacks along with worsening depression. Her temperature is 37°C (98.6°F), blood pressure is 105/65, pulse is 65 and respiratory rate is 12. She is heavily sedated and only able to utter a few words with slurred speech. She stated that she took diazepam and several extra alprazolam due to panic attacks. During examination her respiratory rate drops to 8/minute. Which of the following medication would be most appropriate to administer at this time.

A. Benztropine.
B. Flumazenil.
C. Haloperidol.
D. Lorazepam.
E. Naloxone.

EXPLANATION
The correct answer is B. Flumazenil is a benzodiazepine receptor antagonist, which reverses the psychophysiologic effects of benzodiazepine medications, such as alprazolam, diazepam, and lorazepam. After IV administration, flumazenil has a half-life of 7-15 minutes. For the initial management of a known or suspected benzodiazepine overdose, the recommended initial dose of flumazenil is 0.2 mg administered IV over 30 seconds. If the desired level of consciousness is not obtained after waiting 30 seconds, a further dose of 0.3 mg can be administered over 30 seconds. Additional doses can be administered up to a cumulative dose of 3.0 mg. A secure airway and IV access should be established before administration of the drug.

Benztropine (choice A) is an anticholinergic medication that can be used in the acute setting to reverse antipsychotic-induced acute dystonic reactions. It is also used on a long-term basis for prophylaxis of extrapyramidal side effects.

Haloperidol (choice C) would not be a proper treatment for this patient. It is often used in the emergency setting for treatment of agitation.

Lorazepam (choice D) is a benzodiazepine and should not be administered to this patient. It would worsen the patient's benzodiazepine intoxication.

Naloxone (choice E) is an opiate antagonist that is used in the treatment of opiate and opioid overdose because it reverses the effects of narcotics. Naloxone can be administered IV (0.4 mg) and this dose can be repeated 4-5 times within the first 30-45 minutes. The patient generally becomes responsive, but, because of its short duration of action, the patient may relapse into coma, making close observation very important.
A 29-yr-old woman gravida 2, para 1 at 38 weeks gestation comes to the labor and delivery ward with frequent painful contractions. Her prenatal course was significant for a urine culture that showed 100,000 colony forming units/ml of group B streptococci and asthma for which she uses an albuterol inhaler. Examination shows that she is contracting at every two minutes and her cervix is 5cm dilated and 100% effaced. Which of the following medications should this patient be treated with during labor and delivery.

A. Betamethasone.
B. Folic acid.
C. Magnessium sulfate.
D. Oxytocin.
E. Penicillin.

EXPLANATION

The correct answer is E. The Group B Streptococcus (GBS) is a bacterium that is a part of the normal bacterial colonization of many women. During pregnancy, as many as 20-40% of women will be colonized with GBS. Most babies born to colonized mothers will not develop infection with GBS. However, approximately 1 to 4% of neonates will develop infection. The likelihood of infection is increased if the mother has preterm labor and delivery (< 37 weeks), prolonged rupture of the membranes (> 18 hours), or intrapartum temperature greater than 38.0 C (100.4 F). Two primary methods are used to determine which women will receive antibiotics during labor. The first method is based upon risk factors. The five risk factors are: 1. History of a GBS-affected neonate. 2. Urine culture with GBS. 3. Preterm labor (< 37 weeks). 4. Membranes ruptured for greater than eighteen hours in labor. 5. Temperature greater than 38.0 C (100.4 F) in labor. A woman with any one of these five risk factors should receive antibiotics in labor. The second method is based on screening, with pregnant women being screened for GBS at 35 to 37 weeks with a culture of the vagina, perineum, and anus. Women should be screened only if they do not have a history of a GBS-affected neonate or GBS bacteriuria. This patient has GBS bacteriuria; therefore, she did not undergo screening. She should be treated with penicillin during labor and delivery.
Betamethasone (choice A) is a corticosteroid that is given to women to accelerate fetal maturity to help prevent neonatal respiratory distress syndrome and other sequelae of prematurity. This patient is at 38 weeks' gestation and, therefore, does not require betamethasone.

Folic acid (choice B) is a supplement that women should take preconceptionally and during pregnancy (not during labor and delivery) to help prevent neural tube defects.

Magnesium sulfate (choice C) is used in obstetrics to prevent preterm labor and for seizure prophylaxis. This patient does not have preterm labor and does not have preeclampsia.

Oxytocin (choice D) is given to women to induce or to augment labor. This patient, however, appears not to need oxytocin as she is contracting every 5 minutes and progressing in labor.
Q-205

A 53-yr-old woman comes to the physician for a lump in her neck. She says that her masseuse noticed it one month ago. There is no pain, pressure or hoarsness. She feels fine and has no other complains. She has no history of radiation exposure. Neck examination reveals palpable thyroid nodule that is approximately 3cm in diameter. Which of the following is the most appropriate next step in diagnosis.

A. Cutting needle biopsy.
B. Fine needle aspiration.
C. Neck ultrasound.
D. Surgical resection.
E. Thyroid hormone replacement.

EXPLANATION

The correct answer is C. An ultrasound is the first step in the evaluation of a palpable thyroid nodule. An ultrasound is a noninvasive technique that can determine if the nodule is cystic or solid, the exact size of the lesion, and whether there are any additional masses. If the nodule is cystic, a fine needle aspiration (FNA; choice B) is performed. If the cyst disappears and the cytology is benign, no additional treatment is necessary. If the cyst remains, further evaluation is necessary. If the nodule is solid and < 3 cm, an FNA is performed. If the cytology is benign, thyroid hormone replacement (choice E) is given to suppress growth. If the nodule is solid and > 3 cm, a needle biopsy (choice A) is performed. If the pathology is indeterminate or malignant, surgical resection (choice D) is the treatment. If the nodule is benign, thyroid hormone is given.
A 64-yr-old man smokes 1-2 cigarettes/day sporadically on weekends and he is diagnosed with severe emphysema. His pulmonologist on examining his routine blood work find elevated transaminases. Hepatitis studies reveal no evidence of viral hepatitis A, B or C. His younger brother died of emphysema at age 50 and had no smoking history. Which of the following disease is most likely to be considered to explain his liver abnormalities and his lung disease.

A. Alpha-1 anti-trypsin deficiency.
B. Primary hemochromatosis.
C. Primary sclerosing cholangitis.
D. Secondary hemochromatosis.
E. Wilson's disease.

EXPLANATION

The correct answer is A. This 64-year-old man has a minimal smoking history and yet has very severe emphysema. He also has a history of elevated transaminases. The condition described here, alpha-1-antitrypsin deficiency, is the only disease among the choices that will affect both organ systems. They do not need to coexist in the same patient, but there will typically be a family history of either emphysema in nonsmokers, or liver function test abnormalities without other obvious cause. There is also a family history present of precocious emphysema in his younger brother, and this suggests a familial disease pattern.

Primary hemochromatosis (choice B) is a genetically transmitted disease with an autosomal recessive pattern that leaves iron deposition in the liver, heart, and pancreas. It leads to a bronze hyperpigmentation of the skin.

Primary sclerosing cholangitis (choice C) occurs in patients with ulcerative colitis and does not affect the lungs.

Secondary hemochromatosis (choice D) occurs in patients who have received massive amounts of blood transfusion over the years.

Wilson disease (choice E) is a familial genetic liver disease that also involves the eye (Kayser-Fleischer ring) and causes neuropsychiatric disorders. There is no lung involvement in Wilson disease.
Q-207

A 74-yr-old woman presents complaining of very severe abdominal pain that began abruptly 8-hours ago. She describes the pain as the worst that she ever had. On questioning she is unable to show a precise location but tells that her entire mid-abdomen is extremely painful. She has been followed for the past ten-years for symptoms of congestive heart failure after she had an anterior wall myocardial infarction. She has remained relatively well controlled with only occasional dyspnea on exertion. Her medications include captopril, furosemide, digoxin, isosorbide dinitrate and aspirin. She has not had any prior surgery. On physical examination she is extremely uncomfortable, her temperature is 38.9 C (101.9 F), blood pressure is 174/102 and pulse is 118 and irregularly irregular. On cardiac examination there is a regular heart rhythm with a 2/6 holosystolic murmur at the apex and radiating to the axilla. She has an irregularly irregular S1 and S2and scattered bibasilar rales. Abdominal examination reveals mild distention and no hepatosplenomegaly. The abdomen is diffusely soft but very tender to palpation. A rectal examination reveals brown guaic-positive stool. She has no audible bowel sounds. Which of the following is the most likely diagnosis.

A. Diverticulitis.
B. Ischemic colitis.
C. Mesentric ischemia.
D. Pancreatitis.
E. Small bowel obstruction.

EXPLANATION

The correct answer is C. This patient has symptoms of congestive heart failure and possible atrial fibrillation, as demonstrated by her irregularly irregular heartbeat. In addition, she is on digoxin and is at high risk for the development of an embolic occlusion of the superior mesenteric artery. These patients will present with severe pain out of proportion to their objective physical findings. The diagnosis should be suspected clinically, and immediate superior mesenteric arteriogram should be performed. If evidence of ischemia is confirmed, the patient should proceed to exploratory laparotomy to evaluate for intestinal ischemia and possible gangrenous bowel.
Diverticulitis (choice A) may present with severe abdominal pain but is generally lower abdominal and is often localized in the left lower quadrant, the site of sigmoid diverticulitis. Patients will often give a history of chronic crampy, postprandial pain in the left lower quadrant.

Ischemic colitis (choice B) will usually present as diarrhea, often bloody, in elderly patients with known atherosclerotic heart disease.

Although pancreatitis (choice D) may develop abruptly, particularly with gallstone pancreatitis, the symptoms are usually localized to the epigastric lesion, with radiation to the back and associated nausea and vomiting. Furthermore, chronic pancreatitis does not cause heme-positive stools, as in this patient.

A small bowel obstruction (choice E) is unlikely in the absence of prior abdominal surgery, and associated adhesions and will generally present with abdominal distension in association with high-pitched hyperactive bowel sounds, as well as nausea and vomiting.
A 65-yr-old woman is admitted to the hospital with severe, constant abdominal pain that has worsened over the past week. She has no other associated symptoms like nausea and vomiting but has noted that her daily urine output is sharply decreased. She has a constant desire to urinate but when she tries only a small amount of bloody urine is discharged. She is a long time smoker having smoked 3-packs/day for more than 45-years, although she claims to have quit 2-days ago. A bladder ultrasound in the ER reveals a mass consistent with bladder cancer and significant urinary retention. Which of the following is the most likely to be detected upon imaging the patient's genito-urinary system.

A. Bilateral hydronephrosis.
B. Bladder dilation.
C. Bladder dyskinesia.
D. Unilateral hydronephrosis.
E. Ureteral dilatation.

EXPLANATION

The correct answer is A. Urinary retention is most often caused by an anatomic obstruction to urine outflow. In men, this is often due to benign prostatic hypertrophy (BPH). Women have a variety of causes. The common manifestation of prolonged urinary retention is bilateral hydronephrosis due to urinary retention and pressure increases in the urinary system.

The bladder is a very muscular organ. Increases in pressure do not cause bladder dilation (choice B), but rather, hypertrophy.

Bladder dyskinesia (choice C), like ventricular dyskinesia, would most likely be seen in an area of focal bladder injury. This most often results from external impingement on the bladder wall.

Unilateral hydronephrosis (choice D) is most often encountered in cases of ureteral obstruction in which only one kidney suffers from the increased pressure.

Ureteral dilation (choice E) would not be seen in urinary retention until very late in the course. It is an uncommon finding because most patients present to a physician prior to this late stage.
Q-209
A 26-yr-old man with schizophrenia comes to the ER with a 2-hour history of involuntary contractions in his neck muscles. He states that he was watching television and all of a sudden he turned his head and it locked. He began taking a high potency anti-psychotic agent three-days earlier. Patient shows no abnormality except torticollis. Which of the following is the most appropriate pharmacotherapy.

A. Amantadine.  
B. Benztropine.  
C. Bromocriptine.  
D. Clonidine.  
E. Propranolol.

EXPLANATION

The correct answer is B. This patient has acute dystonia. Dystonia is characterized by involuntary muscle spasms, which in this patient, are due to a high potency antipsychotic agent. Dystonia is most common in young men, and often begins within days of starting the drug therapy. It usually involves the muscles of the head and neck, leading to torticollis and blepharospasm. It can produce a life-threatening laryngospasm requiring intubation. The treatment of acute dystonia is with anticholinergic medications, such as benztropine or diphenhydramine.

Amantadine (choice A) enhances dopaminergic transmission and may improve the bradykinesia, rigidity, and tremor of Parkinson's disease. It may also be helpful in the treatment of neuroleptic malignant syndrome (NMS). It is not used for acute dystonia.

Bromocriptine (choice C) is a dopamine agonist that is used in Parkinson disease and NMS. It is not used for acute dystonia.

Clonidine (choice D) is an alpha agonist that is used in hypertension and alleviates the motor and phonic tics in Tourette syndrome.

Propranolol (choice E) is a beta-blocker that is used in hypertension, angina, arrhythmias, tremor, and social phobias. It may be helpful for patients with akathisia. It is not used for acute dystonia.
Q-210
A 40-yr-old woman consults a physician about lesions on her neck that she finds cosmetically unattractive. On neck examination there are multiple lesions that seem to be hanging are seen. Each lesion is small, soft and pedunculated. The largest lesion is about 4-mm in diameter. The color of different lesions varies from flesh colored to slightly hyper-pigmented. Which of the following is the most likely diagnosis.

A. Acrochordons.
B. Lentigos.
C. Lipomas.
D. Seborrheic keratosis.
E. Spider angiomas.

EXPLANATION

The correct answer is A. These lesions are skin tags, more formally known as acrochordons. They are very common benign lesions that can occur at any skin site, but have a predilection for the neck, axilla, and groin. Multiple lesions are common, and the lesions tend to increase in number with age. They are usually asymptomatic but can be irritating. Microscopically, an acrochordon consists of a fibrovascular core, sometimes also with fat cells, covered by an unremarkable epidermis. Asymptomatic skin tags are usually not treated. Many methods can be used to remove disfiguring or irritated skin tags, including freezing with liquid nitrogen, light electrodesiccation, or excision with scalpel or scissors.

Lentigos (choice B) are flat macules characterized microscopically by an increased number of melanocytes occurring singly rather than in clusters in the lower part of the epidermis.

Lipomas (choice C) produce soft, movable, subcutaneous nodules composed of mature adipose tissue.

Seborrheic keratoses (choice D) are pigmented superficial epithelial lesions that are usually warty in consistency.

Spider angiomas (choice E) are bright red, faintly pulsatile, vascular lesions of the skin.
Q-211
A 63-yr-old woman presents to the ER complaining of severe mid-abdominal pain. The patient reports that the pain has increased in intensity over the past few days. There has been no associated nausea and vomiting or any change in bowel habits and no relief afforded by positive changes. The woman is post-menopausal and does not take hormone replacement therapy. She has a 30-yr history of hypertension and has been non-compliant with her calcium channel blocker and thiazide diuretic therapy. On examination the abdomen is obese but there is a suggestion of a non-tender pulsatile mass in the epigastric region. Remainder of the physical examination is normal. Imaging studies are done and immediate surgical evaluation is indicated. Which of the following results are most likely obtained form the imaging studies.

A. An abdominal aortic segment spanning 7-cm in diameter.
B. A liver span of more then 9-cm.
C. Multiple cysts in the liver.
D. Posterior herniation of lumber intervertebral disk.
E. Stones in the renal pelvis.

EXPLANATION

The correct answer is A. Abdominal aortic aneurysms greater than 5 cm have greater than a 30% chance of rupturing in 3 years. As most ruptures result in death, and as the mortality of surgical repair has fallen sharply, surgical repair of the aneurysm is indicated. Aneurysms that are not repaired expand on average at about 0.4 cm per year. Repair of these aneurysms can be accomplished via either traditional open approaches or new endovascular approaches.

A liver span of 9 cm (choice B) is within normal limits for most of the population.

Liver cysts (choice C) are common incidental findings on imaging of the abdomen. Although there is a large differential diagnosis for liver cysts, most etiologies have a benign course and can be followed conservatively.

Most disk herniations (choice D) respond to medical treatment. The percentage of disk herniations that require surgical intervention is less than 10%. In addition, the relationship between disk herniations and actual symptomatic disease is not linear, and many people with one fail to have the other.

Urinary stone disease (choice E) represents one of the most common problems of the urinary tract. Calcium, uric acid, struvite, or cystine stones within the renal pelvis that are nonobstructive can be followed medically without surgical intervention. The patient should be encouraged to increase fluid intake.
Q 212
A 12-yr-old girl comes to the physician for an annual examination. She has been in good health for the past year and has no complains. She began having menses this year and after a few irregular cycles she is now having regular monthly periods. Past medical history is significant for multiple episodes of otitis media as a child. Past surgical history is unremarkable. She takes no medications and has no known drug allergies. Physical examination is unremarkable. If not currently immune, which of the following immunizations should this patient most likely receive?

A. Hepatitis B virus immunization.
B. HIV immunization.
C. Japanese encephalitis virus immunization.
D. Rabies virus immunization.
E. Salmonella typhi immunization.

EXPLANATION
The correct answer is A. Hepatitis B virus can cause significant morbidity and mortality. It is spread through sexual and blood-borne contact. In fact, it is the only sexually transmitted disease for which there is a widely available and accepted immunization to prevent the disease. The current recommendations are for universal vaccination against hepatitis B for adolescents to be given at ages 11 to 12. Older adolescents and adults should receive the vaccine on the basis of risk status, although several groups recommend universal vaccination of adolescents. This patient is 12 years old. Therefore, she should receive hepatitis B vaccination.

Trials are under way to test HIV immunization (choice B). At present, however, there is no widely available and accepted vaccine to be used universally.

Japanese encephalitis virus immunization (choice C) and rabies virus immunization (choice D) are two immunizations that can be given to travelers going to endemic areas or in situations where infection with Japanese encephalitis virus or rabies virus may occur. Universal vaccination against these two viruses is not recommended.

Salmonella typhi immunization (choice E) is used to prevent infection with Salmonella typhi. This bacterium is the cause of the infection commonly known as typhoid fever. This vaccine is recommended to people traveling to areas in which such infection is likely to occur. Universal vaccination is not recommended.
A 72-yr-old man with a 25-year history of emphysema presents to his physician after he developed the acute onset of rigors, fever and a cough productive of green sputum. The symptoms gradually worsened over the next 36-hours and he presents to the ER. He has been taking beclomethasone inhaler twice daily and albuterol nebulizer treatment at home four times daily. He has been taking erythromycin for a recent bronchitis. On physical examination he is 183-cm tall (6-feet) and weighs 85-kg. His temperature is 38.3°C (100.9°F), blood pressure is 162/92, pulse is 94 and respirations are 32/min. Lung examination reveals diffuse bilateral coarse ronchi. He uses his sternoclidomastoid for each inspiration. An arterial blood gas reveals a pH of 7.2, pCO₂ of 60 mmHg and pO₂ of 52 mmHg. Over the next 2-hours he becomes increasingly tachypneic and his pCO₂ rises to 72 mmHg. The decision is made to intubate him. Which of the following settings would be most appropriate for his tidal volume on his respirator.

A. 500 mL/breath.
B. 600 mL/breath.
C. 700 mL/breath.
D. 850 mL/breath.
E. 1000 mL/breath.

EXPLANATION

The correct answer is D. The tidal volume for a patient is generally estimated as 10 mL/kg of weight, which for this patient would be 850 mL/breath. Giving a lower tidal volume will yield hypoventilation and be insufficient to eliminate pCO₂. Providing a tidal volume greater than 10 mL/kg increases the risk of pneumothorax, particularly in a patient with longstanding emphysema who may have thin-walled alveoli.

A low tidal volume with risk of hypoventilation would be produced by choice A (500 mL/breath), choice B (600 mL/breath), and choice C (700 mL/breath).

A high tidal volume with risk of pneumothorax would be produced by choice D (1000 mL/breath).
A 65-yr-old retired accountant with a 60-pack/year smoking history presents for his annual physical examination. He was last seen 3-years ago when he had episode of chronic bronchitis. He reports that he has been coughing for last several months with productive green sputum. He denies any dyspnea or limitation on his daily activities. On physical examination his blood pressure is 126/62, pulse is 80 and respirations are 24. He has diffuse bilateral expiratory ronchi and markedly prolonged expiratory phase. His cardiac examination reveals a second heart sound that increases in intensity with inspiration. The liver edge is 14-cm and to the mid-clavicular line and is mildly tender to palpation. There is bilateral lower extremity edema to the knees. A chest x-ray film reveals hyper-inflation of both lung fields. The pulmonary function tests reveals FEV-1/FVC ratio. Routine labs are sent. Which of the following is most likely expected.

A. Hb of 9 gm/dl.
B. Hb of 17 gm/dl.
C. A platelet count of 84,000.
D. A platelet count of 102,000.
E. A white blood cell count of 3,400.

EXPLANATION

The correct answer is B. A hemoglobin of 17 g/dL would be expected. The question describes a patient with chronic obstructive pulmonary disease (COPD) confirmed by his physical examination, which also suggests right-sided heart failure, loud P2, and hepatic congestion and peripheral edema due to right-sided heart failure. The pulmonary function tests are consistent with the diagnosis of obstructive airway disease. Given the long history of smoking, this patient most likely has COPD. Because of chronic hypoxia, these patients also develop erythrocytosis in an effort to increase the oxygen carrying capacity.

Choice A would be seen in anemia.

There is no reason for this patient to develop thrombocytopenia (choices C and D) or leukopenia (choice E).
A 5-yr-old girl presents with a three-day history of dyspnea, fever and intermittent joint pain. She has a history of sore throat about one month ago. On physical examination her temperature is 39.2°C (103.2°F), blood pressure is 94/60 and pulse is 114 and respirations are 22. Her knees and elbow joints are swollen and tender to palpation. There is a grade III/VI systolic murmur heard best at the apex, multiple fine macules are noted on her trunk and the macules are blanching in the middle. Which of the following is the most likely diagnosis.

A. Juvenile rheumatoid arthritis.
B. Lyme's disease.
C. Rheumatic fever.
D. Scarlet fever.
E. Septic arthritis.

EXPLANATION

The correct answer is C. Rheumatic fever is an inflammatory disease, possibly autoimmune in nature. Immune responses to group A streptococcal antigens during pharyngitis resulting in antibody cross-reactions with myocardial antigens remain central to the pathogenesis. Rheumatic fever involves many tissues, including the heart, joints, skin, and CNS. Preceding infection with group A Streptococcus is a prerequisite to the development of acute rheumatic fever. Initially, fever, dyspnea, chest pain, and cardiac murmur develop. The Jones criteria* for diagnosis are listed below:

Major: Carditis, Erythema marginatum and subcutaneous nodules, Sydenham's chorea, Arthritis

Minor: Fever, Polyarthralgias, Reversible prolongation of the PR interval, Elevated erythrocyte sedimentation rate, Recent beta-hemolytic streptococcal infection, History of rheumatic fever.

*Two major criteria or one major and one minor criterion establish the diagnosis.

The initial episode of rheumatic fever can be prevented by early treatment of streptococcal pharyngitis. Optimal therapy is intramuscular benzathine penicillin G as a single dose. Penicillin VK or amoxicillin for 10 days can also be used. For the penicillin-allergic patient, either erythromycin succinate for 10 days or azithromycin for 5 days is effective.
Juvenile rheumatoid arthritis (choice A) is characterized by chronic synovitis and systemic inflammatory manifestations. It does not present with carditis.

Lyme disease (choice B) may begin with migratory polyarthralgias and progress to attacks of asymmetric oligoarthritis in large joints. Erythema chronicum migrans, the diagnostic annular red lesion at the site of the tick bite, occurs in 50% to 80% of cases during the early phase of illness. Cardiac involvement is atypical.

Septic arthritis (choice E) is an infection of the synovial cavity. It does not follow a strep pharyngitis and does not cause carditis or valvular deformities.
A woman comes to the clinic with her thirteen-year-old grandson stating that he has behavioral problems for the past four years. He is living with her because his mother is in drug rehabilitation center. She states that he has run from home twice and has been kicked of school bus for threatening other kids and challenging the driver. He is about to be expelled from the school for extorting money from other kids. Which of the following is the most likely diagnosis.

A. Attention deficit hyperactivity disorder.
B. Conduct disorder.
C. Intermittent explosive disorder.
D. Oppositional defiant disorder.
E. Rett syndrome.

EXPLANATION

The correct answer is B. Conduct disorder is a childhood/adolescent disorder defined as a pattern of behavior in which the basic rights of others are violated with three or more of the following present in the past 12 months: destruction of property, cruelty to animals and people, deceitfulness or theft, and serious violations of rules. It causes clinically significant impairment in social functioning and it is reserved for patients younger than 18.

Attention deficit/hyperactivity disorder (choice A) requires the presence of six symptoms of inattention for at least 6 months to a degree that is maladaptive and six symptoms of hyperactivity/impulsivity that cause social impairment. Symptoms are present in two or more settings (e.g., home and school), and some of the symptoms are present before age 7. The symptoms are not due to a general medical condition or other mental disorder.

Intermittent explosive disorder (choice C) is diagnosed in adults only after several episodes of failure to resist aggressive impulses that lead to assaults or destruction of property. The degree of episodes is not proportionate to precipitating stressor. The disorder is not due to any other mental disorder or general medical condition.

Oppositional defiant disorder (choice D) is a pattern of negativistic and defiant behavior lasting at least 6 months with four or more of the following: loss of temper, arguments with adults, defying rules, deliberately annoying other people, blaming others for own faults, presence of vindictive behavior, presence of anger, and resentment.

Rett syndrome (choice E) belongs to the pervasive developmental disorders. After a normal development, the onset of disorder is between 5 and 48 months and is characterized by deceleration of head growth, loss of previously acquired purposeful hand skills, loss of social engagement, poor coordination of movements, motor mannerisms, and preoccupation with parts or objects. There is no delay in language or cognitive development.
A 22-yr-old woman gravida 2, para 0, at 8-weeks gestation comes to the physician for a prenatal visit. She has no complains, her first pregnancy resulted in a 22-week loss when she presented to her physician with bleeding from vagina, fully dilated and delivered the fetus. Examination today is unremarkable. She declines to have a circlage placed. When should this patient start having regular cervical examinations.

A. 10 weeks.
B. 16 weeks.
C. 22 weeks.
D. 28 weeks.
E. 37 weeks.

EXPLANATION

The correct answer is B. This patient has an obstetrical history that is consistent with abnormal cervical competence. This diagnosis may be made when the patient has a history of painless cervical dilation in the second trimester. Cervical incompetence is a cause of second-trimester pregnancy loss and preterm delivery. Cervical incompetence may be congenital and/or acquired. Women who have had previous trauma to the cervix (e.g., dilation of the cervix, cervical conization, or obstetric trauma) and women with mullerian anomalies, or a history of in-utero exposure to diethylstilbestrol may be at increased risk. This patient, given her history, was offered a cerclage. Cerclage is a procedure in which a suture is placed at the level of the internal os after bladder dissection (Shirodkar) or as high up on the cervix as possible (McDonald). A prophylactic cerclage is placed between 12 and 16 weeks' gestation. Once the cerclage is placed, the patient should not engage in sexual intercourse, prolonged standing, or heavy lifting. This patient, however, refused to have a cerclage placed. Given her history, however, she needs to be followed closely to ensure that any signs of cervical incompetence are detected as soon as possible. Regular examinations of the cervix, either digitally or with ultrasound, should begin at 16 weeks because cervical incompetence becomes a concern during the second trimester.

Starting regular examinations at 10 weeks (choice A) is unlikely to be helpful. Cervical incompetence most often manifests itself in the second or third trimester.

Starting regular examinations at 22 weeks (choice C) or 28 weeks (choice D) would not be correct, as these gestational ages may be too late to detect cervical changes. This patient lost her last pregnancy at 22 weeks, which means that her cervix may have started changing several weeks earlier. To wait until 22 or 28 weeks would risk missing cervical changes and the possibility of instituting changes (e.g., bed rest, hospitalization, or cerclage placement) to help prevent pregnancy loss.

37 weeks (choice E) is the time at which a cerclage should be removed. In a woman with a history of a 22-week loss, waiting until 37 weeks to start checking the cervix regularly would not be appropriate.
Q-218
A 67-yr-old man shows up in the ER because he has not been able to work for the past 12-hours. He feels the need to but he cannot do it. He gives the history that for several years now he is getting 4-5 times a night to urinate and it gets him quite a long time to get his urinary stream going, the stream lack force and often ends in a dribble. Because of a cold he began taking an anti-histamine, a decongestant and was drinking plenty of fluids. Physical examination shows a palpable, smooth, round mass arising from pubis and reaching about the halfway to the umbilicus. The mass is dull to percussion and pushing on it accentuates the feeling of needing to void. On rectal examination reveals a large, boggy, non-tender prostate gland without nodules. This is a classic presentation of which of the following acute conditions.

A. Bacterial prostatitis.
B. Cystitis in a patient with bladder cancer.
C. Renal failure.
D. Urinary retention in a patient with benign prostatic hypertrophy.
E. Urinary retention in a patient with prostatic cancer.

EXPLANATION

The correct answer is D. The history and rectal examination findings are classic for benign prostatic hypertrophy. The use of a decongestant has led to stimulation of alpha adrenergic receptors, which have further closed the bladder neck. A big, palpable bladder has resulted.

Bacterial prostatitis (choice A) would produce pain, fever, and a very tender prostate on rectal examination.

Cystitis and bladder cancer (choice B) could be expected to produce irritative symptoms and hematuria, but not painless retention.

Renal failure (choice C) produces oliguria, not anuria. The bladder would be empty and thus not palpable. The patient would urinate small amounts and feel no need to urinate more.

Prostatic cancer (choice E) is usually first felt as a stony hard nodule. It would be unusual for it to grow to a size at which complete obstruction is the first manifestation. If it did, though, the prostate would feel stony hard.
Q-219
A 40-yr-old man is brought in for evaluation by the coastguards after the small plane he was piloting crashed into the ocean. The man’s wife and two friends were also on the plane. The man has survived the crash with scratches and a broken arm but he claims that he has no memory of the crash and how he escaped the crash. He also is unable to explain how he got his life jacket on. His physical examination is significant only for minor lacerations and a fractured right humerus and he has no alteration in his consciousness. A CT-scan is normal. He is very upset that the fate of his wife is unknown and he has the nightmares for next several nights while asleep. Which of the following is the most likely diagnosis.

A. Dissociative amnesia.
B. Dissociative fugue.
C. Dissociative identity disorder.
D. Factitious disorder.
E. Transient global hypoxia.

EXPLANATION

The correct answer is A. In this instance, an extremely stressful event has been followed by localized loss of memory or amnesia of circumstances surrounding the event, making the diagnosis of dissociative amnesia the most likely diagnosis. Dissociative amnesia is often accompanied by nightmares and anxiety concerning the event, both of which this patient also has.

Dissociative fugue (choice B) is a disturbance of identity that requires a sudden, unexpected travel away from home or one’s place of work, with inability to recall one’s past.

Dissociative identity disorder (choice C) is also a disturbance of identity. It requires the presence of two or more distinct identities or personality states, which recurrently take control of the person’s behavior. This is popularly known as multiple personality disorder.

Factitious disorder (choice D) is a diagnosis requiring intentional production of symptoms and gratification from assuming the sick role.

Transient global hypoxia (choice E) is not a likely diagnosis given this patient’s lack of altered consciousness following this event.
Q-220

A 27-yr-old pharmacist presents for her annual physical examination. She describes that over the past several months she has woken up from sleep with cough, shortness of breath and wheezing but denies having these symptoms during the day. The symptoms generally last for up to two hours before subsiding. She has no previous history of asthma and exercise regularly without difficulty. She is on no medications except for the frequent use of over-the-counter histamine-H\(2\) receptor antagonist for daily heartburn. She is afebrile and has normal vital signs. Her lungs are clear to auscultation and percussion. Which of the following is the most likely explanation for her nocturnal symptoms.

A. Acid reflux.
B. Laryngospasm.
C. Mast cell release.
D. Mucous plugs.
E. Upper respiratory obstruction.

EXPLANATION

The correct answer is A. This patient has typical symptoms of the extra-esophageal manifestations of gastroesophageal reflux disease (GERD). At night, while she is supine, acid may reflux across the upper esophageal sphincter and into the upper airway, triggering bronchoconstriction and her asthmatic symptoms. The history of GERD is suggested by her baseline symptoms of heartburn requiring histamine-2 receptor antagonists. The treatment for these patients is acid reduction directed at the underlying GERD process.

Laryngospasm (choice B) does not present with cough and wheezing, but with hoarseness and stridor.

Mast cell release (choice C) is the mechanism whereby exercise-induced asthma occurs.

Mucus plugs (choice D) can occur in patients with copious secretions, which may cause transient airway obstruction.

Upper airway obstruction (choice E) may occur during sleep in patients with sleep apnea, but there are no signs or symptoms to suggest this syndrome in this patient.
Q-221
A 35-yr-old male with end-stage renal disease presents with syncope. The patient denies chest pain or dyspnea. Physical examination is remarkable for left extremity AV fistula. His creatinine is 14 mg/dl and BUN 88 mg/dl and potassium is 8.8 Meq/L. ECG reveals sinus bradycardia with a sine-wave pattern. Which of the following is the most appropriate next step in management.

A. IV calcium gluconate.
B. IV dextrose.
C. IV furosemide.
D. IV sodium bicarbonate.
E. Rectal kayexelate.

EXPLANATION

The correct answer is A. IV calcium will work very rapidly to counteract the effect of the high potassium on the heart and muscle and should be given first. The calcium will not actually lower the level of potassium, however. All of the other agents are good at lowering potassium, but do not have the same immediate effect to spare the muscle that calcium has. Therefore, these agents should be given after IV calcium when there are severe ECG changes.
Q-222
A 22-yr-old college student is brought to the ER after being found unarousable by his roommates in the morning. He had complained of severe headache the night before. His temperature is 39.6 C (103 F), physical examination reveals nuchal rigidity and patechie over both legs. Chest x-ray films are unremarkable. After fundoscopic examination a lumber puncture is performed, CSF appears cloudy. Lab studies of CSF sample shows cells 8,000/mm$^3$ mostly neutrophils, proteins 6 gm/l, glucose 0.3 gm/l, plasma glucose/CSF glucose < 0.4. On microscopic examination no bacterial or fungal microorganisms are detected in the CSF. Which of the following is the most likely pathogen.

A. E.coli.
B. Group B streptococci.
C. Haemophilus influenzea.
D. Listeria monocytogen.
E. Meningococcus.
F. Pneumococcus.

EXPLANATION

The correct answer is E. The clinical presentation, with nuchal rigidity, fever, and obtundation, is characteristic of acute meningitis. The CSF findings are diagnostic of this acute bacterial infection. Acute bacterial meningitis is associated with CSF pleocytosis (mostly due to neutrophilia), increased protein, and decreased glucose. Furthermore, the patient’s age and finding of petechiae point to meningococcus as the most likely pathogen. Meningococcus is the most common etiologic agent of cases affecting young immunocompetent adults. Sometimes, but not always, gram-negative cocci can be detected on gram-stained samples of the CSF. CSF cultures, however, allow isolation of meningococcus unless the patient has already received antibiotic treatment (partially treated meningitis). In any case, antibiotic treatment with penicillin should be immediately started soon after submitting a sample of CSF for culture studies. Antibiotic therapy may then be optimized according to culture and antibiotic sensitivity results.

Escherichia coli(choice A) and group B streptococci (choice B) are the most common etiologic agents in infants. In this age group, bacterial meningitis may manifest with nonspecific symptoms, such as fever, poor feeding, and excessive crying.

Hemophilus influenzea(choice C) has become a relatively rare cause of meningitis since the introduction of mandatory immunization against this bacillus.

Listeria monocytogenes(choice D) is now a frequent cause of meningitis in infants younger than 2 months and in immunocompromised adults.

Pneumococcus (choice F) is the most common agent causing purulent meningitis in the elderly.
Q-223
A 40-yr-old woman is evaluated by a dermatologist because she has many pigmented lesions on her body. Examination of skin and scalp demonstrate over a hundred separate lesions, most of which vary in size in from 5-12 mm. They are found all over her body but mainly on sun-exposed skin. They are predominantly round in shape, but some have subtly notched borders and are slightly asymmetrical. The woman's entire skin surface is photographed and when the photographs are repeated 6-months later no changes are noted. Which of the following is the most likely diagnosis.

A. Compound nevi.
B. Dysplastic nevi.
C. Halo nevi.
D. Lentigos.
E. Malignant melanomas.

EXPLANATION

The correct answer is B. Pigmented, mole-like lesions are very common in the general population, and virtually every physician needs to develop some skill in distinguishing obviously benign lesions from potentially malignant ones. Dysplastic nevi are an intermediate category between obviously benign nevi and malignant melanoma. While not considered cancerous themselves, they do have an increased rate of progression to melanoma. Isolated dysplastic nevi are often excised to remove the melanoma risk. More problematic are cases like this one, in which large numbers of dysplastic nevi are present. In this situation, careful monitoring with serial photographs can identify any changing lesions which may be undergoing malignant transformation.

Compound nevi (choice A) are usually dark, typically elevated, 3 to 6 mm lesions with a very regular shape; most people have about 10 of these lesions.

Halo nevi (choice C) are flesh-colored or dark nodules, usually 3 to 5 mm, surrounded by a ring of depigmented skin.

Lentigos (choice D) are flat, sharply marginated, uniformly pigmented, 2 to 4 mm diameter skin lesions.

Malignant melanomas (choice E) are often quite asymmetrical in shape and the color varies more widely than in dysplastic nevi, potentially showing tan, brown, black, blue, red, or clear areas.
Q-224
A 21-yr-old professional dancer complains of several episodes of near loss of consciousness during a performance. She has been in excellent health and is principal dancer in a New York city ballet corps. She has no family history of coronary artery disease. She does not smoke and a recent cholesterol profile was normal. On physical examination her blood pressure is 144/88, pulse is 84 and regular. She has a brisk carotid up stroke with a double impulse palpable. She has a loud S4 and a harsh systolic murmur heard along the left sternal border. The murmur is accentuated during Valsalva maneuver. An ECG reveals severe left ventricular hypertrophy. Which of the following is the most appropriate medication in the management of this patient.

A. Captopril.
B. Digoxin.
C. Diltiazem.
D. Furosemide.
E. Propranolol.

EXPLANATION

The correct answer is E. This patient has the presentation of idiopathic hypertrophic subaortic stenosis, which is a frequent cause of syncope or near syncope in young patients. She has a characteristic murmur, which can be distinguished from other systolic murmurs by its increase with the Valsalva maneuver. Any maneuver that acts to decrease left ventricular size will increase the murmur of idiopathic hypertrophic subaortic stenosis because the obstructive component increases as the left ventricular cavity shrinks. Beta-blockers, such as propanolol, help relax the left ventricular smooth muscle and reduce ventricular outflow obstruction.

The angiotensin converting enzyme inhibitor captopril (choice A), the cardiotropic agent digoxin (choice B), and the diuretic furosemide (choice D) are variably effective in patients with dilated cardiomyopathy. However, they are potentially harmful in a patient such as this, who already has a hypertrophic ventricle and increased ejection fraction.

Diltiazem (choice C), a calcium channel blocker, has lesser effects than propranolol on the relaxation of ventricular smooth muscle.
Q. 225
A 60-yr-old woman complains of increasing fatigue over the past several months. She states that any physical activity leads to fatigue and she is unable to find any comfortable position at rest. She has lost 5-pounds in past three months. Prior to this she was healthy and is not on any medication. Physical examination is unremarkable. Which of the following is the most likely diagnosis.

A. Depression.
B. Hypokalemia.
C. Polymyalgia rheumatica.
D. Polymyositis.
E. Temporal arteritis.

EXPLANATION

The correct answer is C. Polymyalgia rheumatica (PMR) is characterized by muscle discomfort and patients often have vague symptoms. The neuromuscular examination is normal.

Depression (choice A) can cause fatigue and diminished activity but discomfort is less frequently a complaint.

Hypokalemia (choice B) can cause muscle weakness but discomfort is not a typical feature.

Polymyositis (choice D) can cause muscle discomfort but there should be accompanying weakness on examination. The serum creatine kinase (CK) is often elevated.

Temporal arteritis (choice E) can occur with PMR, but this patient is not complaining of headache or vision change.
A 29-yr-old man presents to the clinic complaining of generalized fatigue. Patient is new to the clinic and reports that over the past few weeks he has been feeling much more tired than usual. He also reports that this happens to him just almost every year and the other physician has told him that he is over worked. His systemic review is significant for frequent sneezing, post-nasal drip, eye watering and an itch of his posterior pharynx. These symptoms tend to be worse in the summers and springs and has been bothering him since mid-April about one month ago. His past history is significant only for mild asthma induced by being outdoors. He is on no regular medications but does take dyphenhydramine on occasions. He denies tobacco, ethanol or illicit substance use. Which of the following is the most appropriate diagnostic test at this time.

A. Blood radioallergosorbent test.
B. None, the diagnosis is based on history and physical examination.
C. Intradermal testing.
D. Serum protein electrophoresis.
E. Skin pric testing.

EXPLANATION

The correct answer is B. This patient most likely has seasonal allergic rhinitis. It has been shown quite convincingly that the diagnosis is based on the history and physical alone and that further work-up is not cost-effective and should be reserved for refractory cases.

The blood radioallergosorbent test (choice A) reliably detects allergen-specific IgE antibodies in the serum and quantifies their concentrations.

Intradermal testing (choice C) involves the introduction of a measurable amount of allergen into the dermal layer of the skin.

Serum protein electrophoresis (choice D) is not routinely used to aid in the diagnosis of rhinitis. It is commonly used in the diagnosis of sickle cell disease and multiple myeloma.

Skin-prick testing (choice E) involves the application of a small amount of concentrated allergen to the skin; it is then "pricked" through to the epidermal layer. This type of testing is less sensitive than intradermal testing.
Q-227
A 34-yr-old African-American woman complains of dyspnea on exertion and a non-productive cough. She has been in good health except for a history of infectious mononucleosis while in the college. She does not drink or smoke. She has been monogamous with her husband since they were married 16-years ago. On physical examination her temperature is 38.3 °C (100.9 °F), blood pressure is 132/80, pulse is 74 and respirations are 20. There are purple areas of swelling on her nose and cheeks. The pharynx is clear. There are scattered cervical lymph nodes and clubbing of peripheral nail beds. Bilateral inspiratory crackles are heard on lung examination. There is regular S1 and S2. The liver span is 13-cm in the mid-clavicular line. The spleen tip is palpable. The chest x-ray film shows bilateral hilar lymphadenopathy. Which of the following would be the most appropriate next step in evaluation of this patient.

A. HIV antibody.
B. Cervical lymph node biopsy.
C. Transthoracic hilar lymph node biopsy.
D. Liver biopsy.
E. Splenectomy.

EXPLANATION
The correct answer is B. An African American woman with bilateral hilar adenopathy should always raise the suspicion of sarcoidosis. She has the facial findings of lupus pernio, and lymphadenopathy and hepatosplenomegaly are commonly seen with this condition. In evaluation of the differential diagnosis of hilar lymphadenopathy, a tissue diagnosis is essential to rule out other possibilities in the differential diagnosis, e.g., carcinoma, lymphoma, or tuberculosis. Among the diagnostic tests described, a cervical lymph node biopsy would be the least invasive method of obtaining tissue for diagnosis. In a patient with sarcoidosis, a biopsy will reveal noncaseating granulomas. This disease is typically found in African Americans, approximately 10 times more often than in whites. The disease usually presents between the ages of 20 and 40 and will most commonly involve the lungs, skin, eye (uveitis), and lymph nodes. A Bell palsy may also been seen with this condition. Hypercalcemia is an electrolyte abnormality that may be found in advanced cases.

Although HIV (choice A) and is in the differential diagnosis of a patient with diffuse lymphadenopathy and hepatosplenomegaly, there are no specific risk factors for HIV.

Transthoracic hilar lymph node biopsy (choice C), liver biopsy (choice D), and splenectomy (choice E) might also obtain tissue for evaluation, but they are much more invasive than cervical node biopsy.
Q-228
A 7-yr-old boy arrives in the ER in acute distress. Over the past three to four days he has become progressively ill with generalized fatigue and mold midabdominal pain that have become steadily worse. On physical examination he has a maculo-papular rash on his thighs and feet and some spread of his rash to his buttocks. This rash does not blanch and some lesions near the ankle look patechial or bruised. His temperature is 39 C (102.2 F) and he is drawing his legs to the chest for relief of his stomach pain. He is nauseated and vomited once before coming to the hospital. He has semi-soft dark stool, which is guaiac-positive. The boy has not voided since early morning and cannot provide a urine sample. The doctor determines that he is 10% dehydrated and asks the nurse to start IV fluids. Which of the following is the most likely diagnosis.

A. Pancreatitis.
B. Rocky mountain spotted fever.
C. Nephrotic syndrome.
D. Henoch-schonlein purpura.
E. Appendicitis.

EXPLANATION

The correct answer is D. Henoch- Schönlein Purpura (HSP) is the most likely diagnosis. This boy has abdominal pain with guaiac-positive stools, but also has a prominent rash, mostly on his lower extremities. Other characteristic findings of HSP include hematuria and joint pains. The illness may follow an upper respiratory infection or strep throat. The rash starts out as an urticarial rash and progresses to become petechial and purpuric. There may be a history of migratory joint pain and arthritis. Affected joints include ankles, knees, wrists, and elbows.

If the abdominal pain were described as epigastric with radiation to the back, pancreatitis (choice A) might have been the likely diagnosis. In children, pancreatitis is frequently associated with viral illnesses (e.g., mumps), drugs (e.g., sulfonamides), or underlying systemic disease (e.g., lupus). Although pancreatitis has been reported in association with HSP, it is not the most likely diagnosis.

Rocky Mountain spotted fever (choice B) is one of the most common tick-borne diseases. The typical rash of RMSF appears within a week of the tick bite. It begins on the palms, soles, and extremities and spreads centrally. Severe headache and photophobia are common complaints.

This child did not have the typical findings of nephrotic syndrome (choice C) including: proteinuria, edema, and oliguria. Nephrotic syndrome frequently follows an infectious illness.

In the classic case of appendicitis (choice E) periumbilical pain progresses with localization to the right lower quadrant. Anorexia, nausea, vomiting and changes in bowel movements may all occur. Fever is typically low-grade and rash is not present.
Q-229
3-hours after an uneventful appendectomy a previously healthy except appendicitis 78-yr-old man becomes confused and disoriented. He repeatedly asks the nurse where he is and his speech pattern is disorganized and rambling. His temperature is 37 C (98.6 F), blood pressure is 120/80, pulse is 70 and respirations are 18. The patient is uncooperative, shows no physical abnormalities, mental state examination is not possible because of an altered state of consciousness. Lab studies show no abnormalities. Which of the following is the most likely diagnosis.

A. Adjustment disorder.
B. Brief psychotic disorder.
C. Delirium.
D. Delusional disorder.
E. Dementia.

EXPLANATION

The correct answer is C. This patient has delirium, which is also called acute confusional state. It is very common in hospitalized and institutionalized elderly individuals. It is characterized by a rapid onset of impaired cognition, altered level of consciousness, disturbances in attention and psychomotor activity, and altered sleep-wake cycles. The symptoms tend to fluctuate and it is usually reversible when the underlying disorder is identified and treated. Common causes include psychologic and physical stress (for example, surgery), metabolic disturbances, neoplasms, infections, medications, cerebral and cardiovascular diseases, and withdrawal from alcohol and prescription medications.

Adjustment disorder (choice A) is a maladaptive response to a stressful event. The symptoms include mood disturbances, behavioral changes, and impaired functioning. It usually resolves within 6 months.

Brief psychotic disorder (choice B) is characterized by the abrupt onset of psychotic symptoms, including hallucinations, delusions, and disorganization with impaired functioning. It is present for more than 1 day, but less than 1 month. It is usually preceded by a stressful life event.

Delusional disorder (choice D) is characterized by the presence of nonbizarre delusions that last for more than 1 month. Functioning is not usually impaired. Antipsychotic agents and psychotherapy may be necessary.

Dementia (choice E) refers to the slow and insidious onset of cognitive and intellectual deficits with no changes in consciousness. The symptoms are stable and irreversible. The most common causes are Alzheimer disease and multi-infarct dementia.
A 32-yr-old woman gravida 3, para 2 at 37-weeks gestation comes to the physician for a prenatal visit. She has no current complaints. Her past medical history is significant for hepatitis C virus infection, which she acquired through a needle stick injury at work as a nurse. She is hepatitis B and HIV negative. She takes no medications and has no allergies to medications. Her prenatal course has been uncomplicated. She wants to know whether she can have contact with her baby and breast-feed him. Given her hepatitis C status which of the following is the most appropriate response.

A. There is no evidence that breast-feeding increases HCV transmission.
B. There is strong evidence that breast-feeding increases HCV transmission.
C. Complete isolation is not needed but breast-feeding is prohibited.
D. The patient should be completely isolated from the baby.
E. Casual contact with the baby is prohibited.

EXPLANATION

The correct answer is A. In the U.S., hepatitis C virus (HCV) is the most common blood-borne infection. HCV is a single-stranded RNA virus that is transmitted by blood-borne transmission or through sexual contact. With the disease being so prevalent—it affects 3.9 million Americans—it is not rare to find a pregnant patient with hepatitis C. In fact, it appears to infect as much as 0.6% of the pregnant population. Studies that have been performed so far show that the rate of infection of infants born to hepatitis C—positive, HIV-negative mothers is about 5%. Hepatitis C transmission through breast milk has not been clearly proven. Breast-fed and bottle-fed infants have a rate of infection that is approximately 4%. Therefore, the patient should be told that casual contact is permitted and that currently there is no evidence that breast-feeding increases HCV transmission to the baby.

To state that there is strong evidence that breast-feeding increases HCV transmission to the baby (choice B) is incorrect. As explained above, the available studies do not demonstrate that breast-feeding increases HCV transmission.

To state that complete isolation is not needed but breast-feeding is prohibited (choice C) is incorrect for the reasons detailed above.

To state that the patient should be completely isolated from the baby (choice D), or that casual contact with the baby is prohibited (choice E) are both incorrect for the reasons detailed above. If patients with hepatitis C were not allowed contact with their infants, they would have to give them up, because hepatitis C is a chronic disease. Fifty percent of patients with HCV develop biochemical evidence of chronic liver disease. Hepatitis C is not like varicella-zoster (chickenpox), where a neonate can be isolated from the mother until she is no longer infectious.
Q-231
A 55-yr-old woman has been known for years to have mitral valve prolapse. She has now developed exertional dyspnea, orthopnea and atrial fibrillation. She has an apical high-pitched systolic heart murmur that radiates to the axilla and back. Because of her deterioration condition surgery has been recommended. Which of the following is the most appropriate procedure.

A. Aortic valve replacement.
B. Mitral commissurotomy.
C. Mitral valve annuloplasty.
D. Mitral valve replacement.
E. Both aortic and mitral valve replacement.

EXPLANATION

The correct answer is C. The physical findings are classic for mitral valve insufficiency. Whenever possible, repair of the native mitral valve is preferable to replacement. The way to repair an insufficient valve is to tighten the annulus, bringing the leaflets closer to one another.

There are no physical findings indicating involvement of the aortic valve; therefore, choices A and E are wrong.

Mitral commissurotomy (choice B) is the preferred operation for mitral stenosis. This patient has no signs of stenosis, and no history of rheumatic heart disease to suggest that she might have it.

Mitral valve replacement (choice D) is the choice when repair of the native valve cannot be done.
A 5-month-old infant presents with diarrhea and decreased activity for five days. On physical examination, his pulse is 162/min, his anterior fontanelle is sunken, and he has skin tenting. Investigations reveal potassium 5.8 Meq/L, sodium 165 Meq/L, chloride 128 Meq/L, bicarbonate 14 Meq/L, creatinine 0.9 mg/dl, and BUN 49 mg/dl. Eight hours after the IV reperfusion therapy has started, the infant developed generalized seizures. Which of the following is the most likely etiology of the seizure:

A. Hyperglycemia.
B. Hyperkalemia.
C. Idiopathic epilepsy.
D. Rapid correction of hypernatremia.
E. Rapid correction of metabolic acidosis.

EXPLANATION

The correct answer is D. The infant in this clinical vignette has developed hypernatremic (Na+ 165 mEq/L) dehydration from the diarrhea. Hypovolemic patients who have hypernatremia have a relatively greater loss of water than of sodium. Initial therapy requires administration of normal saline or Ringer's lactate to restore an effective circulating plasma volume. Five percent albumin solution or plasma also can be used. These patients require a hypotonic solution containing salt to restore the Na+ deficit (2-5 mEq/kg of body weight) and to begin the Na+ maintenance (3 mEq/kg of Na+ ) in a solution containing 20-40 mmol/L of KCl and 5% glucose. For a serum Na+ concentration of 150-160 mEq/L, this volume should be given over a 24-hour period. Because extracellular fluid osmolarity may fall more rapidly than the brain can dissipate the idiogenic osmoles generated to protect intracellular osmolarity, an elevated serum Na+ concentration should be corrected by no more than 10 mEq/L per day. For a serum Na+ concentration >160 mEq/L, the rehydration should be spread out over the number of days necessary to lower the Na+ concentration to 150 mEq/L at a rate of 10 mEq/day (e.g., 2 days for a Na+ of 170 mEq/L). Both the daily fraction of the deficit and the daily maintenance requirement should be provided. The degree of hypertonicity of the fluid administered is less important than the rate of correction. If hypernatremia is corrected too rapidly, the brain cells can be swollen beyond the cell volume restored by the osmoles, resulting in seizures.

Hyperglycemia (choice A) is not a common case of seizure.

Hyperkalemia (choice B) causes arrhythmias.

Idiopathic epilepsy (choice C) is much less likely in this clinical vignette.

Rapid correction of metabolic acidosis (choice E) does not cause seizures.
A young woman who sustained minor injuries after a motor vehicle accident is admitted to the hospital. During the observation period the intern notices that all her vital signs are increased and she seems confused, disoriented and delirious. On admission she states that she has been using medications to control her anxiety however, she ran out of it couple of days prior to accident. From which of the following medications this patient is experiencing withdrawl.

A. Alprazolam.
B. Buspirone.
C. Hydroxazine.
D. Nefazodone.
E. Paroxetine.

EXPLANATION

The correct answer is A. Alprazolam is a short-acting benzodiazepine with a rapid onset of action and a relatively short half-life. It is indicated for treatment of panic attacks and anxiety disorders in general. Given its properties, however, it also has a highly addictive potential. The abrupt discontinuation of its use may result in withdrawal delirium, seizures, or death.

Buspirone (choice B) is an antianxiety agent chemically unrelated to benzodiazepines, barbiturates, or sedative/anxiolytic drugs. It is indicated for the management of anxiety disorders. In human and animal studies, it has not shown potential for abuse or physical or psychological dependence.

Hydroxyzine (choice C) belongs to the piperazine group of antihistamines and is indicated for symptomatic relief of anxiety and tension and as an adjunct to treatment of organic diseases with anxiety present. Because of its sedative properties, it can be used in preanesthesia and it potentiates the effects of other CNS sedatives. Withdrawal delirium has not been reported.

Nefazodone (choice D) is an antidepressant structurally unrelated to MAOs, SSRIs, or tri- or tetracyclics. It is indicated for depression and not solely for anxiety disorders. Studies have not shown that it has any addictive potential or that its discontinuation causes delirium.

Paroxetine (choice E) is a selective serotonin reuptake inhibitor (SSRI) and is indicated in treatment of anxiety disorders. Paroxetine is not considered a controlled substance, and clinical trials have not revealed a tendency for drug-seeking behavior. Abrupt discontinuation may lead to flu-like symptoms, as with some other SSRIs, but not withdrawal delirium.
Q-234
A 54-yr-old obese man presents for a routine physical examination. He was diagnosed with type II diabetes one-year earlier. He has been moderately compliant with dietary precautions and his morning glucose has been persistently between 150 and 200 mg/dl. He is therefore started on glipizide. One-month later metformin is added because of continued poor control. His other medications are propranolol and nifedipine for hypertension and naproxen which he began approximately two-weeks ago for severe knee pain due to osteoarthritis. On physical examination his blood pressure is 154/92 and he has a soft fourth heart sound. The remainder of the physical examination is normal. His routine electrolytes are checked and reveal a BUN of 29 mg/dl and a creatinine of 1.8mg/dl (both had been normal one-year earlier). Which of his medications is most likely responsible for increased BUN and creatinine.

A. Glipizide.
B. Metformin.
C. Naproxen.
D. Nifedipine.
E. Propranolol.

EXPLANATION
The correct answer is C. The use of nonsteroidal anti-inflammatory drugs (NSAIDs), such as naproxen, may cause a usually mild renal insufficiency, possibly related to a mild interstitial nephritis or glomerulonephritis. Risk of NSAID-induced renal damage is increased in the elderly and in patients with underlying renal disease.

Glipizide (choice A), a second-generation sulfonylurea, may predispose patients to hypoglycemia but is not associated with renal toxicity.

Metformin (choice B) does not induce renal damage but should be used cautiously in patients with underlying renal damage because of the possibility of developing lactic acidosis.

Neither nifedipine (choice D) nor propranolol (choice E) has a tendency to adversely affect the kidneys.
Q-235
A 12-yr-old boy is brought to the ER by his parents because of several day history of progressive weakness. He has been a healthy child who has met all developmental milestones and his immunization is up-to-date. He reports that he had an upper respiratory tract infection two-weeks ago. His vital signs are labile with a pulse that ranges from 60-100/min and systolic blood pressure ranging from 80-120 mmHg. He is alert and oriented. Neurological examination is impressive for bilateral weakness in upper and lower extremities, deep tendon reflexes are absent and sensation is intact. Which of the following is the most likely diagnosis.

A. Guillain-Barre syndrome.
B. Myasthenia gravis.
C. Polymyositis.
D. Transverse myelitis.
E. Viral encephalitis.

EXPLANATION

The correct answer is A. The patient presents with a progressive, symmetric motor weakness as well as autonomic dysfunction. There are no sensory deficits or mental status changes. In this setting and with a history of a recent infection, the diagnosis of Guillain-Barré is most likely. Usually this is self-limited and only supportive therapy is needed. Paralysis of respiratory muscles may occur, requiring mechanical ventilation. Occasionally, steroids may be needed.

Myasthenia gravis (choice B) would present with progressive weakness as a result of antagonism at the acetylcholine receptors. Edrophonium effectively increases the concentration of acetylcholine at the neuromuscular junction and proves the diagnosis if symptoms transiently improve.

Polymyositis (choice C) is characterized by profound inflammatory involvement of skeletal muscle. When accompanied by cutaneous manifestations, it is termed dermatomyositis. The characteristic progressive symmetric proximal muscle weakness and atrophy are thought to be caused by a chronic inflammation of the muscles.

Transverse myelitis (choice D) is seen in neurologic diseases such as multiple sclerosis. It may present acutely with signs and symptoms referable to a particular spinal cord level. Spastic paraparesis, loss of sensation below the level of cord involvement, and incontinence are observed.

Viral encephalitis (choice E) is an inflammatory process involving the brain. It usually presents with altered mentation and seizures. With the exception of herpes simplex encephalitis, which is treated with antivirals, the treatment is supportive.
Q-236
A 72-yr-old man comes to the physician because of a three-day history of right-sided chest pain. He denies any nausea or vomiting or shortness of breath. Physical examination shows unilateral maculo-papular, erythematous rash extending from anterior chest wall around to the back in a dermatomal pattern, the remainder of the examination is normal. In conversation he states that he is going to visit his grand children next-week and that their mother does not believe in immunization. His grand children are at increased risk of which of the following rashes.

A. Discrete maculo-papular lesion that become confluent as they spread from head to toe.
B. Dome shaped papules with central umblication.
C. Expanding annular lesions with central clearing.
D. Slapped cheek appearance in a lacy reticular rash.
E. Vesicles at various stage of evolution.

EXPLANATION

The correct answer is E. This patient has herpes zoster, which is a reactivation of the varicella-zoster virus (VZV) that was dormant in the dorsal root ganglion. Zoster (shingles) affects individuals in the 6th to 8th decades. It is characterized by pain, fever, and a dermatomal erythematous vesicular rash. Treatment includes antiviral therapy. Individuals with herpes zoster are contagious and can spread the VZV virus. Chickenpox (varicella) is characterized by a vesicular rash at various stages of evolution. The varicella vaccination is recommended at 12 months, however if the grandchildren have not been immunized, they may develop chickenpox.

Discrete maculopapular lesions that become confluent as they spread from "head to toe" (choice A) is the typical presentation of measles, which is caused by a paramyxovirus. It is associated with cough, conjunctivitis, coryza, and Koplik's spots.

Dome-shaped papules with central umbilication (choice B) is the description of molluscum contagiosum, caused by a poxvirus.

An expanding annular lesion with central clearing (choice C), also known as erythema chronicum migrans, is the rash of Lyme disease, caused by Borrelia burgdorferi (after a tick bite). The rash begins as an erythematous macule that expands with central clearing, leading to the typical "bull's eye" lesion.

A"slapped-cheek" appearance and a lacy reticular rash (choice E) is the description of the rash of erythema infectiosum (Fifth disease), which is caused by parvovirus B16.
A 15-yr-old girl presents to a pediatric cardiology clinic with a complaint of chest pain. She states that the pain has come and gone over the past year but has increased in frequency over the past few weeks. She describes it as a sharp pain over her left chest. Physical examination reveals a healthy appearing 15-yr-old girl. Her temperature is 37.2 C (99 F), pulse is 90, respiratory rate is 20. Lung examination is normal. Cardiac examination reveals a late systolic murmur preceded by a click at the apex, no heave or rub is present. An ECG and chest x-ray films are unremarkable. Which of the following is the most likely diagnosis.

A. Atrial septal defect.
B. Mitral regurgitation.
C. Mitral stenosis.
D. Mitral valve prolapse.
E. Tricuspid regurgitation.

EXPLANATION

The correct answer is D. An apical click followed by a late systolic murmur is classic for mitral valve prolapse. It can be a source of subjective chest pain in children. Mitral valve prolapse is more common in females. Antibiotic prophylaxis is recommended prior to dental procedures.

An atrial septal defect (choice A) is characterized by a fixed and widely split second heart sound.

Mitral (choice B) and tricuspid regurgitation (choice E) produce holosystolic murmurs with relatively uniform intensity. Mitral regurgitation is heard at the apex while tricuspid regurgitation is best heard along the lower left sternal border.

Mitral stenosis (choice C) is characterized by a mid-diastolic murmur heard after an opening snap.
Q-238
2-weeks after receiving an allogenic bone marrow transplant for treatment of acute myelogenous leukemia a 45-yr-old man develops fever, intractable diarrhea, generalized rash and a non-productive cough. Chest x-ray film shows bilateral interstitial infiltrates in the lung. The patient dies of sepsis and multi-organ failure. Autopsy investigations reveals cytomegalovirus pneumonia and extensive single cell necrosis in the intestinal epithelium in the skin. The complication of bone marrow transplantation is principally mediated by which of the following cells.

A. B-lymphocytes of bone marrow graft.
B. Leukemic cells.
C. NK cells of recipient.
D. T-lymphocytes of bone marrow graft.
E. T-lymphocytes of recipient.

EXPLANATION

The correct answer is D. Allogeneic bone marrow transplantation has become a frequent therapeutic approach to a variety of conditions, including leukemic diseases. The patient undergoing bone marrow transplantation is profoundly immunosuppressed and prone to developing opportunistic infections. The clinical picture described in this case is consistent with graft versus host disease (GVHD), in which T cells (both helper and suppressor cells) of the engrafted marrow react against the recipient’s antigens, thus triggering inflammation and injury to the host tissues. The most severely affected organs include the immune system, gastrointestinal tract, liver, skin, and lungs. This complication may be acute (this case) or chronic. CMV pneumonia is a frequent fatal complication in the acute stage. The chronic stage is characterized by progressive fibrosis of affected organs.

B-lymphocytes of a bone marrow graft (choice A) do not play a significant role in GVHD.

Leukemic cells (choice B) may give rise to recurrence of the original disease, which must be distinguished from GVHD. The combination of skin rash and opportunistic infections strongly favor GVHD. In addition, single cell necrosis in the epithelia of skin, GI tract, and liver is highly characteristic of GVHD.

Natural killer cells of the recipient (choice C) and T-lymphocytes of the recipient (choice E) play a crucial role in mediating rejection of allogeneic marrow transplants.
Q-239
A 43-yr-old primigravid woman at 10-weeks gestation comes to the physician for a prenatal visit. She is feeling well except for some occasional nausea. She had no bleeding from vagina, abdominal pain, dysuria, frequency or urgency. She has asthma for which she occasionally uses inhaler. Examination is normal for a woman at 10-weeks gestation. Urine dipstick is positive for nitrates and leukocyte esterase. A urine culture shows 50,000 CFU/ml of E.coli. Which of the following is the most appropriate next step in management.

A. Wait to see if symptoms develop.
B. Resent another urine culture.
C. Obtain a renal ultrasound.
D. Treat with oral antibiotics.
E. Admit for IV antibiotics.

EXPLANATION

The correct answer is D. Asymptomatic bacteriuria is present in 2 to 9% of pregnant women. An association between asymptomatic bacteriuria and preterm delivery/low birth weight has been demonstrated. Therefore, all pregnant women should be screened for asymptomatic bacteriuria early in the pregnancy, and women who demonstrate bacteriuria (defined as a clean-catch, midstream urine specimen with 25,000 to 100,000 colony forming units per milliliter of a single organism) should be treated. E. Coli is the organism that is isolated in roughly 80% of cases while other gram-negative organisms (e.g., Klebsiella, Enterobacter, and Proteus species) and gram-positive cocci (e.g. enterococci and group B streptococci) are responsible for the remainder. Antibiotic sensitivities are often available at the time of diagnosis of the asymptomatic bacteriuria, which will allow for correct choice of medications. A 3-day course of antibiotics may be given. Possible choices include trimethoprim-sulfamethoxazole, nitrofurantoin, and cephalaxin. Ampicillin and amoxicillin can also be used, but up to 1/3 of E. Coli isolates will be resistant to these drugs. Therefore, these drugs should be chosen only if the organism is sensitive. 10 days after completing the medication, the patient should have a follow-up urine culture as a test-of-cure.

Waiting to see if symptoms develop (choice A) is not appropriate. Bacteriuria, even without symptoms, has been shown to be associated with preterm labor and low birth weight. Asymptomatic bacteriuria should, therefore, be treated.

Resending another urine culture (choice B) would not be the most appropriate next step. This patient already has demonstrable bacteriuria and treatment should be instituted.

Admitting for intravenous antibiotics (choice E) or obtaining a renal ultrasound (choice C) would not be necessary. This patient has asymptomatic bacteriuria and not pyelonephritis; therefore, a 3-day course of oral antibiotics followed by a repeat culture 10 days later is all that is necessary.
Q-240
A 69-yr-old retired police officer presents with complaints of excruciating right foot pain. The pain began approximately 6-hours ago immediately on awaking. One night earlier he had gone out for a stake dinner and drank half of a bottle of wine to celebrate his recent retirement. His past medical history is significant for hypertension for which he takes hydrochlorothiazide. On physical examination he is afebrile but appears acutely uncomfortable, there is swelling and tenderness in right ankle and the first right toe. The lab studies show WBC of 12,400/mm$^3$ and a hematocrit of 39%. Serum electrolytes and LFTs are normal. Uric acid 4.1mg/dl (normal 2.5-5.5mg/dl). Which of the following will most likely be seen on joint arthrocentesis.

A. Gram-negative rods.
B. Gram-positive cocci pairs in chains.
C. Negatively birefringent needle crystals.
D. Negatively birefringent rhomboid crystals.
E. Positively birefringent needle shaped crystals.

EXPLANATION
The correct answer is C. This patient has the acute onset of podagra and ankle involvement as well, secondary to gout. These attacks often follow the ingestion of red meats and/or alcohol since both of these lead to transient hyperuricemia. Note that this patient has a normal serum uric acid, which may occur during an acute attack; however, all patients with gout have some history of hyperuricemia. The appropriate evaluation of an edematous joint is an arthrocentesis. Examination of the fluid under polarizing light microscopy in a case such as this will reveal the typical uric acid crystals, which appear as negatively birefringent needle-shaped crystals (compare with choice E) under polarizing light microscopy.

Although it is always important to consider the possibility of an infectious arthritis, this patient has no risk factors for either gram-negative bacteremias or arthritis (choice A).

The gram-positive cocci in pairs and clusters (choice B) are describing Streptococcus, but this organism does not cause joint involvement.

Rhomboidal crystals (choice D), when positively birefringent, are due to calcium pyrophosphate (pseudogout crystals), and the typical history of recent ingestion of alcohol or red meat would not usually be elicited.
A 41-yr-old man presents to the clinic complaining of chronic cough over the past 4 months which is now accompanied by hemoptysis. He denies smoking or any past medical condition. On physical examination his head and neck examination is normal. His lungs have diffuse bilateral rales. Cardiac examination is normal. Lab findings reveal a sodium of 142 Meq/l, potassium of 4.3 Meq/l, chloride of 110 Meq/l, bicarbonate of 24 Meq/l, BUN of 39 mg/dl and a creatinine of 2.9 mg/dl. Urinanalysis reveals microscopic hematuria and 4+ proteinuria. Which of the following serologic blood test would most help confirm the suspected diagnosis.

A. Anti-glomerular basement antibodies.
B. Anti-mitochondrial antibodies.
C. Anti-neutrophilic antibodies.
D. Anti-parietal cell antibodies.
E. Anti-smooth muscle antibodies.

EXPLANATION

The correct answer is A. The combination of hematuria and hemoptysis should always raise the possibility of Goodpasture syndrome. Anti-glomerular basement membrane antibodies are pathognomonic for this diagnosis.

Anti-mitochondrial antibodies (choice B) are found in patients with primary biliary cirrhosis.

The anti-neutrophilic cytoplasmic antibodies (choice C) are found in patients with Wegener granulomatosis. Wegener granulomatosis may also present with pulmonary and renal involvement but will have associated upper respiratory tract findings, e.g., sinusitis and sinus abscesses.

Anti-parietal cell antibodies (choice D) are found in patients with the autoimmune disease known as pernicious anemia.

Anti-smooth muscle antibodies (choice E) are found in patients with autoimmune hepatitis.
Q-242
A newborn infant is noted to have microcephaly after birth. His mother is 38-yr-old and she also has a 5-yr-old son who is mentally retarded and she had one previous second trimester miscarriage. In addition she has a genetic disease that require a special diet but she discontinued the diet many years ago. On physical examination the infant weight and length are both below the tenth percentile for his gestational age. He is also noted to have grade III systolic ejection murmur best heard at the lower left sternal border. Which of the following condition does the mother most likely have.

A. Fragile X syndrome.
B. Galactosemia.
C. Hypothyroidism.
D. Maple syrup urine disease.
E. Phenylketonuria.

EXPLANATION
The correct answer is E. The mother had phenylketonuria (PKU) early in her life. Many clinically normal female PKU patients, who were treated with diet early in life, discontinue dietary treatment and have marked hyperphenylalaninemia by the time they reach childbearing age. Most children born to such women are mentally retarded and microcephalic, and 15% have congenital heart disease, even though the infants themselves are heterozygotes. This syndrome, known as maternal PKU, results from the teratogenic effects of phenylalanine or its metabolites (which cross the placenta), affecting specific fetal organs during development. It is very important that maternal dietary restriction of phenylalanine is initiated before conception and continues throughout the pregnancy.

The biochemical abnormality in PKU is an inability to convert phenylalanine into tyrosine. With a block in the phenylalanine metabolism secondary to lack of phenylalanine hydroxylase, minor shunt pathways come into play. This produces metabolites, such as phenylpyruvic acid, phenyllactic acid, phenylacetic acid, and Ú-hydroxyphenylacetic acid, which are excreted in large amounts in the urine in PKU. Some of these abnormal metabolites are excreted in the sweat, and phenylacetic acid, in particular, imparts a strong musty or mousy odor to affected infants. It is proposed that excess phenylalanine or its metabolites contribute to the brain damage and mental retardation in PKU.

Homozygotes with this autosomal recessive disorder classically have a severe lack of phenylalanine hydroxylase, leading to hyperphenylalaninemia and PKU. Affected infants are normal at birth but, within a few weeks, develop a rising plasma phenylalanine level, which in some way impairs brain development. Usually by 6 months of life, severe mental retardation becomes evident. Seizures, other neurologic abnormalities, decreased pigmentation of hair and skin, and eczema often accompany the mental retardation in untreated children. Hyperphenylalaninemia and the resultant mental retardation can be avoided by restricting phenylalanine intake early in life. Hence, a number of screening procedures are routinely used for detection of PKU in the immediate postnatal period.
Fragile X syndrome (choice A) is an X-linked disorder that results in mental retardation of various degrees.

Galactosemia (choice B) is an autosomal recessive disorder of galactose metabolism that causes significant damage to the liver, eyes, and brain.

Congenital hypothyroidism (choice C) is associated with cretinism and severe mental retardation. It occurs in 1 in 7000 births and is amenable to in utero diagnosis and treatment.

Maple syrup urine disease (choice D) is a familial cerebral degenerative disease caused by a defect in branched chain amino acid metabolism and characterized by severe mental and motor retardation and urine with a maple-syrup-like odor.
A 40-yr-old woman is brought to the hospital after overdosing on alcohol and pills. In talking to a psychiatrist she denies any prior psychiatric problem but says that about a week ago her apartment burned down. She was trying to get a job before that happened but when she realized that she has lost every thing that she had and that moving-in with her family would probably not be possible she decided that she would take her own life. Which of the following is the most likely diagnosis.

A. Acute stress disorder.
B. Adjustment disorder.
C. Antisocial personality disorder.
D. Brief psychotic disorder.
E. Major depressive disorder.

EXPLANATION

The correct answer is B. Adjustment disorder is exemplified by a set of behavioral or emotional symptoms developing as a response to an identifiable stressor within 3 months after exposure to the stressor. The symptoms are excessive compared with what one would expect from the exposure, and they cause marked impairment in social functioning.

Acute stress disorder (choice A) is anxiety produced by extraordinary life stress. An event is relived in dreams and waking thoughts. The symptoms include re-experiencing, avoidance, and hyperarousal lasting less than a month.

Antisocial personality disorder (choice C) involves a pervasive pattern of violation of the rights of others after the age of 15, as indicated by a failure to conform to social norms, deceitfulness, impulsivity, irritability, disregard for the safety of others, and a lack of remorse.

Brief psychotic disorder (choice D) requires the presence of one or more of the following: delusions, hallucinations, or disorganized speech. Duration of an episode is 1 day up to 1 month, and it is not due to any other medical condition or substance abuse.

Major depressive disorder (choice E) involves the presence of depressed mood or anhedonia for at least 2 weeks on a daily basis in the past month, as well as the additional symptoms of changes in appetite, weight, sleep, energy, and concentration; the presence of guilt and suicidal ideation; and changes in psychomotor activity. The symptoms are not due to a medical condition or the use of substances.
Q-244

A 31-yr-old primigravid woman comes to the physician for a prenatal visit. She is known to be HIV positive. She also has asthma for which she uses an inhaler. She had a diagnostic laparoscopy for at the age of 20 for pelvic pain and has had no other surgeries. She has no known drug allergies. Extensive counseling is given to the patient regarding vertical transmission of HIV to the fetus. It is recommended to her that she takes antiretroviral therapy during pregnancy to decrease the vertical transmission rate, it is also recommended to her that she have a scheduled cesarian delivery. After consideration of these options the patient chooses not to have antiretroviral therapy and go for vaginal delivery. Which of the following represent rate of vertical transmission from the mother to the fetus in this patient.

A. 2%
B. 8%
C. 25%
D. 50%
E. 100%

EXPLANATION

The correct answer is C. Studies have demonstrated that in the absence of maternal treatment with antiretroviral therapy or scheduled cesarean delivery, the rate of vertical transmission is approximately 25%. Thus, all pregnant women should be offered HIV testing to identify those patients who are infected so that they may receive antiretroviral therapy and be offered scheduled cesarean delivery to decrease the rate of vertical transmission.

2% (choice A) represents the approximate rate of vertical transmission in women who receive antiretroviral therapy during the pregnancy and a scheduled cesarean delivery (i.e., a cesarean delivery prior to the onset of labor or rupture of membranes.)

8% (choice B) represents the approximate rate of vertical transmission when women are treated with antiretroviral therapy during pregnancy and the neonate is treated postpartum. This rate was identified in the landmark study from the Pediatric AIDS Clinical Trials Group 076 study. This study showed that antepartum, intrapartum, and postpartum zidovudine (ZDV) use would reduce the vertical transmission rate from 25% to 8%.

50% (choice D) and 100% (choice E) are incorrect.
A 22-yr-old gang member arrives in the ER with multiple gunshot wounds to the chest and abdomen. He has labored breathing and he is cyanotic, diaphoretic, cold and shivering. He is wide-awake and in normal tone of voice tells everyone that he is going to die. An initial survey reveals blood pressure of 60/40 and his pulse is 150 and barely perceptible. He is in obvious respiratory distress and has big distended veins in his neck and forehead. His trachea is deviated to the left and the right side is hyper-resonant to percussion with no breath sounds. Which of the following is the most appropriate initial step in management.

A. Emergency blood gases.
B. Immediate chest x-ray films.
C. Awake endotracheal intubation.
D. A 16-gauge needle inserted in the second intercostal space.
E. Pericardiocentesis.

EXPLANATION

The correct answer is D. This patient obviously has a tension pneumothorax on the right. The pressure needs to be relieved immediately, which insertion of a needle will do. Then, a formal chest tube should be inserted.

Blood gases (choice A) or chest x-ray films (choice B) are not needed to recognize the presence of a tension pneumothorax. These two studies will soon be done in this patient, but not before action is taken to save his life by prompt decompression of the tension pneumothorax.

A patient who is awake and alert and speaking with a normal tone of voice has a patent airway. At this moment, he does not need endotracheal intubation (choice C), although given his multiple injuries, he will probably end up having surgery and being intubated for that anesthetic.

Pericardiocentesis (choice E) assumes our first clinical diagnosis is pericardial tamponade. If he were still in shock and still had big distended veins after his pleural space had been decompressed, we might think that he also has a pericardial tamponade in addition to the tension pneumothorax. In fact, as the most pressing problems are resolved, we might uncover other reasons for his state of shock, such as internal bleeding. Right now, however, what is crying out for help is his right pleural space.
Q-246
A 58-yr-old man with known hepatitis C and cirrhosis complains of worsening fatigue and confusion over the past 5-days. He has been admitted three times in the past 4-months for variceal bleeding and has had ascites that has been refractory to high dose oral diuretic use. He also reports that over the past 48-hours he had a declining urinary output. On physical examination he is gaunt and jaundiced, he has tense ascites and a liver span of 7 cm in the midclavicular line. Lab studies reveal a WBC count of 4,600/mm$^3$, a hemoglobin of 9.4 g/dl and a hematocrit of 29%. His electrolytes reveal a BUN of 34 mg/dl and creatinine of 3.1 mg/dl. A urinary sodium is < 10 Meq/l. Which of the following is the most appropriate treatment for his elevated BUN and creatinine.

A. Large volume paracentesis.
B. Hemodialysis.
C. Meso-caval shunt.
D. Kidney transplantation.
E. Liver transplantation.

EXPLANATION
The correct answer is E. This patient with well advanced cirrhosis and portal hypertension has developed the onset of renal insufficiency consistent with hepatorenal syndrome. This occurs during the end stages of cirrhosis and is characterized by diminished urine output and low urinary sodium. In the setting of end-stage liver disease, renal vasoconstriction occurs, and the distal convoluted tubule responds by conserving sodium. Unless the renal function is allowed to deteriorate further, liver transplantation will reverse this vasoconstriction and kidney function will return to normal.

A large volume paracentesis (choice A) may relieve the ascites but will have no significant benefit on the impaired renal function.

There are no indications in this question to suggest that the patient requires acute hemodialysis (choice B).

A mesocaval shunt (choice C) is a surgical procedure that may decompress the portal pressure but will not have any benefit on renal function.

Renal transplantation (choice D) is of no value in this patient since the underlying lesion is in the liver; the kidneys will return to normal function if there is improvement in hepatic function.
A 51-yr-old presents to the ER with abdominal pain. He was well until two-days ago when he began to experience severe right upper quadrant pain radiating to the epigastric region. He reports temperature of 38.3 °C (101 °F) and some nausea and vomiting. His temperature is now 39.1 °C (102.3 °F), blood pressure is 130/70 and pulse is 90. Physical examination reveals tenderness in his right upper quadrant and abrupt cessation of inspiration on deep palpation of his right upper quadrant. Which of the following is the most appropriate management for this patient.

A. IV fluids and observation.
B. IV antibiotics and observation.
C. Admission to a surgical for next day surgery.
D. Urgent surgical evaluation for immediate surgery.
E. Urgent percutaneous drainage.

**EXPLANATION**

The correct answer is C. This patient has symptomatic cholecystitis. This complication is most commonly associated with long-standing gallstones and less frequently with severe illness (so-called acalculous cholecystitis). The therapy for such patients is usually prompt surgical removal of the inflamed gallbladder. If left in place, there is an increased risk of infection, abscess formation, or sepsis. All such patients should receive IV fluids, resuscitation, and, if very ill appearing, coverage with broad-spectrum antibiotics.

IV fluids and observation (choice A) and IV antibiotics and observation (choice B) are inappropriate since the patient requires surgery. Failure to recognize this fact will result in serious morbidity. Once the patient is appropriately referred, then fluids and possibly antibiotics are crucial components of therapy.

Urgent surgical evaluation for immediate surgery (choice D) is not appropriate since the patient appears stable, although febrile and uncomfortable.

Urgent percutaneous drainage (choice E) is an interventional radiology procedure that allows for drainage of the gallbladder. These procedures are usually reserved for very ill patients who could not tolerate surgery and general anesthesia.
A 30-yr-old man with a long history of seizures is medically managed with anticonvulsants. He now presents with repetitive generalized motor convulsions that have persisted for the last one-hour. After administration of IV benzodiazepines at a high dose his seizures stopped. Which of the following is the next course of action.

A. Electroconvulsive therapy.
B. IV pentobarbital.
C. IV phenytoin.
D. Oral carbamazapine.
E. Oral ethosuximide.

EXPLANATION

The correct answer is C. Administration of intravenous phenytoin should follow intravenous benzodiazepines. This is the usual protocol in the management of status epilepticus. Fast acting benzodiazepines have a duration of action of a few minutes. Unless there is a contraindication, the patient should receive a loading dose of phenytoin intravenously.

Electroconvulsive therapy (choice A) is used in the management of severe depression.

Intravenous pentobarbital (choice B) would be used if he were still seizing. However, at this time, inducing a pentobarbital coma is not needed.

Carbamazepine (choice D) is an effective anticonvulsant, but cannot be given intravenously or intramuscularly.

Ethosuximide (choice E) is indicated for the treatment of absence seizures.
Q-249
A 60-yr-old man comes to the office because of a lesion in his lower lip that has been growing for the past nine-months. It is painless and he is now here because his wife made him come. He has not seen a physician for the past 4-years. He works as a farmer and is exposed to the sun. On physical examination the lower lip is fixed to the lower aspect of the mandible. Which of the following is the most likely diagnosis.

A. Basal cell carcinoma.
B. Erythema nodosum.
C. Leukoplakia.
D. Melanoma.
E. Squamous cell carcinoma.

EXPLANATION

The correct answer is A. Basal cell carcinoma is the most common form of skin cancer and risk factors include sun exposure and ultraviolet radiation. Features include an ulcerated center with pearly, heaped up edges. Excision may be required.

Erythema nodosum (choice B) is a vascular disorder whose skin manifestations include erythematous and nodular lesions, especially on the anterior aspect of the tibia.

Leukoplakia (choice C) is an Epstein-Barr virus-related lesion that would be found on the lateral aspects of the tongue and is white in appearance.

Melanoma (choice D) has the maximum metastatic potential and may be nodular or radial. It may have irregular borders, may be of variegated coloration, and may be on any aspect of the body.

Squamous cell carcinoma (choice E) is the second most common form of skin cancer after basal cell carcinoma and would be most common on sun-exposed surfaces as well.
A 30-yr-old woman calls her new primary care physician to request a refill of her alprazolam which had been prescribed by her former physician for severe anxiety. Her new physician has only seen her once about a month ago when the patient made several superficial lacerations on her wrist during a fight with her boy friend. At that time she had been referred for emergency psychiatric evaluation. On telephone she describes intense anxiety related to an unstable relationship with her new boy friend’s binges on alcohol over the last few days, alternating irritability, anger and depression and recurrent vague suicidal thoughts without a plan or intent to harm her-self. Contact with her former physician reveals that these feelings and behaviors are unchanged over the five-years that he has seen her for routine health maintenance examination and minor illnesses. Which of the following is the most likely diagnosis.

A. Borderline personality disorder.
B. Dependent personality disorder.
C. Histrionic personality disorder.
D. Narcissistic personality disorder.
E. Schizotypal personality disorder.

EXPLANATION

The correct answer is A. The probable diagnosis is borderline personality disorder. This disorder is marked by a pervasive pattern of instability of interpersonal relationships, self-image, and affect, as well as marked impulsivity by early adulthood. Criteria for this diagnosis evident in this patient’s history include: affective instability marked by severe anxiety, irritability, and depression, inappropriate and intense anger, impulsivity as made evident by cutting behavior and binges on alcohol, a pattern of unstable and intense relationships, and recurrent suicidal ideation and behaviors. The chronicity of these behaviors also supports this diagnosis.
Dependent personality disorder (choice B) is characterized by an excessive need to be taken care of, which leads to submissive and clinging behavior and fears of separation.

Histrionic personality disorder (choice C) is a cluster B personality disorder, like borderline personality disorder. Histrionic patients need to be the center of attention, and exhibit a pattern of excessive emotionality and attention seeking, seductive or provocative behavior, shallow expressions of emotion, self-dramatization, suggestibility, and an impressionistic style of speech.

Narcissistic personality disorder (choice D) is also a cluster B personality disorder. This disorder is characterized by a pattern of grandiosity, need for admiration, and lack of empathy.

Schizotypal personality disorder (choice E) is characterized by a pattern of social and interpersonal deficits marked by acute discomfort with, and reduced capacity for, close relationships, as well as by cognitive or perceptual distortions and eccentricities of behavior.
Q-251

A 9-month-old girl has had one serious infection after another since about 3-months of age including thrush, pneumonias and diarrhea. The baby is small for age. An older brother died at the age of two of pneumonia. Immunologic evaluation demonstrates lymphopenia and very low gamma-globulin levels, both T and B-cell number are very low. Radiologic studies demonstrates frayed long bones, abnormally thick growth arrest lines and dysplasias of costo-chondral junctions. Which of the following is the most likely diagnosis.

A. Adenosine deaminase deficiency.
B. Bruton’s agammaglobulinemia.
C. DiGeorge syndrome.
D. Nezelof syndrome.
E. X-linked severe combined immunodeficiency.

EXPLANATION

The correct answer is A. This baby has a form of severe combined immunodeficiency with autosomal recessive inheritance and low antibody levels. This is most likely to be adenosine deaminase deficiency. This enzyme is a purine salvage enzyme that converts adenosine and deoxyadenosine to inosine and deoxyinosine. When the enzyme is deficient, abnormally high levels of dATP accumulate, and turn off DNA synthesis. This particularly impacts the immune system, which (for both T and B cell lines) gears up specificity by triggering massive reproduction of clones that are immunologically active against a particular antigen. Some of these children present as illustrated; in others the immunologic defect develops more slowly and affects T cells before B cells. Bony abnormalities are common in these children. Bone marrow transplant, and very recently, gene transfer, are used to treat this otherwise fatal condition.

Bruton agammaglobulinemia (choice B) is characterized by pan hypogammaglobulinemia but intact T cell function.

DiGeorge syndrome (choice C) is characterized by absent thymus, normal B cell function, and often hypocalcemia in infancy.

Nezelof syndrome (choice D) is characterized by elevated immunoglobulins that function poorly.

X-linked severe combined immunodeficiency (choice E) would not be seen in a female.
A 56-yr-old man has been admitted to the medical intensive care unit in respiratory distress and endotracheal tube is in place for mechanical ventilation at a tidal volume of 900ml, a rate of 12 breaths/min and a fraction of inspired oxygen of 50%. The positive expiratory pressure is 10cm of water. Medications include subcutaneous heparin and aspirin. He now develops tachycardia and a blood pressure of 70/palpitations mmHg. Cardiac examination reveals multiple premature contractions. His arterial blood gases reveal $PO_2$ of 40mmHg. Which of the following is the most likely cause of his symptoms.

A. Cardiac arrythmia.
B. Bronchial secretions.
C. Myocardial infarction.
D. Pneumothorax.
E. Pulmonary embolus.

**EXPLANATION**

The correct answer is D. The sudden onset of tachycardia and hypotension indicates an acute process. Since the patient is being mechanically ventilated with positive pressure, he is at increased risk of a bullous rupture from barotrauma, leading to a pneumothorax.

Cardiac arrhythmia (choice A) could lead to tachycardia and hypotension. Ventricular tachycardia and atrial fibrillation with a rapid ventricular response may cause this from decreased ventricular filling. An ECG would aid in this diagnosis. In the setting of mechanical ventilation, however, a pneumothorax must be excluded first.

Bronchial secretions (choice B) usually have a progressively worsening presentation. Furthermore, the patient would exhibit desaturation, but not necessarily hypotension.

Myocardial infarction (choice C) may lead to cardiogenic shock from failure. However, this would most likely be a bit more progressive and less acute. Infarction must remain high on the differential diagnosis, and the patient may require vasopressors because of the shock. In the immediate setting, the pneumothorax is more likely, given the acuity of onset.

Pulmonary embolus (choice E) is on the differential diagnosis of electromechanical dissociation. This patient’s risk of an embolus is increased because of prolonged immobilization. However, the subcutaneous heparin should be adequate prophylaxis against an embolism.
Q-253
An 18-yr-old college student comes to the student's health clinic because of a two-week history of fever, chills and a sore throat. His temperature is 38.3 °C (101 °F), blood pressure is 110/70, pulse is 70 and respirations are 17. Physical examination show marked pharyngeal hyperemia, tonsillar exudates, cervical lymphadenopathy and splenomegaly. Ampicillin therapy has begun and the patient has been sent back to his dormitory. Two days later he returned because of a maculo-papular rash. Which of the following is most likely to confirm the diagnosis.

A. Chest x-ray.
B. Heterophile antibody test.
C. Lateral x-ray film of the neck.
D. Rapid streptococcus test.
E. Varicella virus antibody immunofluorescence.

EXPLANATION
The correct answer is B. This patient most likely has infectious mononucleosis, which is caused by the Epstein-Barr virus. The clinical features include sore throat, headache, fever, malaise, lymphadenopathy, pharyngitis and tonsillitis, hepatosplenomegaly, periorbital edema, rash, and a palatal enanthem. The diagnosis is made by heterophile antibody testing, EBV antibody titers, and lymphocytosis with atypical lymphocytes. Treatment includes rest, fluids, and analgesics. Ampicillin therapy leads to a maculopapular rash. An antibiotic should not be given because this is a viral infection.

A chest x-ray film (choice A) is useful for a respiratory or cardiac process. Infectious mononucleosis cannot be diagnosed by any radiographic study.

A lateral x-ray of the neck (choice C) is useful in acute epiglottitis. It would show epiglottic swelling. The symptoms of epiglottitis include extreme sore throat, drooling, and difficulty swallowing.

A rapid streptococcus test (choice D) is used to diagnose streptococcal pharyngitis. Streptococcal pharyngitis is characterized by fever, sore throat, tonsillar exudates, and cervical lymphadenopathy. A scarlatiniform rash may follow the pharyngitis. The rash is a diffuse erythema that later desquamates. It is caused by an erythrototoxin.

Antibodies to the varicella virus (choice E) can be detected by immunofluorescence. The symptoms of varicella include a vesicular rash in various stages of evolution, fever, and malaise. The treatment is bathing, soaks, and antipruritic topical medication. Treatment with aspirin has been associated with Reye syndrome and should therefore be avoided.
Q-254

A 15-yr-old girl is brought to the pediatrician's office because of sudden deterioration of school performance. Over the past month her mother has noticed occasional paint stain on her girl's hand. Her mother also noticed 6-bottles of typewriter correction fluid in her bedroom about a week ago. She raised the concern of inhalant abuse. Which of the following is the most likely consequence of chronic inhalant abuse.

A. Arrhythmia.
B. Bronchial asthma.
C. Cerebral hemorrhage.
D. Encephalopathy.
E. Respiratory depression.

EXPLANATION

The correct answer is D. Inhalant abuse is the intentional inhalation of volatile hydrocarbons, such as model glue, correction fluid, spray paint, and gasoline, to achieve an altered mental state. It is a common health problem in adolescence. The effect of inhaling a large quantity of hydrocarbons has been described as "quick drunk" because it resembles alcoholic intoxication. Initially, euphoria develops; then, lightheadedness and agitation. Disorientation, ataxia, and dizziness might develop with increasing intoxication. In extreme cases, generalized weakness, hallucinations, and nystagmus can occur. Abusers often show deterioration in school performance, disturbance of family relationships, and increased risk-taking behaviors. Encephalopathy is the major chronic morbidity following chronic inhalant abuse. Hydrocarbons are highly lipophilic and can easily distribute to the brain. Studies have shown that chronic abusers have radiographic evidence of CNS damage, such as loss of brain mass on CT and white matter degeneration on MRI. Clinically, chronic abusers often have cognitive and cerebellar dysfunction, including peripheral and cranial neuropathy, visual loss, and parkinsonism.

Inhalant abuse poses a significant health threat to teenagers. Surveys have shown that about 15% to 20% of high school seniors have used inhalants in the past. These figures, however, likely underestimate the true prevalence because of under-reporting and school dropouts. A high level of suspicion is needed to diagnose inhalant abuse. A good history is essential because there is no drug screen test that can detect inhalant hydrocarbons.
Q-255
A young woman comes to her primary care physician describing extreme irritability and conflicts with her boyfriend a week or so before her period. At times she becomes tearful and depressed without any reason and cannot focus on what she is doing. She noticed that she starts overeating and craving chocolates and sweets. This used to happen occasionally but it has happened each month for the past 4 months. The symptoms resolve with menses. Which of the following is the most likely diagnosis.

A. Adjustment disorder with depressed mood.
B. Cyclothymic disorder.
C. Depressive personality disorder.
D. Major depressive disorder with atypical features.
E. Pre-menstrual dysphoric disorder.

EXPLANATION

The correct answer is E. Premenstrual dysphoric disorder is a constellation of physical and emotional symptoms occurring during the late luteal phase of the menstrual cycle. The symptoms must be present during most cycles in the past year and during at least two subsequent cycles. Patients have at least five of the following symptoms: depressed mood, marked anxiety, affective lability, decreased interest, decreased energy, sleep disturbance, craving food, feeling overwhelmed, and difficulties concentrating. The symptoms interfere with social or occupational functioning and are not due to other psychiatric or medical disorders.

Adjustment disorder with depressed mood (choice A) involves as a criterion a major stressor to which an individual is reacting within 3 months after the exposure. It also involves the continuous presence of symptoms that do not resolve with the onset of follicular phase of the cycle.

Cyclothymic disorder (choice B) requires the presence of numerous episodes of hypomanic and depressive symptoms that do not meet the criteria for major affective disorder. The person must have at least 2 continuous months of these symptoms in a 2-year period. The disorder is not due to another psychiatric disorder or medical condition.

Depressive personality disorder (choice C) is characterized by pessimism, anhedonia, low self-esteem, and moralistic self-denigrating features.

Major depressive disorder with atypical features (choice D) is characterized by mood reactivity, significant weight gain and increased appetite, hypersomnia, leaden paralysis or heavy feeling in arms and legs, and a long-standing pattern of sensitivity to interpersonal rejection. Other criteria for major depressive disorder, including a 2-week period of depressed mood and anhedonia in the past month and significant impairment in functioning, must be met to establish the diagnosis.
Q-256

A 34-yr-old woman gravida 3, para 2 at term comes to the labor and delivery ward with a gush of blood, abdominal pain and irregular painful contractions. Her prenatal course is significant for her being Rh negative and antibody negative. Her temperature is 37 C (98.6 F), pulse is 110, blood pressure is 110/70 and respirations are 12/min. Abdominal examination shows a tender abdomen and cervical examination shows the cervix to be closed and long with a significant amount of blood in the vagina. The fetal heart rate is in the 170s and moderate to severe variable decelerations with contraction. The diagnosis of placental abruption is made and an emergency cesarian delivery is performed. To determine the correct amount of RhoGAM (anti-D immunoglobulin) that should be given. Which of the following is the most appropriate laboratory test to send.

A. An apt test.
B. Complete blood count.
C. Kleihauer-Betke.
D. Partial thromboplastin time.
E. Serum potassium.

EXPLANATION

The correct answer is C. Women that are Rh negative are at risk for developing Rh isoimmunization. Rh isoimmunization occurs when an Rh-negative mother becomes exposed to the Rh antigen on the red blood cells of an Rh-positive fetus. This exposure may lead the mother’s immune system to become sensitized to the Rh antigen such that in a future pregnancy with an Rh-positive fetus, the mother’s immune system may “attack” the Rh antigen on the fetal red blood cells. This immune response may lead to the development of fetal anemia, hydrops, and death. To prevent Rh isoimmunization from occurring, Rh-negative women who are not Rh alloimmunized should receive RhoGAM (anti-D immune globulin) at 28 weeks of gestation, within 72 hours after the birth of an Rh-positive infant, after a spontaneous abortion, or after invasive procedures such as amniocentesis. RhoGAM should also be strongly considered in cases of threatened abortion, antenatal bleeding, external cephalic version, or abdominal trauma. The amount that is usually given after the delivery of an Rh-positive fetus is 300 µg. This amount is sufficient to cover a fetal to maternal hemorrhage of 30 mL (or 15 mL of fetal cells). However, some women will have a fetal to maternal hemorrhage that is in excess of this 30 mL—especially in cases such as manual removal of the placenta or placental abruption (as this patient had). To determine the amount of fetal to maternal hemorrhage that occurred, it is necessary to perform a Kleihauer-Betke test which is an acid-dilution procedure that allows fetal red blood cells to be identified and counted. Knowing the amount of fetal to maternal hemorrhage that took place allows the correct amount of RhoGAM to be given.
An apt test (choice A) is used to differentiate fetal from maternal blood. It can be used in the diagnosis of vasa previa or with neonatal melena.

A complete blood count (choice B) will demonstrate the amount of maternal hemorrhage, but not the amount of fetal to maternal hemorrhage.

Partial thromboplastin time (choice D), and serum potassium (choice E) do not allow for the determination of the amount of fetal to maternal hemorrhage.
Q-257
A 69-yr-old man who smokes and drinks and has rotten teeth has a hard fixed 4-cm mass in his left neck. The mass is just medial to and in front of sternocledomastoid muscle at the level of upper notch of the thyroid cartilage. It has been there for at least six-months and is growing. Which of the following is the most appropriate next step in diagnosis.

A. Radionucleotide scan of the thyroid gland.
B. Sputum cytology and CT-scan of the lungs.
C. Penendoscopy, triple endoscopy and mucosal biopsies.
D. Open incisional biopsy of the mass.
E. Open excisional biopsy of the mass.

EXPLANATION

The correct answer is C. In this setting (old man who smokes and drinks and has rotten teeth), the clinical diagnosis is metastatic squamous cell carcinoma to a cervical lymph node, from a primary (or multiple primaries) somewhere in the mucosa of the aerodigestive tract. Endoscopy and biopsies should establish the diagnosis.

Thyroid cancer could indeed metastasize to neck nodes, sometimes before the primary tumor is palpable. In this particular setting, however, a radionuclide scan (choice A) would be a very distant second choice.

Sputum cytology and CT scan of the lungs (choice B) is another tempting thought for a smoker. But, when lung cancer metastasizes to the cervical nodes, it affects the supraclavicular nodes, not the nodes higher up in the neck.

Open biopsy of the neck mass is an absolute no-no, whether it is excisional (choice E) or incisional (choice D). Doing so will in fact confirm the diagnosis, but at the cost of contaminating the tissues and interfering with the placement of incisions for the definitive surgery. Furthermore, the location of the primary (or primaries) would not be established.
A previously healthy 21-yr-old woman has a profuse malodorous vaginal discharge. Examination shows greenish gray frothy discharge with fishy odor and patechial lesions on the cervix. There is no cervical motion tenderness. Her temperature is 37.5 C (99.4 F), blood pressure is 120/80, pulse is 60 and respirations are 16. Microscopic evaluation of the discharge is most likely to show which of the following.

A. Clue cells.
B. Gram-negative diplococci.
C. Gram-positive diplococci.
D. Motile flagellated organisms.
E. Hyphae or pseudohyphae.

EXPLANATION

The correct answer is D. This patient has trichomoniasis. Trichomoniasis is caused by a motile, flagellated protozoan, Trichomonas vaginalis. The symptoms include a copious, malodorous (“fishy”), greenish-gray, “frothy” discharge. The vulvar and vaginal epithelium may be erythematous and edematous. Colposcopy may reveal petechial cervical lesions (“strawberry cervix”). A wet mount of the discharge often reveals motile trichomonads and polymorphonuclear leukocytes (PMNs). The treatment is metronidazole. Simultaneous treatment of the sexual partner reduces the risk of reinfection.
"Clue cells" (choice A), vaginal squamous epithelial cells coated with coccobacillary organisms, are seen in bacterial vaginosis. The symptoms include a moderate amount of malodorous ("fishy"), white to gray, homogeneous vaginal discharge. An amine ("fishy") odor is present after mixing vaginal secretions with KOH. This is often called a positive whiff test. Saline preparations of the discharge reveal the "clue cells". The treatment is metronidazole. Simultaneous treatment of the sexual partner has not been shown to reduce recurrence.

Gram-negative diplococci (choice B) are an indication of Neisseria gonorrhoeae. N. gonorrhoeae causes a mucopurulent cervical discharge in acute cervicitis and can lead to pelvic inflammatory disease (PID). PID is characterized by lower abdominal pain, fever, and cervical motion tenderness. Diagnosis is often made by Gram's stain of cervical secretions revealing gram-negative diplococci and polymorphonuclear leukocytes. Treatment is ceftriaxone IM once and doxycycline or azithromycin. The 2 latter drugs are given since concomitant chlamydial infection is common. Sexual partners must be treated.

Gram-positive diplococci (choice C) are not a common cause of cervical discharge.

Pseudohyphae or hyphae (choice E) is an indication of candidiasis. Vulvar pruritus, irritation, and a thick, white, cottage cheese-like discharge are the predominant symptoms. Diagnosis is made by KOH, saline, or Gram's stain evaluation of the vaginal fluid revealing fungi. Treatment is fluconazole PO or imidazole cream. Routine treatment of sexual partners is usually not indicated.
Q-259

A 24-yr-old man with a history of asthma presents to the ER complaining of 5-hours of severe wheezing and shortness of breath. He had used his bronchodilator inhaler six-times during past five-hours but with only minimal relief. On physical examination he appears dyspneic, his temperature is 37.4 C (99.3 F), blood pressure is 118/64, pulse is 106 and respirations are 32/min. There is visible use of sternocleidomastoid muscle with each inspiration. A lung examination reveals diffuse bilateral inspiratory and expiratory wheezing with poor air movement and a prolonged expiratory phase. Which of the following will most likely be found on a chest x-ray film.

A. Bilateral interstitial infiltrate.
B. Lobar consolidation.
C. Pleural effusion.
D. Pneumothorax.
E. Normal findings.

EXPLANATION

The correct answer is E. This patient is presenting with an asthmatic attack and is not responding to his usual bronchodilator therapy. Although the findings are consistent with a severe asthmatic attack, i.e., the use of the sternocleidomastoid muscles for inspiration, these patients will generally have a normal chest x-ray film. The patient may have developed a low-grade (probably viral) infection, as suggested by his low-grade fever. However, the infections that are most likely to cause an exacerbation of asthma are usually of the upper respiratory tract; they would consequently be unlikely to produce any findings consistent with pneumonia.

A bilateral interstitial infiltrate (choice A) would suggest pneumonia.

Similarly, there are no signs or symptoms to suggest a lobar consolidation (choice B), consistent with a bacterial pneumonia, in that there is no mention of productive cough, fever, or rigors.

There are no physical findings (dullness to percussion, decreased movement of diaphragm, decreased or absent breath sounds) or symptoms (pleuritic pain with breathing) to suggest a pleural effusion (choice C).

Patients with asthma may develop a pneumothorax (choice D) because of the high intrathoracic pressures that occur during a severe attack. However, the physical findings would include absent breath sounds on examination, and this patient has symmetric bilateral breath sounds.
Q-260
A 57-yr-old woman with a history of hypertension is brought to the ER because of headache and loss of balance for two hours. She is conscious and oriented to person, space and time. She feels nauseated and cannot walk or stand without help. Neurologic examination reveals paralysis of conjugate lateral gaze to the right side. There is no decrease in muscle strength or sensory loss. A CT-scan of the head reveals an intracerebellar hematoma. Which of the following is the most appropriate next step in management.

A. Lumber puncture.
B. MRI of the head.
C. Supportive medical treatment.
E. Immediate surgical evacuation.

EXPLANATION

The correct answer is E. Hypertension is a frequent cause of intracerebral hemorrhages. Cerebellar bleeding differs from intracerebral bleeding (i.e., that occurring within the cerebral hemisphere) with respect to clinical manifestations and management. Whereas intracerebral bleeding usually develops slowly, cerebellar hematomas manifest with abrupt onset. Intracerebral bleeding usually leads to early loss of consciousness, but patients with cerebellar hematomas remain lucid until the increased pressure within the posterior fossa results in cerebellar tonsillar herniation. Cerebellar hematomas should be evacuated as soon as possible before coma ensues. In contrast to intracerebral bleeding, prompt surgical intervention may be life-saving and followed by complete or nearly complete neurologic recovery. It is thus essential to recognize this clinical syndrome promptly.

Lumbar puncture (choice A) is definitely contraindicated in case of suspected intracerebellar hematoma, as it may precipitate fatal herniation of the tonsils through the foramen magnum.

MRI of the head (choice B) would not add any more information compared with the CT scan in the acute stage of intracranial bleeding.

Supportive medical treatment (choice C) is appropriate for most cases of hypertensive intracerebral bleeding, which develops in deep structures of the cerebral hemisphere or brainstem, i.e., basal ganglia, centrum semiovale, or pons. Measures aimed at controlling blood pressure and reducing edema are the mainstay of treatment.

Anticoagulant treatment (choice D) is contraindicated when there is evidence of intraparenchymal bleeding.
A previously healthy 50-year-old woman comes to the physician because of double vision for 3-days. Her temperature is 37 °C (98.6 °F), she denies nausea or vomiting. Examination shows ptosis and slight divergence of her right eye, extraocular movements are limited in all directions except laterally. Pupil of the right eye is slightly larger than of the left and poorly reactive to light. Examination of the fundus fails to reveal any papilloedema. Which of the following is the most likely underlying condition.

A. Aneurysm of the posterior communicating artery.
B. Carcinoma of the right pulmonary apex.
C. Diabetes mellitus.
D. Giant cell arteritis.
E. Syphilis.
F. Systemic hypertension.

EXPLANATION

The correct answer is A. This patient displays signs of oculomotor palsy, with restriction of the eye movements in all directions (except laterally, due to preservation of the sixth cranial nerve, the abducens), and ptosis. Dilatation of the pupil, which fails to react to light, is a sign of intracranial compression of the third, or oculomotor cranial nerve. This should prompt search for an underlying surgical cause of oculomotor palsy. Uncal herniation and aneurysm of the posterior communicating artery are the two most common surgical conditions leading to oculomotor palsy. In the absence of clinical evidence of increased intracranial pressure, it may be assumed that the patient has an aneurysm of the posterior communicating artery until proven otherwise. Cerebral angiography is the investigation of choice to confirm the diagnosis.

All of the most common medical causes of oculomotor nerve palsy result in paresis of extraocular movements and ptosis, but the pupillary light reflex is preserved. These conditions include diabetes mellitus (choice C), giant cell arteritis (choice D), syphilis (choice E) and systemic hypertension (choice F).

Carcinoma of the right pulmonary apex (choice B) may result in Horner syndrome (miosis, ptosis, enophthalmos, and loss of sweating on the affected hemiface) due to infiltration of the cervical autonomic ganglia.
Q-262
An otherwise healthy 5-year-old boy is brought to the emergency dept. of a small hospital because of 3-cm simple laceration in his forehead. The patient is crying and frightened and practitioner decides to perform conscious sedation before suturing the laceration. Support personal and equipment are available to monitor patient's vital status and resuscitation if it is needed. Which of the following is the most effective pharmacological agent to achieve safe level of conscious sedation in this situation.

A. Oral or rectal midazolam or diazepam.
B. Concomitant opioid and benzodiazapine administration.
C. I/V propofol.
D. I/V ketamine.
E. Concomitant analgesics, sedatives and muscle relaxants.

EXPLANATION
The correct answer is A. Suturing a laceration is one of the most common situations in which sedation may be required in a child. Sedation may be classified as conscious or deep. By definition, during conscious sedation the patient is able to maintain airway patency, protective airway reflexes, and responses to physical stimuli. This level of sedation is indicated for children (or adult patients) who have not fasted prior to the procedure, or patients who do not require a deep level of sedation. Nevertheless, conscious sedation should be performed by appropriately trained personnel, and only when equipment for resuscitation measures is readily available, should the need arise.

For minor surgical procedures such as suturing uncomplicated linear lacerations, administration of a short-acting or long-acting benzodiazepine (midazolam or diazepam, respectively) by the oral or rectal route provides sufficient sedation. Intravenous access is not required. Intravenous midazolam or diazepam can be used for procedures that produce more intense pain or discomfort, such as repair of complex lacerations, bone marrow aspiration, and reduction of fractures.

Concomitant opioid and benzodiazapine administration (choice B) is used to achieve not only sedation, but also an adequate level of analgesia. The synergistic action of opioids and benzodiazepines increases the risk of respiratory depression.

Intravenous propofol (choice C) provides rapid onset of sedation that resolves quickly once infusion is discontinued. This drug is used for procedures requiring deeper levels of sedation in appropriately fasted and stable children.

Intravenous ketamine (choice D) is an appropriate alternative to propofol. Its most common side effect is the production of visual and auditory hallucinations (about 10% of cases).

Concomitant analgesic-sedative agents and muscle relaxants (choice E) is employed for deep sedation and when muscle relaxation is necessary for endotracheal intubation or other diagnostic/therapeutic procedures.
Q-263
A 48-year-old man is discharged after an uncomplicated myocardial infarction. Several weeks later he visits his physician complaining of insomnia, anorexia and depressed mood. He appears to be clinically depressed. Which of the following is most appropriate for initial therapy.

A. Methylphenidate.
B. Nortriptyline.
C. Phenelzine.
D. Sertraline.
E. Thioridazine.

EXPLANATION

The correct answer is D. In a patient with cardiac complications, a selective serotonin reuptake inhibitor (SSRI), such as sertraline, has been demonstrated to be the safest and most effective medication for the treatment of clinical depression.

Methylphenidate (choice A) is a stimulant medication that would have the potential to increase heart rate and sympathetic tone, which would not be advantageous in the post-myocardial infarction period.

Nortriptyline (choice B) is a tricyclic antidepressant that has the potential for producing cardiac arrhythmias in overdose.

Phenelzine (choice C) is a monoamine oxidase inhibitor, which would be contraindicated with a history of recent myocardial infarction, as the ingestion of tyramine with an MAO inhibitor could induce a hypertensive crisis.

Thioridazine (choice E) is a low-potency dopamine antagonist antipsychotic medication that is not indicated for the treatment of depression.
Q-264
A 19-yr-old nulligravid woman comes to the emergency department because of severe left lower quadrant pain. She has been noticing this pain intermittently for last 3-days but this after noon it became more persistent and severe and unaccompanied by nausea and vomiting. Examination shoes left lower quadrant tenderness and tender left adnexal mass. Urine hCG is negative. Pelvic ultrasound show 7-cm complex left ovarian complex mass. Which of the following is the most appropriate next step in management.

A. Expectant management.
B. Repeat ultrasound in 6-wks.
C. I/V antibiotics.
D. Laparoscopy.
E. Oophorectomy.

EXPLANATION

The correct answer is D. Ovarian torsion is a surgical emergency. Ovarian torsion occurs when the ovary completely twists and thus, occludes its blood supply. Patients often present with intermittent pain as the ovary twists and untwists and then constant, severe pain when the torsion becomes complete and the ovary becomes ischemic. Time is of the essence and can mean the difference between saving, versus losing, an ovary. This is important for any patient, but is particularly important for a young female of childbearing age, especially one who is nulligravid. The reason that time is so essential is that the longer the ovary stays torsed, the more likely it is to become necrotic. Most surgeons would perform laparoscopy on this patient if they felt it was safe to do so. The pelvis can be fully evaluated through the laparoscope and a torsion can often be untwisted using laparoscopic instruments. However, with large cysts, some surgeons prefer to perform a laparotomy.
Expectant management (choice A) would not be appropriate for this patient. When ovarian torsion is considered to be likely in a patient, that patient must have surgery. To expectantly manage these patients is to risk further damage to, and possible loss of, the ovary.

A follow-up ultrasound in 6 weeks (choice B) is appropriate management for some ovarian cysts. For example, if this patient were asymptomatic and the cyst did not have features suspicious for malignancy, one could follow-up with an ultrasound in 6 weeks, as long as the patient was given strict instructions and precautions regarding the risk of torsion. However, this patient has severe pain and may be infarcting her ovary and therefore needs surgery.

Intravenous antibiotics (choice C) would be appropriate if the patient had pelvic inflammatory disease or another infectious process, however, the likely diagnosis is torsion, and surgery, rather than intravenous antibiotics, is needed.

In the past, oophorectomy (choice E) was recommended for any patient with ovarian torsion. The concern was that the torsion would lead to thrombus formation in the ovarian vessels and that detorsing the ovary could lead to thromboembolism to the pulmonary vasculature. Current thinking is that the ovary may be detorsed and then evaluated. If the ovary appears to be viable, it may be left in-situ. If the ovary appears to be completely non-viable and necrotic, it will be removed.
The unrestrained front seat driver of a car which crashed at high speed is brought to the ER with signs of moderate respiratory distress. Physical examination shows no breath sound at all on left hemithorax. Percussion is unremarkable. His vital signs are normal. Chest X-ray film shows completely collapsed left lung and multiple air fluid level in the left pleural cavity. A nasogastric tube passed prior to taking the films showed to reach the upper abdomen and then curling up in the left pleural cavity. Which of the following is the most likely diagnosis.

A. Blow out of pulmonary blebs.
B. Esophageal rupture or perforation.
C. Left diaphragmatic rupture.
D. Left hemopneumothorax.
E. Major injury to tracheobronchial tree.

EXPLANATION

The correct answer is C. The left diaphragm can blow out with blunt injuries, allowing the bowel to move up into the chest. The multiple air-fluid levels suggest that bowel is indeed there, and the trajectory of the nasogastric tube confirms that the abdominal viscera (including the stomach) have been sucked up into the thoracic cavity.

Pulmonary blebs (choice A) produce a pneumothorax when they rupture.

The esophagus (choice B) virtually never ruptures with blunt abdominal trauma. You need a penetrating injury, or better yet an endoscopy, to perforate it. When that happens, the outcome is mediastinitis.

A hemopneumothorax (choice D) can indeed happen in thoracic injuries, but the x-ray films would show one single large air-fluid level, and the nasogastric tube would be in the stomach, without curling up into the chest.

The tracheobronchial tree (choice E) can indeed break as a consequence of deceleration injuries, but the outcome would be a pneumothorax and air in the mediastinum and the subcutaneous tissues.
A 1-yr-old infant comes to the office, his father states that his son is smaller than he should be. Child weight is 8.6 kg (19 lb) and his length is 71 cm (28 inches). He appears to be growing fine for his growth curve. Which of the following is the most appropriate explanation to be given to the father about the growth of the child.

A. Infants usually double their birth weight by one year.
B. Infants usually triple their birth weight by one year.
C. Infants usually quadruple their birth weight by one year.
D. Infants usually double their length by one year.
E. Infants usually triple their length by one year.

EXPLANATION

The correct answer is B. Most infants are expected to triple their birth weight by the age of 12 months.

Infants usually double their birth weight (choice A) by 6 months, not 1 year.

Infants usually quadruple their birth weight (choice C) by 24 months.

Infants usually double their length (choice D) by 4 years.

Infants do not usually triple their length (choice E) until they are out of infancy and into puberty.
A 34-yr-old perfume saleswoman presents complaining of lower abdominal cramps and diarrhea. She has no history of prior gastrointestinal illness. She noted loose stools 3-days earlier, which subsequently became bloody and associated with urgency and nocturnal bowel movements. She also developed temperature of 98.4 C (101.1 F). On examination she has periumblical and left lower quadrant tenderness and on rectal examination the stool is bloody. Which of the following organism is causing patient's symptoms.

A. Campylobacter jejuni.
B. Cryptosporidium.
C. Giardia lamblia.
D. Staph. Aureus.
E. Toxigenic E.coli.

EXPLANATION

The correct answer is A. Campylobacter jejuni is a common cause of community-acquired bloody diarrhea. It is acquired via the fecal-oral route and may produce a non-bloody or bloody diarrhea. If the symptoms are as severe as in this patient, antibiotics (e.g., ciprofloxacin) would be appropriate.

Cryptosporidium(choice B) is a parasite that can infect immunocompetent individuals and will produce a self-limited watery diarrhea. When it infects AIDS patients it typically leads to a chronic, watery diarrheal syndrome that produces severe weight loss.

Giardia lamblia(choice C) also causes an upper gastrointestinal infection but presents with upper abdominal symptoms and a non-bloody diarrhea.

Staphylococcus aureus(choice D) causes a food-borne infection that will produce upper abdominal pain and nausea and vomiting, secondary to a preformed ingested toxin. The characteristic feature of this infection is its prompt occurrence, i.e., within approximately 4-8 hours of the ingestion of the tainted food.

Toxigenic Escherichia coli(choice E) presents with a watery diarrhea, acquired through the fecal-oral route as a traveler’s diarrhea.
Q-268
A 60-yr-old woman reports to her physician because of weakness, dizziness and tingling in her hands and feet. Physical examination show multiple areas of bruising on the back of her forearm. On specific questioning she tell about five episodes of nosebleeds in the past 2-months, which she attributed to dry air. Blood studies were drawn which shows a platelet count of 1.2x10^6/microliter, a red cell count of 5.1x10^6/microliter and a white cell count of 10,500/micoliter with normal differential counts. Peripheral film demonstrates very large platelets, platelets aggregates and megakaryocyte fragments, film does not show any abnormal red or white cells. Philadelphia chromosome studies are negative. Which of the following is the most likely diagnosis.

A. Chronic myelogenous leukemia.
B. Myelofibrosis.
C. Polycythemia vera.
D. Primary thrombocythemia.
E. Secondary thrombocythemia.

EXPLANATION

The correct answer is D. The most likely diagnosis is primary (essential) thrombocythemia. The condition is due to a clonal abnormality of a multipotent hematopoietic cell that produces megakaryocytic hyperplasia with resultant increased platelet count. Since the platelets are often abnormal, either a thrombotic or a hemorrhagic tendency may be seen. The platelet count may be as low as 500,000/µL or greater than 1,000,000/µL. The clinical presentation and laboratory findings illustrated in the question stem are typical. The other choices listed commonly must be excluded before a diagnosis of primary thrombocythemia is confirmed.

Chronic myelogenous leukemia (choice A) can be a cause of increased platelet count, but the absence of either a Philadelphia chromosome or a markedly increased white count argues against this possibility.

Myelofibrosis (choice B) can also cause thrombocythemia, but would likely show some abnormally shaped (often tear drops) red cells.

Polycythemia vera (choice C) can also cause thrombocythemia, but would be associated with an increased red cell mass.

Secondary thrombocythemia (choice E) is a reactive process that may occur in a variety of settings including chronic inflammatory disorders, acute infection, hemorrhage or hemolysis, tumors, iron deficiency, or splenectomy. Abnormal platelet forms are not usually seen on smears from these patients and platelet function tests are usually normal.
Q 269

A 28-yr-old man with chronic nephritis comes to the physician for a check-up. He has a serum creatinine of 6.7 mg/dl, urea nitrogen of 70 mg/dl and a hemoglobin of 8.4 g/dl. His platelet count is 200,000/mm³ and complains of fatigue on exercise. His blood pressure is 140/80 mmHg. His lungs are clear; his heart rate is normal with a soft systolic murmur. He is guaic negative for occult blood. His ferritin levels 200 ng/ml and iron saturation is 25%. His mean corpuscular volume is 85 micrometer/cube. Which of the following is the most appropriate treatment for his anemia.

A. No treatment, follow values.
B. Erythropoietin.
C. Folic acid.
D. Trial of iron therapy.
E. Blood transfusion.

EXPLANATION

The correct answer is B. The patient has an anemia of advanced chronic renal failure. It should not be simply watched (choice A), as a hemoglobin this low will cause a high output state with cardiac hypertrophy. The patient should be started on erythropoietin by the subcutaneous route.

Folic acid (choice C) should be given as an added vitamin to assure good marrow function but it is very unlikely to treat the anemia alone. This is especially so given the normal MCV.

He is already iron-loaded with a ferritin of over 100 ng/mL and an iron saturation of over 20%. Giving more iron (choice D) will not help further.

Blood transfusion (choice E) is not necessary in this patient.
A 55-yr-old woman comes to the physician for hot flashes, she first noted them about 9-months ago, since then they are worsening. She states that hot flashes come at various times of the day but they are more intense at night. She had her last menstrual period about 5-months ago. Past history is significant for pulmonary embolus at the age of 36 and severe depression. She takes fluoxetine for depression and has no allergies to medications but smokes one pack of cigarettes per day. Physical examination is unremarkable including pelvic examination. Which of the following is the most appropriate pharmacotherapy for the patient.

A. Clonidine.
B. Estrogen and progesterone.
C. Estrogen only.
D. Glucophage.
E. Tamoxifen.

EXPLANATION

The correct answer is A. This patient has a presentation that is most consistent with perimenopausal hot flashes (or hot flushes as they are sometimes called). The exact pathophysiology that underlies the hot flush is not known. However, it is known that women at the menopause and men that undergo orchietomies experience these symptoms. Therefore, it is assumed that it is the removal of normal levels of sex steroids from the circulation that results in the hot flash. These hot feelings are experienced as a flushing that can last from several seconds to many minutes. The first-line treatment for most women is with hormone replacement therapy. However, estrogen is contraindicated in this patient given her history of pulmonary embolus. The fact that she is a current smoker also places her at greater risk of developing a thrombus if she were to take hormones. Progestins alone have also been shown to relieve hot flashes; however, they may worsen depression and cause other mood changes in patients. Therefore an alternative treatment is needed for her. Clonidine has been used with some success by many women for relief from hot flashes. It is a blood pressure medication, but it has been shown to be effective against hot flashes when used in low doses.
Estrogen and progesterone (choice B) should not be used in this patient because of her history of a pulmonary embolus. Combined hormone replacement therapy has been shown to increase the risk of clot formation in patients. With her history and current smoking, this patient would be at a particularly increased risk.

Estrogen only (choice C) would be contraindicated in this patient for two reasons. First, her uterus is still in place, and unopposed estrogen would place her at greater risk for endometrial hyperplasia and cancer. Second, estrogen would increase this patient’s risk of thrombus formation.

Glucophage (choice D) is an oral hypoglycemic medication used in patients with diabetes. It is not known to be effective for the treatment of hot flashes.

Tamoxifen (choice E) actually causes hot flashes in many patients and is not used to treat them.
A 42-yr-old woman was applying her morning make-up while also drinking a cup of coffee. She noticed that a round 2-cm mass would move up and down whenever she swallowed while looking in the mirror. The physician confirmed that there is a single nodule in the right lobe of thyroid gland. There are no other abnormality in the history and physical examination. Pulse is 82/min and regular, TSH is within normal limits. Which of the following is the most appropriate next step in management.

A. Repeating the TSH at least once a year.
B. Determination of T3 and T4 values.
C. Radionucleotide thyroid scan.
D. Fine needle aspiration cytology of the mass.
E. Right thyroid lobectomy.

EXPLANATION

The correct answer is D. Most thyroid nodules are benign, and surgery must be reserved for selected candidates with the highest likelihood of malignancy. Fine needle aspiration (FNA) is the best way to make the selection. If read by an experienced pathologist as negative for cancer, patients can be safely followed. If read as either indeterminate or positive for cancer, surgery would be required. Choosing surgical candidates this way, cancer is found at surgery in 20% to 40% of patients operated, a vast improvement over earlier selection methods, where the yield was around 10% to 15%.

Clinical observation alone (choice A) would not be appropriate. Thyroid cancers grow slowly, but they still need to be diagnosed and treated. Incidentally, they typically do not affect thyroid function, so that following the TSH would not alert you to the presence of malignancy.

Thyroid nodules can be benign but hyperfunctioning (toxic adenoma), and therefore thyroid function must be determined. But, that has already been done here with the normal TSH. Further pursuit of T3 and T4 (choice B) is unnecessary in someone with no clinical evidence of hyperfunction (normal pulse).

Thyroid scan (choice C) would have been the answer 10 or 20 years ago, before FNA displaced it as the best way to select surgical candidates. In the old days, a cold nodule raised suspicions of malignancy but gave low yields at surgery.

Without a diagnosis of cancer, or an indeterminate FNA, one cannot justify the extremely aggressive approach of surgery as the next step in management. Thus, choice E is clearly wrong.
A 70-yr-old man is found unresponsive at home. Medical emergency team found his blood pressure at the spot to be 70 mmHg by palpation, his pulse is 120 and he is brought to the emergency dept. where his temperature is found to be 39.5 C (103 F) and respirations are 30. He has rales halfway up his chest, his heart sounds are inaudible, his urine output is 10 ml/hr. X-ray film reveals curly B-lines and ECG shows sinus tachycardia. He is given antibiotics and taken to the intensive care unit where right-sided catheterization shows elevated wedge pressure and diminished cardiac output. His right atrial pressure is not elevated. Which of the following best explains the man's hypotension.

A. Gastrointestinal bleeding.
B. Gram-negative sepsis.
C. Left ventricular dysfunction.
D. Pericardial tamponade.
E. Pulmonary embolus.

EXPLANATION

The correct answer is C. This patient is hypotensive and has oliguria. He has shock, fever, and pulmonary edema. His elevated wedge pressure is an indication of left ventricular failure. This may be the result of a myocardial infarction. This patient has cardiogenic shock, severe cardiomyopathy, or myocarditis.

Gastrointestinal bleeding (choice A) would present with hypotension, tachycardia, and shock. Hypovolemia from a gastrointestinal bleed would cause a decrease in the wedge pressure as well.

Similarly, septic shock (choice B) would lead to hypotension and decreased wedge pressure. The cardiac output would be increased, and the systemic vascular resistance would be decreased. In the setting of fever, however, this diagnosis must be considered. Treatment would include supportive therapy with vasopressors and fluids, as well as antibiotics.

Pericardial tamponade (choice D) could produce elevated wedge pressures, but the obstruction to the right ventricular inflow should be associated with equally abnormal right atrial mean, right ventricular end-diastolic, and pulmonary artery end-diastolic pressures.

A pulmonary embolus (choice E) would lead to decreased wedge pressure. The patient would be tachycardic, tachypneic, and hypotensive. Pulmonary edema would not be seen, however. Treatment would include administering a lytic agent and heparin.
Q-273
A 35-yr-old woman is in long term weekly insight oriented psychotherapy. She has been in the psychotherapy for one and a half year and explored issues related to her depressive symptoms and her use of physical attractiveness to get close to men even those for whom she has no romantic interest. She is also exploring her relationship with her parent and their interest in her high school and college pageant beauty contests. During the course of psychotherapy subtle seductive tendencies have arisen towards the psychotherapist. One day she came to the psychotherapy session without wearing any makeup and during the session expressed her depression and views herself as inadequate and disappointing to the therapist. The therapist make the following comment “you think on a day without any makeup I will find you inadequate much like you perceived your father disappointment when you didn’t won the beauty contest. It seems difficult for you to feel accepted if you do not look attractive.” Which psychotherapy technique best describes the therapist comments?

A. Clarification.
B. Confrontation.
C. Empathic validation.
D. Resistance interpretation.
E. Transference interpretation.

EXPLANATION

The correct answer is E. An interpretation involves making something conscious that was previously unconscious, such as the connection between the patient’s sense of depression and her lack of make-up as well as the correlation between her relationship styles with her father and with her therapist. An interpretation is an explanatory statement that links a feeling, thought, behavior, or symptom to its unconscious meaning. In this case, the interpretation directly deals with the transference (the patient’s feelings and behavior toward the therapist that are based on earlier wishes with important figures).

Clarification (choice A) involves a reformulation of what the patient has expressed in order to convey a coherent view of what is being communicated. A clarification can help the patient articulate something that is difficult to verbalize.

Confrontation (choice B) addresses something that the patient does not want to accept. The patient’s avoidance or minimization of a denied or suppressed feeling is identified.

Empathic validation (choice C) demonstrates the therapist’s attunement with the patient’s internal state to show the patient that he or she is understood on an emotional level. This technique is more often used in a supportive type of psychotherapy than in an insight-oriented approach.

Resistance interpretation (choice D) is an interpretation that directly deals with the patient’s unconscious use of resistance to avoid painful or conflictual issues.
Q-274
A 71-yr-old woman is admitted to the hospital for pneumonia. Patient presented to the hospital two-days ago for cough and fever. She reported temperature of 38.9 C (102 F) and a cough productive of green copious sputum. She also has pleuritic chest pain with deep inspiration. The initial examination reveals diminished breath sounds in the left lower lobe and dullness to percussion and a chest x-ray show a dense left lower lobe infiltrate. Which of the following organism is most likely responsible for his pneumonia.

A. Bordetella pertussis.
B. Klebsiella pneumonia.
C. Mycoplasma pneumonia.
D. Pneumococcus.
E. Staphylococcus aureus.

EXPLANATION
The correct answer is D. The etiology of pneumonia is related to both the age of the patient and the particular risk factors that he or she may exhibit. For patients with no specific risk factors, pneumonia is referred to as community-acquired pneumonia (CAP). CAP has a variable etiology depending on the age of the patient. In patients aged 29-55, the pneumococcus (Streptococcus pneumoniae), a gram-positive organism, is the most frequent agent causing so-called typical or bacterial pneumonia.

Bordetella pertussis(choice A) causes whooping cough in children. Most adults in the U. S. have been vaccinated against this organism. However, 20 years after the last booster, immunity begins to fade, and it is reasonably common to see patients aged 55 and older presenting with upper and lower respiratory tract infections caused by this organism.

Klebsiella pneumoniae(choice B) is a reasonably frequent source of pneumonia in both hospitalized patients and those with chronic aspiration problems, such as post-stroke patients.

Mycoplasma pneumoniae(choice C) is the primary agent responsible for so-called atypical pneumonia in the same age bracket.

Staphylococcus aureus(choice E) is a gram-positive organism that causes severe cavitating pneumonia. It is most often responsible for pneumonia in diabetic patients.
An 80-yr-old woman presents with dyspnea on exertion. On physical examination her blood pressure is 100/70 and her pulse is 75. She has no pulsus paradoxus. Her jugular veins are distended and she has distant heart sounds. In addition she has extra third and fourth heart sounds. Her liver is enlarged and she has pedal edema. She has occasional premature ventricular contractions on ECG. A chest x-ray reveals clear chest with dilated cardiac shadow. Her echocardiogram reveals ventricular walls with a speckled pattern. Which of the following is the most likely diagnosis.

A. Alcoholic cardiomyopathy.
B. Amyloidosis.
C. Hemochromatosis.
D. Tuberculosis.
E. Viral myocarditis.

EXPLANATION

The correct answer is B. In amyloidosis, the left ventricular wall appears speckled on the echocardiogram, and there is a restrictive cardiomyopathy. In such a condition, ventricular filling is impaired, and the cardiac silhouette may be mildly enlarged. An ECG may reveal a host of nonspecific arrhythmias. Primary cardiac amyloidosis usually develops into diastolic dysfunction.

Alcoholic cardiomyopathy (choice A) is typically the cause of a biventricular dilated cardiomyopathy, which leads to both right- and left-sided heart failure. An S3 will be heard. An echocardiogram will show enlarged left and right ventricles. The walls of the ventricles may appear very thin and stretched, consistent with volume overload.

Hemochromatosis (choice C) also may cause a restrictive cardiomyopathy, as seen in amyloidosis. However, the speckled pattern mentioned above would be absent. Other noncardiac features include bronzing of the skin and diabetes.

Tuberculosis (choice D) may cause a chronic tuberculous pericarditis that can manifest clinical symptoms similar to those seen in constrictive cardiomyopathy. The presentation is similar to that seen with restrictive features. However, patients tend to have normal ventricular wall thickness on echocardiogram, pericardial calcification, an absent S3, and S4.

Viral myocarditis (choice E), like alcohol, can lead to a dilated cardiomyopathy. Unfortunately, such conditions may progress to complete left and right ventricular failure, ultimately requiring cardiac transplantation in refractory cases.
Q-276
A 1-month-old boy has bloody diarrhea. Infectious agent has been identified but the baby is profoundly thrombocytopenic. The baby is also noted to have a skin rash and dermatologist diagnosis eczema. By three months of age baby develops recurrent respiratory infections. If this child survives until adolescence, he is at particularly at high-risk of developing which of the following.

A. Congestive heart failure.
B. Crohn’s disease.
C. Lymphoma.
D. Rheumatoid arthritis.
E. Wilm’s tumor.

EXPLANATION

The correct answer is C. The baby has Wiskott-Aldrich syndrome, which is an X-linked recessive immunodeficiency disease characterized by the triad of thrombocytopenia (hemorrhage may be the presenting complaint), eczema, and recurrent infections (often respiratory). The children have defects in both T and B cell function, and are vulnerable to pyogenic bacteria, viruses, fungi, and Pneumocystis carinii. These patients have severe disease, and formerly often died by age 15. Survivors past age 10 have a 10% incidence of cancer, particularly lymphoma and acute lymphoblastic leukemia. Modern treatment consists of splenectomy, continuous antibiotic therapy, IV immunoglobulin, and bone marrow transplantation.

Congestive heart failure (choice A) is not a particular problem in these children.

Crohn disease (choice B) and rheumatoid arthritis (choice D) are not increased in these children.

Wilms tumor (choice E) usually occurs in infancy or very early childhood, and is not a specific complication of Wiskott-Aldrich syndrome.
Q 277
A 27-yr-old woman is 2-weeks post-partum with her first child. During her first follow-up visit she complains to her physician that she has had several crying spells and she has been increasingly irritable however she has had spells during which she has felt almost euphoric. She had these symptoms over the past week. She has had not any previous psychiatric disorder. Which of the following is the most likely diagnosis.

A. Adjustment disorder.
B. Dysthymic disorder.
C. Maternity blues.
D. Post-partum depression.
E. Post-partum psychosis.

EXPLANATION

The correct answer is C. Maternity blues is a normal state of sadness, dysphoria, frequent tearfulness, and dependence that about 20% to 40% of women experience in the postpartum period. It is thought to be derived from rapid changes in women's hormonal levels and the stress of childbirth associated with maternity.

Adjustment disorder (choice A) requires the development of emotional or behavioral symptoms in response to a stressor occurring within 3 months of the stressor, which also requires significant impairment in social and occupational functioning. It is excluded as a diagnosis when the presence of another Axis I diagnosis, such as postpartum blues, can account for the condition.

Dysthymic disorder (choice B) is a disorder of depressed mood, more often than not, over the course of at least 2 years. It is not an appropriate diagnosis for such a short period.

Postpartum depression (choice D) is a diagnosis that requires symptoms of major depression lasting longer than 5-7 days. It occurs more often in the months following childbirth rather than immediately subsequent to it.

Postpartum psychosis (choice E) is a serious diagnosis that requires the presence of auditory or visual hallucinations in addition to frequent suicidal and sometimes infanticidal ideation.
Q-278
A 54-yr-old woman comes to the physician because of hot flashes. She states that her hot flashes have been steadily worsening over the past year since she had a total abdominal hysterectomy and bilateral salpingo-oophorectomy for menorrhagia. Pathology form the surgery shows low-grade endometrial hyperplasia. She has no medical problems and takes no medications. Her family history is unremarkable except for a family history of osteoporosis. She states that the hot flashes have become absolutely debilitating for her and she wants to take something that gives her a chance to stop them. Which of the following is the most appropriate pharmacotherapy.

A. Alprazolam.
B. Clonidine.
C. Estrogen.
D. Oral contraceptive pills.
E. Raloxifene.

EXPLANATION

The correct answer is C. Menopause can bring about a number of bothersome symptoms for patients. These include anxiety, fatigue, depression, headaches, insomnia, and dyspareunia. Perhaps the most common symptom is the hot flash, which is an uncomfortable sensation of heat, especially in the face and chest. These flashes can occur once in a while or several times each day. There are many therapies available for hot flashes, but the most effective appears to be estrogen. Numerous studies have shown estrogen replacement to be highly effective in reducing central nervous system symptoms such as hot flushes, insomnia, irritability, anxiety, and headaches. This patient may also benefit from estrogen given her strong family history of osteoporosis, as estrogen replacement has been shown to be beneficial in reducing bone loss in postmenopausal women. The fact that this patient had endometrial hyperplasia does not prevent her from taking estrogen replacement therapy. She had hyperplasia, not endometrial cancer. And, even in some cases of endometrial cancer, some gynecologic oncologists would argue that once therapy has been given (i.e., hysterectomy and bilateral oophorectomy) and there is no evidence of residual disease, then estrogen replacement may be given. This patient, with only low grade endometrial hyperplasia on pathologic evaluation, has no contraindication to estrogen and would likely benefit significantly from estrogen replacement therapy.
Alprazolam (choice A) is a benzodiazepine and would not be the first line treatment for this patient's hot flashes.

Clonidine (choice B) is an antihypertensive that has been shown, in some studies, to be effective in the treatment of hot flashes. However, the most effective treatment is estrogen.

The oral contraceptive pill (choice D) would not be indicated for this patient as the levels of hormones are in excess of those needed during the postmenopausal period.

Raloxifene (choice E) is a selective estrogen receptor modulator. It has been approved for the prevention of postmenopausal osteoporosis. However, some patients experience an increase in hot flashes while taking raloxifene. Thus, estrogen would be preferable to raloxifene for this patient whose primary complaint is hot flashes.
Q-279
A 49-yr-old woman has a firm 2-cm mass in the right breast that has been present since 3-months. Mammogram has been read as "cannot rule out cancer" but it cannot diagnose cancer either. A fine needle aspirate of the mass and cytology do not identify any malignant cells. Which of the following is the most appropriate next step in management.

A. Reassurance and re-appointment in a year.
B. Repeat mammogram and fine needle aspiration in one-month.
C. Core or incisional biopsies.
D. Lumpectomy and axillary dissection.
E. Modified radical mastectomy.

EXPLANATION
The correct answer is C. Negative findings do not have the same diagnostic value that positive findings have. If this had been a 19-year-old woman suspected of having a fibroadenoma, one would have been satisfied with negative imaging studies (in that age, a sonogram) or the negative FNA. But, at age 49, the risk of cancer is much higher. Given negative findings in the least invasive studies, one would feel compelled to move to more aggressive ways to obtain better tissue sampling.

Obviously, reassurance (choice A) is not justified yet, and waiting a whole year with what may be a cancer would be malpractice.

Repeating the same studies in a month (choice B) leaves you with the quandary of what to do if they are negative again. No, you need more tissue for the pathologist right now.

Lumpectomy and axillary dissection (choice D) is too much to do before the diagnosis has been established. Lumpectomy alone might have been okay. An excisional biopsy could indeed be justified under the circumstances, and a lumpectomy is not much more than a big excisional biopsy. But, messing with the axilla should not happen before we know it is cancer.

Mastectomy (choice E) is even less acceptable. Patients are grateful when a cancer is ruled out by procedures that they do not perceive as mutilating. But, when surgery leaves them deformed, the "good news" that there was no cancer may lead them to call their lawyer.
A 54-yr-old woman comes to the physician for an annual examination. She has no complaints. For the past year she has been taking tamoxifen for the prevention of breast cancer. She was started on this drug after the physician determined her to be at high-risk on the basis of her strong family history, nulliparity and early age menarche. She takes no other medications. Examination is within normal limits. Which of the following is patient most likely to develop while taking tamoxifen.

A. Breast cancer.
B. Elevated LDL cholesterol.
C. Endometrial changes.
D. Myocardial infarction.
E. Osteoporosis.

EXPLANATION

The correct answer is C. Tamoxifen is a nonsteroidal agent with both pro- and antiestrogenic properties. It was first approved in 1977 by the U.S. Food and Drug Administration for use in postmenopausal women with advanced breast cancer. Since that time, it has been approved for many other uses related to breast cancer: as adjuvant therapy in postmenopausal women with resected node-positive disease, in postmenopausal women with metastatic breast cancer, and as adjuvant therapy in women (pre- and postmenopausal) with resected node-negative disease. Recently, much attention has been focused on its use for breast cancer prevention. There is evidence that women at high risk for the development of breast cancer may reduce their risk by taking tamoxifen. However, although tamoxifen appears to be antiestrogenic at the level of the breast, it appears to act in a proestrogenic fashion at the level of the endometrium. Many women on tamoxifen will develop endometrial changes, including polyp formation, hyperplasia, and frank invasive carcinoma. Thus, women on tamoxifen need to be followed carefully, and prompt evaluation of abnormal vaginal bleeding should be conducted.

Tamoxifen is used to prevent breast cancer (choice A).

Tamoxifen, like estrogen, has been shown to lower blood levels of LDL cholesterol (choice B).

Women on tamoxifen appear to be at no greater risk, and may be at a lower risk, for the development of myocardial infarction (choice D).

Tamoxifen, like estrogen, has been shown to increase bone density and to reduce the likelihood of development of osteoporosis (choice E).
Q-281
A one-month-old boy is brought to the ER by his mother who states that he has been having, what she describes as projectile vomiting for the past several days. She states that he vomits every time she feeds him and the situation seems to be getting worse although he does not seem to be in pain. She describes the vomitus as non-bilious and he has had normal stools with no blood in them. On examination the infant appears to be mildly dehydrated, his abdomen is soft and there is a palpable olive sized, firm, movable mass in the right upper quadrant. Which of the following is the most likely diagnosis.

A. Duodenal atresia.
B. Intussusception.
C. Hirschsprung disease.
D. Midgut volvulus.
E. Pyloric stenosis.

EXPLANATION

The correct answer is E. Pyloric stenosis develops in the first weeks of life. It is caused by hypertrophy of the pyloric muscle, which obstructs gastric outflow. The incidence is higher in males and first-born infants. The symptoms include progressively worsening vomiting, which becomes projectile and is non-bilious. On examination, peristaltic waves may be seen, and an olive-sized mass is usually palpated in the right upper quadrant.

Duodenal atresia (choice A) is usually associated with other congenital anomalies. Symptoms include bilious vomiting, abdominal distention, and failure to pass meconium. Upright abdominal x-ray films show the classic "double-bubble sign."

Intussusception (choice B) presents with vomiting, bloody stool, and colicky abdominal pain. As the obstruction progresses, the vomitus becomes bile-stained. On examination, there is usually a sausage-shaped mass in the distribution of the colon.

Hirschsprung disease (choice C), or aganglionic megacolon, is associated with failure to pass meconium or constipation and abdominal distention. Diagnosis is made by rectal biopsy.

Midgut volvulus (choice D) can occur at any age but is common in infancy. Symptoms include bilious vomiting, abdominal distention, pain, and bloody stools. An upper gastrointestinal series is diagnostic for volvulus showing a "corkscrew" narrowing of the distal duodenum.
A 50-yr-old woman is seen by her family physician because she is feeling poorly. The woman has known history of severe chronic gastritis. Physical examination demonstrates pallor of skin and mucosal membranes and no other positive findings are noted. Her hematocrit of 33% is demonstrated in the physician's office, blood smear is performed and reviewed in the office shows enlarged erythrocytes that have enlarged central pale areas, neutrophils and other white cells are present in normal numbers, some of the neutrophils have hypersegmented nuclei. Which of the following is the most likely diagnosis.

- A. Beta-thalassemia trait.
- B. Folate deficiency anemia.
- C. Iron deficiency anemia.
- D. Sickle cell anemia.
- E. Vitamin B₁₂ deficiency anemia.

EXPLANATION

The correct answer is E. While either folate deficiency or vitamin B₁₂ deficiency could produce a megaloblastic anemia such as that seen in this patient, the specific hint of chronic gastritis should suggest insufficient synthesis of the intrinsic factor needed for Vitamin B₁₂ absorption by the small intestine. For classic pernicious anemia, autoantibodies directed against parietal cells and intrinsic factor are documented, but some physicians use the term pernicious anemia to also include vitamin B₁₂-deficient anemic states in which another process, such as chronic gastritis (as in this case), has destroyed large amounts of gastric mucosa. Vitamin B₁₂ deficiency anemia can also be seen as a result of inadequate diet (particularly among vegetarians) and small intestinal disease. Additionally, inadequate utilization of B₁₂ can occur in many severely ill patients. The diagnosis of vitamin B₁₂ deficiency can be confirmed with a serum vitamin B₁₂ assay. Supplemental vitamin B₁₂ is given as an IM injection. B₁₂ supplementation must be given for life unless the underlying abnormality producing the deficiency is corrected.

Beta thalassemia trait (choice A) might produce some pale cells, but they would not be enlarged.

Folate deficiency anemia (choice B) would appear similar to B₁₂ deficiency, but the specific hint of chronic gastritis should suggest B₁₂ deficiency instead.

Iron deficiency anemia (choice C) produces small erythrocytes.

Sickle cell anemia (choice D) is associated with abnormally shaped erythrocytes.
A 50-yr-old woman with a past history of recurrent major depressive disorder is currently on maintainance dose of an anti-depressent. She has been well for the past year. She is complaining to her psychiatrist about her decreased ability to reach orgasm. Which of the following medication has most likely caused her anorgasmia.

A. Amitriptyline.
B. Brupropion.
C. Metrazapine.
D. Nefazodone.
E. Paroxetine.

EXPLANATION
The correct answer is E. Paroxetine, along with other selective serotonin reuptake inhibitors, can cause decreased libido and difficulties reaching orgasm. In studies, the incidence of these side effects was 1% to 2% in patients on paroxetine, compared with those on placebo.

Amitriptyline (choice A) is used less frequently in the treatment of depression because of its numerous side effects and possible lethal consequences with overdose. It can cause decreased libido, but usually doesn’t cause anorgasmia.

Bupropion (choice B) has had no negative effects on sexual functions in placebo-controlled trials.

Mirtazapine (choice C) can infrequently (less than 1%) cause decreased libido, but has had no effects on orgasm in placebo-controlled studies.

In about 1% of patients studied, nefazodone (choice D) has caused decreased libido but has had no effect on orgasm compared with placebo.
Q-284
A 60-yr-old man complains of extremely severe sharp shooting pain in his face. He describes the episode as being like a bolt of electricity that are brought about by touching specific area, lasts about 60-seconds and occur many times during the day. Neurologic examination is completely normal but it is noted that part of his face is unshaven because he fears to touch the area. Gadolinium-enhanced MRI shows no abnormalities of trigeminal nerve. Which of the following is the most appropriate initial treatment.

A. Anticonvulsants.
B. Aspirin.
C. Non-steroidal anti-inflammatory drugs.
D. Vasoconstrictors.
E. Vasodilators.

EXPLANATION

The correct answer is A. The clinical description is that of trigeminal neuralgia ("tic douloureux"), which is treated with anticonvulsants. Carbamazepine is usually the first choice, but phenytoin has also been used. Antidepressants, such as amitriptyline, have also been tried. Surgical decompression of the nerve or stereotactic ablation are used in recalcitrant cases.

Aspirin (choice B), nonsteroidal anti-inflammatory drugs (choice C), vasoconstrictors (choice D), and vasodilators (choice E) do not have a role in the treatment of trigeminal neuralgia.
Q-285
During the month of December a middle-aged patient with a chronically dry skin develops widespread coin shaped lesions. The lesions begin as itchy patches of vesicles and papules. These ooze serum and crust over. The lesions are most numerous on the extensor surface of the extremities and on the buttocks. The patient says that some of the lesions appear to heal and then reappear at the same site. Which of the following is the most likely diagnosis.

A. Nummular dermatitis.
B. Pompholyx.
C. Psoriasis.
D. Seborrheic dermatitis.
E. Stasis dermatitis.

EXPLANATION
The correct answer is A. The patient most likely has nummular dermatitis, which is a chronic inflammation of the skin, the etiology of which is still unknown. The presentation illustrated in the question stem is typical. This condition should be in your differential diagnosis whenever the terms "coin-shaped" or "discoid" are used to describe a patient’s skin lesions in a question. Microscopically, the dominant feature is a localized spongiosis (corresponding to edema) of the epidermis, which may also contain minute fluid-filled holes that correspond to the tiny vesicles seen clinically in early lesions. Treatment of these patients is problematic, and numerous regimens involving corticosteroids or antibiotics have been recommended, each of which appears to work with some but not all patients.

Pompholyx (choice B) produces deep-seated pruritic vesicles on the palms, fingers, and soles.

Psoriasis (choice C) can produce coin-shaped lesions, but they are covered with silvery scale.

Seborrheic dermatitis (choice D) produces hyperkeratosis on the scalp and face.

Stasis dermatitis (choice E) can produce discoloration and ulceration of the lower legs near the ankles.
A 67-yr-old woman comes to the physician for pain in urination and frequency with urination. She is hypertensive for which she takes a beta-blocker but has no other problem. She states that she is not sexually active and does not smoke and drinks cranberry juice daily. Examination shows mild suprapubic tenderness and genital atrophy but is otherwise unremarkable. Urinalysis shows 50-100 leukocytes/hpf and 5-10 erythrocytes/hpf. Which of the following is the most likely cause of infection.

A. Cardiac disease.
B. Cranberry juice ingestion.
C. Hypoestrogenism.
D. Nephrolithiasis.
E. Sexual intercourse.

EXPLANATION

The correct answer is C. This patient has a presentation that is most consistent with urinary tract infection (UTI). Two of the major risk factors for uncomplicated UTI are sexual intercourse and hypoestrogenism. Sexual intercourse is believed to lead to urinary tract infection by introducing colonizing bacteria into the bladder. Sexual intercourse has been shown to increase the number of bacteria in the urine up to ten times. Hypoestrogenism is believed to be a risk factor for UTI because it is known that postmenopausal women not receiving estrogen replacement therapy (ERT) are at greater risk for developing a UTI compared with those women who do use ERT. Furthermore, estrogen administration has been shown to prevent recurrent infection.

Cardiac disease (choice A) is a major risk factor for a number of conditions. However, cardiac disease is not a known risk factor for UTI.

Cranberry juice ingestion (choice B) has, for many years, been believed to help prevent UTIs. Many in the medical establishment viewed this as an "old wives tale." However, there have been many studies that have shown that cranberry juice contains substances that inhibit bacterial adherence. Moreover, a recent study showed that elderly women that drank cranberry juice have lower rates of pyuria and bacteriuria and a decreased need for antibiotics.

Nephrolithiasis (choice D) can be a risk factor for the development of an eventual infection, but it is not as common a risk factor as is hypoestrogenism or sexual intercourse. Furthermore, this patient has no evidence of nephrolithiasis, which typically causes severe to excruciating episodes of pain.

Sexual intercourse (choice E), as noted above, is a well-known risk factor for the development of a UTI. Sexually active women with recurrent UTIs may be treated with a single dose of antibiotic prophylactically after intercourse. This patient, however, has stated that she is not sexually active.
Q-287
A 43-yr-old man presents with a four-year history of joint pain. The distribution is asymmetric involving the proximal and distal small joints of the right hand and left knee, the ankle and the right elbow. Pain and morning stiffness are moderate. Physical examination reveals mild nail pitting and the distal third interphalangeal joint is partially subluxated. X-rays of the hand shows resorption of the distal end of the phalynx. The ESR is elevated to 46 mm/hr and rheumatoid factor is negative. Which of the following is the most likely diagnosis.

A. Primary generalized osteoarthritis.
B. Pseudogout.
C. Psoriatic arthritis.
D. Rheumatoid arthritis.

EXPLANATION

The correct answer is C. Nail pitting and dystrophy associated with distal destructive asymmetric arthritis are virtually diagnostic of psoriatic arthritis. Skin disease may or may not be severe and obvious. Nail changes occur in 85% of those with psoriatic arthritis, and in only 20% of those with uncomplicated psoriasis. The clinical categories of psoriatic arthritis include distal interphalangeal, asymmetric, symmetric, mutilating, and spinal. Antimalarials should be avoided if disease-modifying therapy is indicated, as they can exacerbate psoriasis.

Primary generalized osteoarthritis (choice A) can involve the distal interphalangeal joints; joint erosions do not occur, and osteophytes are seen radiologically. Nail dystrophy does not occur.

A variant of pseudogout (choice B) can closely mimic rheumatoid arthritis or a mutilating arthropathy, but nail changes are absent, and there is radiologic evidence of chondrocalcinosis (calcification of articular cartilage).

Rheumatoid arthritis (choice D) does not cause distal erosive disease and is generally (but not invariably) symmetric.
Q-288
A 66-yr-old man presents to the clinic complaining of progressively worsening shortness of breath and non-productive cough over the past two-years. He retired one year ago after working as a rock-miner for more than 30-years. He has no other significant past medical history. On physical examination he is a thin man who appears tachypneic at rest, his lungs have reduced chest expansion and has dry inspiratory rales in the upper lobes bilaterally. The remainder of his examination is normal. A chest x-ray reveals multiple round opacities in the upper lobes and hilar lymphadenopathy with lymph node calcification. Which of the following is the most likely diagnosis.

A. Asbestosis.
B. Aspergillosis.
C. Cystic fibrosis.
D. Silicosis.
E. Tuberculosis.

EXPLANATION
The correct answer is D. This patient's occupational history of working in the mining industry should always prompt the consideration of the diagnosis of silicosis. There is usually bilateral upper lobe involvement associated with hilar lymphadenopathy and "eggshell" calcification of the visualized lymph nodes.

There is no description of asbestos exposure (choice A), making this diagnosis unlikely.

Bronchopulmonary aspergillosis (choice B) is often seen in farm workers who have been working in silos.

Cystic fibrosis (choice C) presents during childhood, and these patients do not survive to this age.

There is no evidence of tuberculosis exposure (choice E) by the patient’s history.
A 29-yr-old presents to a local health clinic after complaining of severe fatigue and low-grade fever for the past three-weeks. In addition he had noted yellow eyeballs over the past several days and has become increasingly nauseated. He admits to occasionally injecting IV cocaine. He is a sexually active heterosexual who usually but not always uses barrier contraceptive devices. Physical examination his temperature is 38.4 °C (101.1 °F) and he has mildly icteric sclera. The liver edge is smooth and mildly tender and measures 13 cm in the mid-clavicular line, the spleen tip is not palpable and there is no shifting dullness. Which of the following will most likely be found on serologic testing to explain his current symptoms.

A. Hepatitis A IgG antibodies.
B. Hepatitis B surface antibodies.
C. Hepatitis B surface antigen.
D. Hepatitis C antibodies.
E. Hepatitis D antibodies.

EXPLANATION

The correct answer is C. This man has multiple risk factors for hepatitis B infection, i.e., IV drug use and occasional "unsafe" sex. The symptoms are consistent with a mild to moderate case of hepatitis B infection. This is confirmed by serologic evidence of hepatitis B surface antigen positivity.

Hepatitis A IgG (choice A) is found in patients who have had a prior hepatitis A infection and have developed immunity.

Hepatitis B surface antibody (choice B) is found in patients who have had a prior hepatitis B infection or who have received the hepatitis B vaccine.

Hepatitis C antibodies (choice D) are found in patients who have been exposed to hepatitis C. This patient is at risk for hepatitis C, given his use of IV drugs and the associated possibility of delivering the blood-borne hepatitis C. However, hepatitis C rarely presents with an acute viral hepatitis syndrome and instead will generally present as an indolent chronic hepatitis.

Hepatitis D (choice E) is found as a co-existing infection to hepatitis B and is usually found in patients with a very severe course of hepatitis B, which is not described in this patient.
Q-290
A 14-yr-old boy is hit by an automobile while crossing the street and is immediately taken to the ER. On arrival he is conscious and complains of shortness of breath and chest pain. Physical examination reveals an ecchymotic area over his right chest and subcutaneous emphysema. Breath sounds are absent on the right side. His trachea is deviated to the left and his right hemithorax is tympanic to percussion. Which of the following is most appropriate initial step in management of this patient.

A. 12-lead ECG.
B. CT-scan of the chest.
C. Plain radiograph of the chest.
D. Chest tube thoracostomy.
E. Pericardiocentesis.

EXPLANATION

The correct answer is B. The findings on physical examination strongly suggest tension pneumothorax. This is a life-threatening emergency that needs to be managed immediately with either chest tube thoracostomy or needle thoracocentesis to relieve the tension on the affected side of the thorax. Physical examination reveals tachycardia, tachypnea, decreased or absent breath sounds over the involved hemithorax, increased resonance to percussion, subcutaneous emphysema, and deviation of the trachea to the opposite side. Tension pneumothorax develops when air leaking into the chest increases intrathoracic pressure, completely collapsing the lung on that side. It results in displacement of the mediastinum and trachea to the opposite side of the chest and impedes venous return.

12-lead ECG (choice A), CT of the chest (choice C), and plain radiography of the chest (choice E) may be indicated on a trauma patient after the patient is stabilized. In tension pneumothorax, no imaging study should precede the emergent relief of tension inside the chest.

Pericardiocentesis (choice D) is indicated when there is cardiac tamponade, caused by buildup of fluid in the pericardium. Cardiac tamponade significantly affects ventricular relaxation and markedly decreases cardiac output.
Q-291
A 58-yr-old man is admitted to a trauma service after a motor vehicle accident that caused a fracture of his pelvis and right femur. His family reports that he recently lost his job due to poor work performance related to a worsening problem with alcohol. On the third day of hospitalization, third post-operative day after internal fixation of femur, the patient is disoriented, he tells the nursing staff about feeling and seeing snakes crawling on his bed. Which of the following is the most appropriate initial step in management of this patient’s altered mental status.

A. Clonidine.
B. Haloperidol.
C. Diazepam.
D. Naloxone.
E. Olanzapine.

EXPLANATION

The correct answer is C. This patient is most likely experiencing alcohol withdrawal delirium (delirium tremens). This most severe form of alcohol withdrawal is a medical emergency that can result in significant morbidity and mortality. Untreated, delirium tremens has a mortality rate of approximately 20%. In addition to delirium, patients in this stage of withdrawal exhibit autonomic hyperactivity, perceptual distortions (commonly visual or tactile hallucinations, as in this case), and fluctuating levels of psychomotor activity. About 5% of all alcohol dependent hospitalized patients will develop delirium tremens. The condition frequently develops unexpectedly around the third hospital day. Benzodiazepines, such as lorazepam, are the treatment of choice. Lorazepam can be administered PO, IM, or IV. Supportive management, including hydration and very close monitoring, should also be initiated.

Clonidine (choice A) may be useful in controlling hypertension associated with delirium tremens, but it would not adequately treat the condition or other symptoms.

Haloperidol (choice B) is a high-potency conventional antipsychotic that would not treat delirium tremens, though it might modify the perceptual disturbances associated with the condition.

Naloxone (choice D) is an opioid antagonist used in the treatment of opioid intoxication or overdose. It would not be a proper treatment of alcohol withdrawal.

Olanzapine (choice E) is an atypical antipsychotic that might control psychotic symptoms associated with alcohol withdrawal, but would not treat the underlying condition.
Q. 292
A 23-yr-old primigravid woman at 29-weeks gestation comes to the physician because of contractions. She states that they have been occurring every 3-5 minutes for the past few hours and they are worsening in intensity. Examination reveals that patient is afebrile and her abdomen is non-tender, her cervix is 3 cm dilated and her fetus is in vertex position. The patient is started on IV magnesium sulphate and penicillin and given an intramuscular injection of betamethasone. Which of the following represents the most significant consequence of this patient's preterm labor.

A. Cesarian delivery.
B. Forceps assisted vaginal delivery.
C. Maternal infection.
D. Neonatal prematurity.
E. Shoulder dystocia.

EXPLANATION
The correct answer is D. Preterm labor is a major problem in the U.S. Estimates are that it affects somewhere between 5% and 10% of all pregnancies. The exact etiology of the preterm labor is usually difficult to determine. Theories abound as to why some women develop contractions and cervical dilation prior to term whereas others do not. Possible etiologies include infection, dehydration, cervical weakness, multiple gestation, and uterine anomalies. The most significant consequence of preterm labor is that it often results in premature delivery of a premature neonate. Premature neonates are at high risk for pulmonary immaturity, intraventricular hemorrhage, necrotizing enterocolitis, apnea, bradycardia, and other complications.

Cesarean delivery (choice A) is not necessarily a consequence of preterm labor. This fetus is in the vertex position, and this patient, should she have unstoppable preterm labor, could have a vaginal delivery.

Forceps assisted vaginal delivery (choice B) is not necessarily a consequence of preterm labor. If this patient is in unstoppable preterm labor, she may have a vaginal delivery without the need of forceps.

Maternal infection (choice C) may be the cause of this patient's preterm labor, but it is unlikely to be the most significant consequence of the preterm labor.

Shoulder dystocia (choice E) has been reported to occur even in a preterm delivery, although this is rare. The most significant consequence of preterm labor is neonatal prematurity, not shoulder dystocia.
An older overweight man complains of sharp disabling heel pain every time his foot strikes the ground. The pain is worse in the mornings, preventing him from putting any weight on the heel. X-ray film shows a bony spur matching the location of the pain and physical examination shows exquisite tenderness to direct palpation right over the heel spur. Furthermore when the ankle is dorsiflexed, the entire inner border of the facia is tender to palpation. Which of the following is the most likely diagnosis.

A. Epiphysitis of the calcaneus.
B. Fracture of the posterolateral talar tubercle.
C. Plantar fascitis.
D. Posterior achille’s tendon bursitis.
E. Posterior tibial nerve neuralgia.

**EXPLANATION**

The correct answer is C. All the details are in the vignette, including the association with a heel spur that in the past led many of these patients to undergo unnecessary surgery to remove the spur. The spur is caused by the pull of the fascia and is not the cause of the plantar fasciitis.

Epiphysitis of the calcaneus (choice A) affects children, and the pain occurs along the sides of the heel where the heel growth centers are located.

Fracture of the posterolateral talar tubercle (choice B) occurs from a sudden jump on the ball of the foot, and the pain and swelling are behind the ankle.

Posterior Achilles tendon bursitis (choice D) occurs mostly in young women, and an erythematous, indurated, tender area is present at the posterosuperior aspect of the heel.

Posterior tibial nerve neuralgia (choice E) is the foot’s equivalent of the carpal tunnel syndrome, with the pain often extending to the toes, and tingling being produced by tapping the nerve.
A 59-yr old African-American man is brought to the ER because he could not get out of bed that morning. He complains of two-weeks of worsening pain in his right shoulder and left arm and has had difficulty urinating for the past 10-months. His blood pressure is 130/68, pulse is 72 and respiratory rate is 16 breaths/min and temperature is 98.9 F. There are no sensory or motor deficits in the upper extremities, his neck has full range of motion, muscle strength is diminished in both lower extremities. Straight leg raising does not elicit pain but temperature and pain sensation are absent in right foot and are nearly absent in the left foot, proprioception is spared, plantar and deep tendon reflexes are absent at the knees and ankles. On rectal examination the prostate is enlarged, firm and non-tender. Which of the following is the most likely diagnosis.

A. Amyotrophic lateral sclerosis.
B. Metastatic prostate cancer.
C. Pott's disease.
D. Sciatica.
E. Spinal stenosis.

EXPLANATION

The correct answer is B. Carcinoma of the prostate is the most common malignancy in men in the U.S., and is the second most common cause of cancer death in men older than 55. The disease is more common among blacks than whites. Most carcinomas of the prostate are slow-growing, and greater than 80% are stage C or D at diagnosis. Symptomatic patients usually complain of difficulty voiding and, with advanced disease, have symptoms of spinal compression. Hematogenous metastases occur to the bone more frequently than to the viscera, and an enlarged, nontender prostate is palpable on rectal exam.
Amyotrophic lateral sclerosis (choice A) is a progressive motor neuron disease that affects both upper and lower motor neurons. Patients present with a gradual onset of asymmetric weakness of the distal limb. Even in advanced disease, sensory and bladder function are preserved. On exam, there is hyperactivity of muscle stretch reflexes.

Pott disease (choice C) is a vertebral osteomyelitis primarily involving the thoracic spine. Patients usually complain of neck or back pain. Palpation of the involved area results in pain, and physical exam reveals spasm of paraspinal muscles and limitation of motion.

Sciatica (choice D) is caused by irritation of the sciatic nerve (L4, L5, S1). Pain originating in this nerve radiates down the posterior aspect of the thigh and the posterior and lateral aspect of the leg. Sciatica generally stops at the ankle and is associated with paraesthesia (tingling and numbness) that extend distally into the foot. Reflex loss, muscle atrophy and weakness, and fascicular twitching may be present on physical exam.

Spinal stenosis (choice E), which typically affects elderly patients, is a narrowing of the lateral recess and intervertebral foramen with resultant encroachment on the roots of the cauda equina. The pain is bilateral, worsens with standing and walking, and is relieved by rest.
Q-295
A 32-yr-old man has a fifteen-year history of celiac sprue. He admitted to be non-compliant with the diet prescription over the past six-months and he has lost fifteen-pounds during that time in association with frequent diarrhea. Which of the following is most likely to occur in this patient.

A. Iron deficiency will produce microcytic anemia.
B. Vitamin A deficiency will produce nystagmus.
C. Vitamin B$_{12}$ deficiency will produce a megaloblastic anemia.
D. Vitamin D deficiency will produce hypercalcemia.
E. Vitamin K deficiency will produce hyperkalemia.

EXPLANATION

The correct answer is A. Celiac sprue will produce signs and symptoms of malabsorption of the proximal small bowel. Iron (along with folate and calcium) is preferentially absorbed in the proximal small bowel and is not well compensated for in the distal small intestine when there is proximal small bowel malabsorption. Vitamin A, D, and K deficiencies will occur but do not produce the described symptoms.

Vitamin A deficiency (choice B) will produce night visual disturbances rather than nystagmus.

Vitamin B$_{12}$ deficiency (choice C) rarely occurs in celiac sprue since the malabsorptive process is generally more severe in the proximal small bowel whereas B$_{12}$ absorption occurs in the terminal ileum.

Vitamin D deficiency (choice D) will produce hypocalcemia rather than hypercalcemia.

Vitamin K deficiency (choice E) produces a coagulopathy rather than hypokalemia.
A 32-yr-old woman comes to the hospital for an elective repeat cesarian delivery. 4-years ago she had a primary cesarian delivery for non-reassuring fetal heart rate tracings. 2-years ago she choose to have repeat elective cesarian delivery rather then attempting a vaginal birth after cesarian. Her prenatal course was uncomplicated except that she has mitral valve prolapse. An echocardiograph demonstrates mitral valve prolapse but otherwise there is no structural cardiac disease. Which of the following is the correct management of this patient.

A. Administration of IV antibiotics 30-minutes prior to the procedure.
B. Administration of IV antibiotics immediately after the procedure.
C. Administration of IV antibiotics for 24-hours after the procedures.
D. Administer oral antibiotics 6-hours after the procedure.
E. No antibiotics are needed.

EXPLANATION

The correct answer is E. Mitral valve prolapse affects approximately 5% of women of childbearing age. Consequently, the issue of mitral valve prolapse and the need for antibiotics comes up quite often in obstetrics, particularly with delivery (either vaginal delivery or cesarean delivery). Bacterial endocarditis is a life-threatening infection that can develop in patients with structural cardiac disease who are exposed to bacteremia. The risk for any given procedure depends upon the nature of the procedure itself and on the nature of the cardiac lesion. Periodically, the American Heart Association publishes guidelines for the prevention of bacterial endocarditis. According to the American Heart Association guidelines, antibiotic prophylaxis is not necessary for cesarean delivery or normal vaginal delivery. The possible exception to this is for patients with "high risk" cardiac conditions, which includes women with a history of endocarditis or who have prosthetic heart valves, complex cyanotic congenital heart disease, or surgically corrected systemic pulmonary shunts. Mitral valve prolapse, if associated with mitral regurgitation (demonstrated by Doppler or a murmur), is considered a moderate risk condition and, therefore, antibiotic prophylaxis is not necessary. This patient, therefore, does not require antibiotics prior to, during, or after her cesarean delivery.

To administer intravenous antibiotics 30 minutes prior to the procedure (choice A), immediately after the procedure (choice B), 24 hours after the procedure (choice C), or to administer oral antibiotics 6 hours after the procedure (choice D) would all be unnecessary. As explained above, the reason for administering antibiotics to women with structural cardiac disease is to prevent bacterial endocarditis. Bacterial endocarditis is a potentially fatal condition. However, there are different degrees of structural cardiac disease. Mitral valve prolapse with regurgitation is considered to be a moderate risk condition. The American Heart Association does not recommend endocarditis prophylaxis for women with moderate risk conditions undergoing vaginal or cesarean delivery.
Q. 297

A 23-yr-old woman seeks help for exquisite pain with defecation and blood streaks on outside of the stool which she had been having for several weeks. Because of pain she has avoided having bowel movements and when she finally did, the stool were hard and even more painful. When seen she had no fever or leukocytosis. Physical examination had to be done under spinal anesthesia because the patient was so afraid of the pain that she initially refused even inspection of the area. The examination confirms the suspected diagnosis and she is placed on stool softners and appropriate topical agents but without success. She is willing to undergo more aggressive treatment. Which of the following is the most appropriate next step.

A. Excision of the lesion.
B. Fistulostomy.
C. Incision and drainage.
D. Lateral internal sphincterotomy.
E. Rubber band ligation.

EXPLANATION

The correct answer is D. The clinical picture is classic for anal fissure, which is perpetuated by the fact that the anal sphincter is "too tight." Forceful dilatation under anesthesia, lateral sphincterotomy, or botulinum toxin injections are acceptable options to "break the cycle." The only one of those choices given is the sphincterotomy.

Excision (choice A) used to be done for this condition, before the role of the "too tight sphincter" was elucidated.

Fistulotomy (choice B) is not the answer. She has a fissure, not a fistula.

Incision and drainage (choice C) is another option that addresses a wrong diagnosis. We do that for perirectal abscess, which produces severe pain with fever and leukocytosis, but without blood streaks, and drains spontaneously after several days if not diagnosed and treated.

Rubber band ligation (choice E) is the answer for internal hemorrhoids. Internal hemorrhoids can bleed, but typically do not hurt. Thrombosed external hemorrhoids can hurt tremendously, but those are not amenable to rubber band ligation.
A 32-yr-old man is comatose in ICU. The patient sustained a massive head injury in a head-on motor vehicle accident 3-months ago and has been in vegetative state since that date. He is ventilator dependent and receives nutritional support via gastrostomy tube. The patient makes no purposeful movements and does not withdraw from painful stimuli. There is discord present within his family about whether to withdraw care, his father desires care to be withdrawn whereas his mother wants to continue maximal support care. Which of the following is the most appropriate determining factor in helping to direct future care.

A. The decision of a court appointed legal guardian.
B. The decision of the medical and nursing team taking care of the patient.
C. The father wishes given that he is the health care proxy.
D. The opinion of the hospital ethics committee.
E. The patient's previously expressed wishes regarding life support.

EXPLANATION

The correct answer is E. In these difficult situations, in which the patient is not able to make his or her own decisions and there are disparate views among family members, the most important directing factor should be what the patient would have decided were he able to speak for himself. Therefore, previously expressed views on what the patient would want if faced with a similar situation could prove invaluable in helping to direct care in the direction that the patient would have wanted.

Court-appointed legal guardians (choice A) are used when a patient has no family or has family members who are not competent to help make medical decisions on behalf of the incapacitated patient.

If the patient has made his or her wishes known in any prior circumstance (in writing or verbally), any sentiments by the medical team (choice B), the parent (choice C), or a hospital ethics committee (choice D) would be minimized.
Q-299
A 32-yr-old woman in second month of pregnancy is found to have a 5cm mass in the upper outer quadrant of her left breast. Mammogram shows no other lesions and core biopsy revealing infiltrating ductal carcinoma. Which of the following would be the best course of action at this time.

A. Chemotherapy now, deferring surgery until after delivery.
B. Radiation therapy now, deferring surgery until after delivery.
C. Lumpectomy and axillary sampling followed in six-weeks by radiotherapy.
D. Modified radical mastectomy now, deferring systemic therapy until later.
E. Immediate therapeutic abortion and palliative breast surgery.

EXPLANATION
The correct answer is D. The treatment of breast cancer in a pregnant woman should be the same as that in a nonpregnant woman, except for two restrictions: no chemotherapy during the first trimester, and no radiation therapy during the pregnancy. It is not necessary to terminate the pregnancy. The preferred treatment for a 5-cm tumor would be mastectomy (too big for lumpectomy). Should axillary nodes be positive, systemic therapy should be done later.

Although the appropriate surgery can be done during the pregnancy, neither chemotherapy (choice A) nor radiation therapy (choice B) would be acceptable at this time.

Lumpectomy (choice C) is not a good idea for a 5-cm tumor. Furthermore, the radiation therapy that must follow lumpectomy could not be given in 6 weeks, while she is still pregnant.

Finally, let's not terminate a pregnancy that is doing no harm. Therapeutic abortion (choice E) does not help with the treatment of breast cancer. Neither is the pregnant woman who gets cancer of the breast automatically incurable, and thus only fit for a palliative procedure.
A 59-yr-old man who is scheduled for an abdominal aortic aneurysm repair in three-weeks presents to the physician’s office. The patient AAA was diagnosed last-week by ultrasound. Imaging at that time revealed a 5.5 cm aneurysm of his abdominal aorta extending bilaterally into his iliac arteries. The patient also has moderate hypertension with a mean daily blood pressure of 150/95 mmHg. On physical examination the patient appears in no distress, he weighs 274 pounds and is 5’9” tall. His lungs are clear and he has a loud S₄. His abdominal aortic aneurysm is palpable as a pulsatile mass in his abdomen. Which of the following is the most appropriate intervention to prepare this patient for surgery.

A. Arrange long-term physical therapy.
B. Improve blood pressure control.
C. Initiate a weight loss program.
D. Prescribe a non-steroidal anti-inflammatory drug.
E. Prescribe a regimen of regular aerobic exercise.

EXPLANATION

The correct answer is B. The most important interventions involve limiting the chance of a ruptured abdominal aortic aneurysm (AAA), which is the suspected diagnosis here. These include counseling for smoking cessation and improving blood pressure control.

Physical therapy (choice A), although often effective for the relief of back pain, plays no role in the treatment of AAA.

Initiating a weight loss program (choice C) or prescribing an exercise program (choice E) can both potentially play an important role in improving the patient’s general health. However, they will unlikely alter his short-term risk from AAA rupture.

Prescribing a nonsteroidal anti-inflammatory drug (NSAID) (choice D) may decrease the back pain, but may worsen the effect of a rupture because of the antiplatelet effects of NSAIDs.
A 35-yr-old man who works as an investment consultant at a firm comes to the physician for daily headaches over the past 2-weeks. He reports that the headache begins in the morning and lasts for the whole day. The pain feels like squeezing tightness around his head and is particularly intense at the back of the neck. He does not drink alcohol or smoke but he does drink many cups of tea during the day. He admits that recently he has been under tremendous stress because of volatility of the stock market and the problem with his clients. Physical examination is normal. Which of the following is the most appropriate next step in management.

A. Non-steroidal anti-inflammatory drug trial.
B. Sumatriptan trial.
C. Psychiatric referral.
D. Lumbar puncture.
E. CT-scan of the head.
F. MRI of the head.

EXPLANATION

The correct answer is A. The vise-like quality of this headache is consistent with tension headache, which is often triggered or worsened by stressful situations, anxiety, and fatigue, for example. Usually, this form of headache does not require further clinical investigations and responds in most cases to nonsteroidal anti-inflammatory drugs (NSAIDs). Although tension headache is said to be extremely prevalent in the general population, patients rarely come to the general practitioner.

Sumatriptan (choice B) is the drug of choice for treatment of migraine during acute attacks. It is a centrally acting serotonin-receptor agonist. It is not used for tension headache, unless this is associated with migraine.

Although psychodynamic analysis may be beneficial in disclosing the underlying causes of anxiety, psychiatric referral (choice C) is usually unnecessary. On the other hand, exercise and relaxation techniques are useful nonpharmacologic approaches.

Lumbar puncture (choice D), CT of the head (choice E), and MRI of the head (choice F) should be considered when there is a reasonable suspicion of organic conditions, such as intracranial bleeding, tumor, ischemic brain disease, and infections.
Q-302
An 8-yr-old boy presents to a physician for a routine health maintenance visit. His mother states that he has difficulty reading and concentrating in his 2nd grade class. On examination severe café-au-lait spots on his body as well two small, soft masses above his orbit are seen. He also has axillary freckling. His mother also has café-au-lait spots on her arms. Which of the following is the most likely diagnosis.

A. Congenital hypothyroidism.
B. Marfan's syndrome.
C. Neurofibromatosis.
D. Osteogenesis imperfecta.
E. Tuberous sclerosis.

EXPLANATION

The correct answer is C. Neurofibromatosis is a multisystem genetic disorder. The features of this condition are more than six café-au-lait spots, two or more neurofibromas, axillary freckling, optic gliomas, iris hamartomas (Lisch nodules), and osseous lesions. There is almost always a first-degree relative with neurofibromatosis.

Congenital hypothyroidism (choice A) is associated with poor feeding, an enlarged fontanelle, an enlarged tongue, and an umbilical hernia in the neonatal period. It would not go undetected until 8 years of age.

Marfan syndrome (choice B) is a connective tissue disorder characterized by long fingers, hypermobile joints, subluxation of the lenses, pectus carinatum, and aortic aneurysms.

Osteogenesis imperfecta (choice D) is a rare connective tissue disease characterized by recurrent fractures, blue sclera, thin skin, and hyperextensibility of ligaments.

Tuberous sclerosis (choice E) is associated with facial angiofibromas (adenoma sebaceum), retinal hamartomas, seizures, and mental retardation. Seizures are the most common presenting symptom. It is an autosomal-dominant inherited disease.
Q-303

A 45-yr-old woman presents to her primary care physician for blurred vision. She states that this symptom started about two days ago. She denies any significant past history of medical or neurological problem but she does not state that several days ago she started treatment for depression with a psychiatrist due to a two-month period during which she had several depressive symptoms. On review of symptoms she admits to having increased her water consumption over the past several days due to a dry mouth. She also complains of dizziness when she stands up from lying or sitting. Her temperature is 37 C (98.6 F), blood pressure on lying down is 135/75, blood pressure on standing is 110/64, pulse on lying down is 84, pulse on standing is 95, respiratory rate is 16/min. Physical examination is unremarkable except for mild mydriasis. Which of the following medication most likely account for this patient’s symptoms.

A. Bupropion.
B. Citalopram.
C. Imipramine.
D. Nefazodone.
E. Sertraline.

EXPLANATION

The correct answer is C. Imipramine is a tricyclic antidepressant (TCA) that inhibits norepinephrine and serotonin reuptake. Like most TCAs, imipramine also has antagonistic effects at muscarinic, histaminic, and α-adrenergic receptors. This patient’s complaint of blurred vision is most likely due to the antimuscarinic effects of the medication. The blockade of muscarinic acetylcholine receptors causes mydriasis (pupillary dilation) resulting in blurred vision. Dry mouth is also due to the anticholinergic effect of imipramine. Orthostatic hypotension is caused by the α1-adrenergic receptor blockade associated with TCAs.

Bupropion (choice A) is an antidepressant with an unknown mechanism of action, though some evidence suggests that it is a norepinephrine and dopamine reuptake inhibitor. Treatment with bupropion is characterized by the absence of significant drug-induced orthostatic hypotension or anticholinergic effects.

Citalopram (choice B) is a selective serotonin reuptake inhibitor (SSRI) with no significant effects at cholinergic, adrenergic, or histaminic receptors. Therefore, it would not cause the cluster of symptoms seen in this patient.

Nefazodone (choice D) acts primarily as an antagonist at serotonin-2 (5-HT2) receptors, although it is also a weak inhibitor of serotonin reuptake. Although it is related to trazodone, it lacks significant antagonistic activity at other receptors.

Sertraline (choice E) is an SSRI, like citalopram, and would not cause the side effects present in this patient.
A 26-yr-old nulligravid woman comes to the ER because of right lower quadrant pain. She states that pain started last night, this morning she was awakened from sleep with severe pain in the same area. During the episode of pain she has nausea, vomiting and diaphoresis. On admission to the ER she required 5 mg of morphine to control her pain. Examination is significant for right lower quadrant tenderness and a tender right adnexal mass on pelvic examination. Urine hCG is negative. Urinalysis is negative. Transvaginal ultrasound reveals an 8 cm right ovarian mass. Which of the following is the most likely diagnosis.

A. Appendicitis.
B. Ectopic pregnancy.
C. Nephrolithiasis.
D. Ovarian torsion.
E. Pelvic inflammatory disease.

EXPLANATION

The correct answer is D. This patient’s presentation is most consistent with ovarian torsion. Ovarian torsion typically occurs in the setting of an adnexal mass. A mass changes the motion "dynamics" of the adnexae such that a twisting of the adnexa becomes possible. This mass can be a functional ovarian cyst, a dermoid, a paratubal cyst, or any number of other benign or malignant neoplasms. Once a complete torsion has occurred, the arterial supply to the ovary is occluded and necrosis can result. Patients with adnexal torsion can present with a history of intermittent pain that comes and goes as the adnexa twists. The pain is usually severe and often accompanied by episodes of nausea, vomiting, and diaphoresis, as this patient had. They may need narcotics to control the severe pain. A pelvic mass will almost always be found on physical examination or by ultrasound. If there is no adnexal mass, the diagnosis of ovarian torsion is highly unlikely. This is true because most normal ovaries do not have the motion "dynamics" that will allow them to twist.
Appendicitis (choice A) should always be a consideration when a patient presents with right lower quadrant pain. However, in this case, the combination of the pain with the ovarian mass makes ovarian torsion, and not appendicitis, the most likely diagnosis.

Ectopic pregnancy (choice B) should also be an important consideration when a young woman presents with abdominal pain. Some emergency departments have signs reading "Think Ectopic" to keep staff aware of this possibility. In this case, however, the patient is not pregnant (negative urine hCG) which excludes ectopic from the differential.

Nephrolithiasis (choice C) can also cause excruciating pain, as does ovarian torsion. With nephrolithiasis, hematuria will often be present. In this patient, the absence of hematuria and the presence of the right adnexal mass make nephrolithiasis less likely.

Pelvic inflammatory disease (choice E) is a diagnosis that merits consideration in a woman with abdominal pain with a negative hCG (it is far less common during pregnancy). However, the ovarian mass in this case makes torsion a more likely diagnosis than PID.
Q-305
A previously healthy intoxicated 19-yr-old man is driving a car without using a seatbelt, he crashes the car into the back of a parked truck. In the process he slams his abdomen into the steering wheel and ruptures his spleen. Which of the following is the most important problem associated with this type of injury.

A. Bacteremia.
B. Electrolyte abnormalities.
C. External blood loss.
D. Internal blood loss.
E. Peritonitis.

EXPLANATION
The correct answer is D. The spleen is a highly vascularized organ, and is vulnerable to traumatic rupture. This can occur "spontaneously" (i.e. with minimal trauma such as falling against a table or even overly vigorous palpation during a physical examination) in patients with an enlarged spleen due to disease (e.g., leukemias, autoimmune diseases with red cell sequestration in the spleen, or as a complication of portal hypertension). Alternatively, splenic rupture can occur in previously normal individuals who have severe trauma to the abdomen. In either case, the heavily vascularized spleen is usually unable to stop (often massively) bleeding internally. Emergency splenectomy is indicated to control the bleeding.

Bacteremia (choice A) and peritonitis (choice E) are much less of a risk in splenic rupture than in rupture of a hollow viscus such as the colon, since the spleen is usually sterile.

Electrolyte abnormalities (choice B) can develop secondarily to the ischemia produced by severe blood loss; these are much less critical than the blood loss itself and will often correct spontaneously with adequate replacement of blood.

External blood loss (choice C) is often insignificant in injuries such as this.
Q-306
A 27-yr-old successful businesswoman has developed a fear of flying after an extremely rough landing. She is paralyzed with fear and unable to travel for business. Her physician tried giving her lorazepam to take during the flight but it did not work. Which of the following is the most commonly used treatment for this disorder.

A. Exposure therapy.
B. Hypnosis.
C. Insight oriented psychotherapy.
D. Medication.
E. Supportive therapy.

EXPLANATION

The correct answer is A. Exposure therapy, a type of behavior therapy, is the most commonly used treatment of specific phobia. The therapist usually desensitizes the patient by a gradual exposure to the phobic stimulus. Relaxation and breathing control are important parts of the treatment.

Hypnosis (choice B) is used to enhance the therapist’s suggestions that the phobic object is not dangerous. At times, self-hypnosis can be taught so that the patient uses it as a method of relaxation when confronted with the phobic stimulus.

Insight-oriented psychotherapy (choice C) was initially used to treat phobias, but analyzing unconscious conflicts didn’t resolve phobic symptoms. It does help the patient understand the origins of the phobia and how to deal with anxiety-provoking stimuli.

Medication (choice D) is used in the treatment of a specific phobia only if it is associated with panic attacks and generalized anxiety. The pharmacologic treatment is then directed toward the panic attacks.

Supportive therapy (choice E) may be used in helping the patient actively confront the phobic stimulus during treatment. It is usually used in addition to an ongoing treatment.
Q 307

A 34-yr-old waiter with a known history of asthma presents with complaints of severe shortness of breath, cough and wheezing. He arrives in the ER and appears extremely dyspneic. His blood pressure is 154/84, pulse is 104 and respirations are 32, with inspiration his blood pressure falls to 112/70. On lung examination there are loud high-pitched wheezes and a prolonged expiratory phase. Which of the following examination findings is most significant in evaluating this patient.

A. Hypertension.
B. Loud wheezing.
C. Prolonged expiratory phase.
D. Pulsus paradoxus.
E. Tachycardia.

EXPLANATION

The correct answer is D. The significant fall in systolic blood pressure with inspiration describes a patient with a pulsus paradoxus in the setting of asthma. This is a very important physical finding in that it indicates this patient is in the midst of a severe asthmatic attack. The other physical finding that indicates a severe asthmatic attack is the use of the accessory muscles of respiration, i.e., the internal intercostal muscles and the sternocleidomastoid muscles.

His hypertension (choice A), loud wheezing (choice B), prolonged expiratory phase (choice C), and tachypnea (choice E) may all be seen in a patient during an asthmatic attack but are not prognosticators of outcome.
An elderly woman consults a physician because she is feeling so tired all the time. Intra-office hematocrit is 35%, peripheral blood smear shows many macrocytic red cells. On questioning the woman, whose finances are limited admits that she has been living on a tea and toast type diet, she has been drinking a powdered orange juice substitute tang. She has not been taking vitamin pills because she thinks that she cannot afford them. A nutritional deficiency of which of the following is the most likely cause of this patient's anemia.

A. Folate.
B. Iron.
C. Vitamin B₁₂.
D. Vitamin C.
E. Vitamin K.

EXPLANATION

The correct answer is A. In real life, you would evaluate this woman for deficiencies in iron, folate, and Vitamin B₁₂, since a woman with a diet this poor may very well have multiple problems. However, for the purpose of this type of test question, you should reason as follows: both vitamin B₁₂ and folate deficiency can cause megaloblastic anemia. The patient's "tea and toast" diet is much more suggestive of folate deficiency than B₁₂ deficiency. Folate is widely found in plant and animal tissues, but is easily destroyed by over-cooking. Particularly vulnerable populations include the elderly, alcoholics, chronic liver disease patients, pregnant women, tropical sprue patients, chronic hemolytic anemia patients, and patients being treated (usually chronically) with certain medications (anti-convulsants, oral contraceptives, antimetabolites, and antibiotics that interrupt folate metabolism).

Iron deficiency (choice B) causes a microcytic anemia.

Vitamin B₁₂ deficiency (choice C) is an important cause of megaloblastic anemia, but is more likely to be related to chronic gastritis with destruction of intrinsic factor-secreting parietal cells (pernicious anemia), fish tapeworm infestation, or malabsorption.

Vitamin C deficiency (choice D) is an occasional cause of megaloblastic anemia (often in conjunction with mild folate deficiency), but this patient is drinking a vitamin C-containing orange juice substitute.

Vitamin K deficiency (choice E) is usually related to either malabsorption or intestinal parasitic infection, and causes a bleeding tendency (because it is needed for synthesis of many clotting factors) rather than anemia.
Q-309
A 7-yr-old boy passes a large bloody bowel movement. He is hemodynamically stable and has a hemoglobin of 14 gm/dl. Nasogastric aspiration yields clear, greenish fluid. Physical examination includes an anoscopy that is unremarkable. Which of the following is the most appropriate next diagnostic test.

A. Celiac arteriogram.
B. Colonoscopy.
C. Radioactive labeled technetium scan.
D. Radioactively tagged red cell study.
E. Upper gastrointestinal endoscopy.

EXPLANATION
The correct answer is C. In this age group, with no obvious anal pathology and negative gastric aspirate, the leading cause of gastrointestinal bleeding is Meckel’s diverticulum. The specific source is ulceration of the normal ileal mucosa by acid produced by gastric mucosa in the diverticulum. The technetium scan identifies that ectopic gastric mucosa.

Arteriogram (choice A) as a diagnostic step is a very invasive study that is appropriate only for very large hemorrhage (>2 mL/min) with clear gastric aspirate. An arteriogram may also be indicated for therapy (embolization) in severe gastrointestinal bleeding.

Colonoscopy (choice B) would not identify the Meckel’s diverticulum. Colonoscopy is often needed in the older patient with lower gastrointestinal bleeding, in whom the source of the hemorrhage is likely to be polyps, cancer, diverticula, or angiodysplasia.

A tagged red cell study (choice D) is often used as a prelude to an arteriogram in patients with substantial lower gastrointestinal bleeding.

Upper gastrointestinal endoscopy (choice E) would have been appropriate if the gastric aspirate had produced blood.
A previously healthy 35-yr-old woman comes to medical attention because of an unsteady gait. Her temperature is 37°C (98.6°F), blood pressure is 130/70, pulse is 80 and respirations are 20. Neurologic examination reveals spasticity and decreased vibratory sensation in her right lower extremity and decreased strength in her left arm. MRI studies show well-demarcated periventricular areas of T2-hyperintensity. A lumber puncture shows mildly increased protein concentration with oligoclonal IgG bands. Which of the following is the most likely diagnosis.

A. CMV encephalitis.
B. Multiple sclerosis.
C. Oligodendroglioma.
D. Progressive multi-focal encephalopathy.
E. Lymphoma.

EXPLANATION

The correct answer is B. Clinical symptomatology, MRI findings, and IgG oligoclonal bands are highly characteristic of multiple sclerosis (MS). It should be emphasized, however, that a diagnosis of definite MS entails identification of multiple episodes of white matter demyelination separated in space and time. Thus, a single episode of demyelination-related neurologic deficits is not sufficient to make a diagnosis of MS. However, the characteristic periventricular distribution of white matter changes on T2-weighted images and the CSF changes are typical of MS. The latter is thought to be due to activation of specific lymphocytic clones against white matter antigens.

Cytomegalovirus (CMV) encephalitis (choice A) affects severely immunocompromised patients, especially those with AIDS. CMV has a specific tropism for ependymal cells and causes periventricular lesions.

Oligodendroglioma (choice C) is a primary brain tumor of oligodendroglial origin. It accounts for approximately 5% of all primary brain neoplasms. It is usually located in the white matter of the centrum semiovale close to the cortex. Mild lymphocytosis may be seen in the CSF as a nonspecific response known as neighborhood reaction.

Progressive multifocal leukoencephalopathy (choice D) also occurs in immunocompromised patients. It is due to JC virus (a papovavirus), and is characterized by multiple foci of white matter destruction scattered throughout the cerebral hemispheres and cerebellum.

Lymphoma (choice E) is particularly frequent in immunocompromised individuals, such as those with AIDS and those receiving immunosuppressant therapy following transplantation. In AIDS patients, brain lymphoma manifests as a space-occupying mass that appears as a ring-enhancing lesion on MRI/CT. In immunocompetent individuals, primary brain lymphoma involves the periventricular regions and may be confused with MS. Atypical lymphocytes may be identified in the CSF.
An AIDS patient develops symptoms suggestive of severe persistent pneumonia with cough, fever, chills, chest pain, weakness and weight loss. The patient does not respond to penicillin therapy but goes on to develop very severe headaches. The presence of focal neurologic abnormality leads the clinician to order a CT-scan of the head. This demonstrates several metastatic brain abscesses. Biopsy of one of these lesions demonstrate beaded, branching, filamentous, gram positive bacteria that are weakly acid fast. Which of the following is the most likely causative organism.

A. Actinomyces.  
B. Aspergillus.  
C. Burkholderia.  
D. Francisella.  
E. Nocardia.

EXPLANATION

The correct answer is E. Nocardia asteroides is an aerobic soil saprophyte that can cause acute or chronic infectious disease often characterized by granulomatous-suppurative lesions that may become widely disseminated. Many, but not all, patients have underlying causes for immunodeficiency, including advanced age, lymphoreticular malignancies, organ transplantation, high dose corticosteroid therapy, or (increasingly commonly) AIDS. Disseminated nocardiosis usually starts as a pulmonary infection that can resemble either a severe pneumonia or tuberculosis. Once dissemination occurs, metastatic brain abscesses are particularly common, occurring in as many as 1/3 of patients with nocardiosis. Nocardiosis is treated with sulfa drugs, such as sulfadiazine or trimethoprim-sulfamethoxazole, for periods of months.

Actinomyces (choice A) is very similar to Nocardia, but is not acid-fast.

Aspergillus (choice B) is a fungus.

Burkholderia (choice C) pseudomallei is a gram-negative bacillus that causes melioidosis, which is characterized by lung involvement or disseminated infection.

Francisella (choice D) tularensis causes tularemia, which is usually acquired by contact with infected wild rabbits.
A 14-yr-old boy presents with decreased exercise tolerance. He is noted to have grade III/VI systolic ejection murmur best heard at the left upper sternal border and a grade II/VI mid diastolic murmur at the lower left sternal border. The first heart sound is normal, the second heart sound is widely split and fixed. A right ventricular impulse is palpated. On a chest roentgenogram the pulmonary artery segment is enlarged and the pulmonary vascular markings are increased. An ECG shows right axis deviation. Which of the following congenital heart disease does this boy most likely has.

A. Aortic stenosis.  
B. Atrial septal defect.  
C. Coarctation of aorta.  
D. Patent ductus arteriosus.  
E. Ventricular septal defect.

EXPLANATION

The correct answer is B. One of the most common types of structural congenital heart disease to present in adolescence is atrial septal defect (ASD), and the most common presentation is a heart murmur. However, some patients present with arrhythmias, decreased exercise tolerance, or a paradoxic embolus.

The physical examination can show classic findings of an ASD; in some cases, however, the findings may be extremely subtle. The murmur associated with the ASD is not caused by blood flow traversing the actual defect but rather by the increased volume of blood flow across the pulmonary valve and, to a lesser extent, across the tricuspid valve. Thus, the murmurs of an ASD are a systolic ejection murmur at the upper left sternal border and a mid-diastolic murmur at the lower left sternal border. The second heart sound is widely split and fixed with regard to respiration. On palpation, a right ventricular impulse is present.

The chest radiogram shows evidence of an enlarged pulmonary artery segment in the posteroanterior projection. The superior vena cava shadow may not be visible because of the rotation of the heart secondary to right ventricular volume overload. Pulmonary vascularity is increased, and the heart may be somewhat enlarged. The lateral projection shows the right ventricular enlargement with filling of the retrosternal airspace. The ECG has a normal to rightward axis and a right ventricular volume overload pattern in the precordial leads.

An echocardiogram with color Doppler examination can demonstrate the ASD. However, because the atrial septum is a posterior structure, it may not be visualized adequately with a transthoracic echocardiogram; therefore, a transesophageal echocardiogram is frequently necessary for diagnosis. Closure of the defect is recommended for patients with ASD to decrease the risk of pulmonary vascular obstructive disease, stroke, and arrhythmias.
Aortic stenosis (choice A) is often associated with bicuspid aortic valve and presents with dyspnea on exertion, chest pain, and syncope. A harsh systolic ejection murmur is typically heard at the right upper sternal border.

Coarctation of the aorta (choice C) results in obstruction between the proximal and the distal aorta. On examination, the femoral pulses are weak and delayed relative to the brachial pulses. Turner syndrome must be considered in a girl with coarctation of the aorta.

Patent ductus arteriosus (PDA) (choice D) usually presents with a "machinery murmur" that is continuous beginning after S1, peaking at S2, and trailing off during diastole. Indomethacin is often effective in closing the PDA in premature infants.

Ventricular septal defect (choice E) is the most common congenital defect of the heart and usually presents with a wide spectrum of symptoms including growth failure, congestive heart failure, and chronic lower respiratory infections. Patients with small defects might be asymptomatic but would have a holosystolic murmur.
The mother of a 35-yr-old man calls her primary care physician for advice on a drug treatment program for her son. She states that he lives with her since the loss of his job and apartment 4-months ago. She reports that he goes out on weekends and uses drugs heavily. When he returns home usually on Monday mornings he sleeps for the entire day and seems very depressed. He is also very irritable and anxious over the course of the next day. She knows of no other withdrawal symptoms. She believes that he uses the drugs throughout the week but with more intense binges on the weekends. On several occasions he has called her from the local psychiatric emergency center after admitting himself for suicidal ideation after use of the drug. Which of the following is the most likely responsible of this man's withdrawal state.

A. Alcohol.
B. Benzodiazapine.
C. Cannabis.
D. Cocaine.
E. Heroine.

EXPLANATION

The correct answer is D. The use of cocaine, especially crack cocaine (an extremely potent, freebase form that is sold in small, ready-to-smoke amounts) is associated with the withdrawal symptoms described in this case. After cessation of the use of cocaine, or after acute intoxication, a post-intoxication depression (crash) often occurs. This depression is associated with dysphoria, anhedonia, anxiety, irritability, fatigue, hypersomnia, intense craving, and suicidal ideation.

Alcohol (choice A) is associated with a potentially dangerous set of withdrawal phenomena. These range from mild withdrawal (mild tremulousness) to a full withdrawal syndrome (tremulousness, diaphoresis, hyperreflexia, elevated vital signs, and anxiety) to the very dangerous withdrawal state known as delirium tremens (altered mental status, hallucinations, autonomic instability, seizures, and possibly death). Alcohol withdrawal should be treated in a medical setting with close observation and a detoxification regimen.

Benzodiazepines (choice B) can cause dependence and a wide range of withdrawal phenomena very similar to those of alcohol withdrawal. Benzodiazepine withdrawal should also be managed with medical supervision.

Cannabis (choice C) may be associated with a withdrawal state including irritability, insomnia, increased or decreased appetite, restlessness, tremor, increased reflexes, and changes in vital signs. The withdrawal phenomena of cannabis are less well defined than many other drugs, and do not lead to dangerous medical sequelae.

Heroin (choice E) dependence leads to a characteristic withdrawal syndrome that is very uncomfortable. Symptoms include myalgias, nausea, vomiting, diarrhea, lacrimation, rhinorrhea, piloerection, anxiety, insomnia, irritability, and intense craving.
Q-314
A 21-yr-old woman gravida 2, para 1 at 22-weeks gestation comes to the physician because of a malodorous vaginal discharge. She states that she first noted the discharge two-days ago and since then it has become more profuse and malodorous. Her prenatal course has been unremarkable during the pregnancy. Her prior pregnancy was complicated by pre-term labor and delivery at 31-weeks gestation. Examination shows a grayish vaginal discharge, a strong amine odor is released when KOH is applied to the discharge. Examination of a normal saline (wet) preparation reveals numerous “clue cells”. Which of the following is the most appropriate pharmacotherapy.

A. No treatment is needed.
B. Oral metronidazole.
C. IM penicillin.
D. IV penicillin.
E. Oral penicillin.

EXPLANATION
The correct answer is B. This patient has signs and symptoms that are most consistent with bacterial vaginosis. Bacterial vaginosis represents a change in milieu of the vagina such that there is a decrease in the number of lactobacilli and an increase in anaerobic organisms. Patients with bacterial vaginosis usually complain of a malodorous vaginal discharge. The examination is significant for a grayish discharge that releases a strong amine (or fishy) odor when KOH is applied to it. This is known as a positive "whiff" test. Microscopic examination reveals clue cells, which are vaginal epithelial cells that are covered with bacteria. Studies have demonstrated an association between bacterial vaginosis and preterm delivery. There is some evidence that treatment of bacterial vaginosis with oral metronidazole in women at high risk for preterm delivery [i.e., women with a prior preterm delivery or a low prepregnancy weight (<50kg)] will help to prevent preterm delivery. Oral metronidazole appears to be better than the topical, vaginal formulation for the prevention of preterm delivery.

To state that no treatment is needed (choice A) is incorrect. First, this patient is symptomatic; therefore, treatment is reasonable. Second, treatment of bacterial vaginosis in the second trimester in women at high risk for preterm delivery may prevent a preterm delivery.

Intramuscular penicillin (choice C) is used during pregnancy for women with syphilis. It is not used to treat bacterial vaginosis.

IV penicillin (choice D) is used during labor to prevent neonatal group B Streptococcus infection. It is not used for bacterial vaginosis.

Oral penicillin (choice E), like intramuscular and IV penicillin, is used for gram-positive infections. Patients with bacterial vaginosis require treatment with a drug that will cover anaerobic infections (e.g., metronidazole.)
A 39-yr-old woman completed her last course of post-operative adjuvant chemotherapy for breast cancer 6-months ago. She now comes to the clinic complaining of constant back pain for about 3-weeks. She is tender to palpation over two well-circumscribed areas in the thoracic and lumbar spine. Which of the following is the most appropriate next step in management.

- A. CT-scan of the trunk.
- B. Needle biopsy of the tender spots.
- C. Radionuclide bone scan.
- D. Sonogram of the affected areas.
- E. X-ray films of the affected areas.

EXPLANATION

The correct answer is C. The most sensitive test to detect early bone metastasis is the radionuclide scan. In a woman who recently had cancer of the breast, we have to suspect bony metastasis when bone pain develops.

CT scan (choice A) would be more expensive and less sensitive.

Needle biopsy (choice B) is invasive and not the first thing to do.

Sonogram (choice D) is superb for many other things, but not to detect early bone metastasis.

X-ray films (choice E) will be done after the scan if the radionuclide "lights up." The radionuclide scan is very sensitive, but not terribly specific. Once it lights up, we have to rule out other radiologically obvious bony problems that might have triggered the positive scan.
Q-316

A 14-yr-old girl presents to the ER for severe lower mid abdominal pain that has been increasing over the past 12-hours. She describes the pain as crampy and sharp. Her last menstrual period was about two-weeks ago, it was regular and with no pain and lasted for 4-5 days. She has had menstrual periods for nearly two-years and over the past 6-months she has noted some cramping pain the first day or two of her menses. She denies sexual activity and has not had any vaginal discharge. Her bowel movements have been normal and she reports no urinary frequency, urgency or burning with urination. Which of the following is the most likely diagnosis.

A. Dysmenorrhea.
B. Ectopic pregnancy.
C. Ovarian cyst.
D. Pelvic inflammatory disease.
E. Mittelschmertz.

EXPLANATION

The correct answer is E. Mittelschmertz is the most likely diagnosis. It occurs for 1 to 2 days in the midcycle of menstruating females. At ovulation, an ovarian follicle can rupture, releasing blood into the peritoneal cavity. This results in peritoneal irritation and pain. The pain may be intermittent, and it usually occurs in the lower abdomen. In this case the girl is 2 years postmenarche and has a history of several months of dysmenorrhea, indicating that she has ovulatory cycles.

By definition, the pain of dysmenorrhea (choice A) should occur at menstrual time. This girl has been menstruating now for a few years and is likely to have ovulatory cycles. She may have dysmenorrhea or pain with her periods, but the pain that has taken her to the emergency room is inter-menstrual.

Ectopic pregnancy (choice B) and pelvic inflammatory disease (choice D) should be considered as diagnostic possibilities in any menstruating adolescent female with sharp abdominal pain. Although they are unlikely in this case with a negative history of sexual activity and the absence of irregular vaginal bleeding, the examining doctor must always determine the need of doing a pelvic examination and a pregnancy test.

Physiological ovarian cysts (choice C) are common during adolescence but are less likely to be the cause of this girl’s acute episode of pain. There is no prior history of abnormal vaginal bleeding or prior episodes of abdominal pain. This girl complains of lower midabdominal pain. Follicular ovarian cysts are generally small in size and may produce estrogen. They are usually asymptomatic, but may result in menstrual irregularities. Corpus luteum cysts are more frequently symptomatic. They may increase in size, causing pressure symptoms and abdominal pains, as well as delayed or heavy menses. A diagnosis of ovarian cyst may be suspected on pelvic examination and confirmed with pelvic ultrasound.
Q-317

A 47-yr-old man who admits to use alcohol daily for the past 3-weeks presents to ER complaining of severe mid-epigastric pain radiating to his back and accompanied by recurrent vomiting. He has a nasogastric tube in place, he is kept NPO and is given IV hydration over the next 72-hours however, his clinical condition continues to deteriorate. Which of the following complications is most likely to occur.

A. Cavitating pneumonia.
B. Hypercalcemia.
C. Nephrotic syndrome.
D. Oral aphthous ulcers.
E. Pleural effusion.

EXPLANATION

The correct answer is E. Severe midepigastric pain radiating to the back in a patient with history of recent heavy alcohol use should be presumed to be pancreatitis. The diagnosis can be confirmed by measuring serum amylase and lipase levels. Severe acute pancreatitis, such as this patient has, can destroy large parts of both the endocrine and exocrine pancreas. Destruction of the exocrine pancreas can release many enzymatically or physiologically active substances that can have local or distant effects. Pulmonary complications include pleural effusion secondary to chemical irritation of the diaphragm, increased alveolar arterial gradient, and adult respiratory distress syndrome (ARDS) secondary in part to the hypotension that can be a prominent feature of pancreatitis.

Cavitating pneumonias (choice A) do not occur as a complication of acute pancreatitis since the condition is not due to an infection.

Hypercalcemia (choice B) may be a cause of acute pancreatitis but is not a complication of acute pancreatitis. On the other hand, hypocalcemia can result from severe acute pancreatitis.

Nephrotic syndrome (choice C) does not occur with acute pancreatitis although severe renal insufficiency due to hypovolemia may occur.

An oral aphthous ulcer (choice D) is a common condition unrelated to pancreatitis. It is associated with Crohn disease, although the vast majority of patients with aphthous ulcers do not have underlying systemic disease.
A 35-yr-old woman complains of increasing shortness of breath and weakness. A complete blood count with differential indicates megaloblastic anemia. Her vitamin $B_{12}$ level is found to be low. She is also found to have hypothyroidism and diabetes and is given the diagnosis of chronic type A gastritis. Which of the following is associated with the illness.

A. Antral involvement.
B. Decreased serum gastrin level.
C. Helicobacter pylori infection.
D. Non-steroidal anti-inflammatory drugs.
E. Parietal cell antibody.

EXPLANATION

The correct answer is E. Chronic type A gastritis is immunologically mediated and is associated with an elevated level of parietal cell antibody. Thus, acid secretion is reduced.

The gastritis primarily involves the stomach body as well as the antrum (choice A).

Due to the reduced acid level (choice B), the gastrin level would be high.

Type B gastritis is more commonly associated with Helicobacter pylori infection (choice C).

Chronic NSAID use (choice D) will lead to type B gastritis as well, involving the antrum of the stomach.
Q-319
A 62-yr-old man presents with status epilepticus. He has a history of small cell lung cancer. He has no history of diabetes, hypertension, thyroid disease and congestive heart failure. Examination reveals a male in a post-tictal state with a blood pressure of 130/90. A fundoscopic examination shows no papilledema, neck is supple, lungs are clear. His heart examination is normal without jugular venous distention, there is no edema or clubbing. Lab studies show serum sodium 112 Meq/l, potassium 4.0 Meq/l, urea 10 mg/dl, creatinine 0.8 mg/dl, urine osmolality 612 mosm/kg, urine sodium 85 Meq/l. A head CT-scan is normal. A chest x-ray film shows right perihilar mass unchanged from a film one-month ago. Which of the following is the most important initial step in management.

A. Demeclocycline.
B. Fluid restriction.
C. Hydrocortisone.
D. Hypertonic saline.
E. Thyroxine.

EXPLANATION

The correct answer is D. Hypertonic saline would be the most advisable treatment. The patient has hyponatremia and seizures, which would suggest an acute drop in sodium. There is no mention of a brain lesion to explain the seizures. The patient most likely has a syndrome of inappropriate diuretic hormone secretion (SIADH) due to his lung cancer. Furosemide may be given with the hypertonic saline to promote water loss.

Demeclocycline (choice A) is a tetracycline antibiotic that causes a nephrogenic diabetes insipidus. It can be used to treat SIADH on a chronic basis. It will not work immediately and is not advised to acutely raise sodium.

Fluid restriction (choice B) would be a good long-term treatment for SIADH but would be too slow to treat a patient with seizures.

Hyponatremia may be caused by Addison disease. Only in this case will steroids (choice C) be of any value.

Hypothyroidism can cause hyponatremia. However, there is no evidence that this patient has hypothyroidism, and giving empiric thyroxine (choice E) has no role in treating hyponatremia.
Q-320
A 36-yr-old man develops rapid mental status deterioration 2-days after sustaining a femoral fracture in a skiing accident. Physical examination shows multiple petechiae in the anterior chest and abdomen. On the third day patient lapses into coma and dies. Post-mortem examination of the brain reveals numerous petechial hemorrhages in corpus callosum and central semi-ovale. Which of the following is the most likely diagnosis.

A. Diffuse axonal injury.
B. Fat embolism.
C. Septic embolism.
D. Systemic thromboembolism.
E. Watershed infarction.

EXPLANATION
The correct answer is B. The clinical manifestations are consistent with fat embolism. This complication is frequent, following fractures of long bones, but is usually asymptomatic. Fat embolism mainly affects the lungs and the brain, and the clinical picture consists of dyspnea, tachycardia, and mental status changes. Only rarely, does this condition lead to death. In the lungs, fat emboli can be visualized histologically. In the brain, multifocal petechiae in the white matter represent the most common pathologic change.

Diffuse axonal injury (choice A) is one of the most common forms of traumatic brain injury. It involves the central white matter, especially the corpus callosum and cerebral peduncles. It is sometimes associated with small petechiae in these areas. The patient may develop coma a few hours to days after head trauma.

Septic embolism (choice C) results from septic emboli lodging in the terminal intraparenchymal arteries of the brain. It leads to multiple cortical infarcts, usually of the hemorrhagic type. The white matter is spared.

Systemic thromboembolism (choice D) is usually of cardiac origin—for example, in patients with cardiac arrhythmias with thrombi in the right atrium or ventricle. Thromboemboli in the brain cause hemorrhagic infarction in the cortex.

Watershed infarction (choice E) is often seen in patients suffering from acute hypotensive episodes, especially if the circle of Willis is already compromised by atherosclerotic change. The cortical regions at the border zone between different vascular territories (e.g., between the distribution of the anterior and middle cerebral arteries) undergo ischemic necrosis.
Q-321
A 24-yr-old woman gravida 3, para 2 comes to the physician for her first prenatal visit. Her last menstrual period was 8-weeks ago and a home pregnancy test was positive. She states that this pregnancy like her last two pregnancies was unintended. She had been using condoms for birth control in all three instances. She had normal vaginal deliveries 4 and 2-years ago. Which of the following is the most likely reason for condom failure.

A. Allergic reaction.
B. Breakage.
C. Inconsistent and improper use.
D. Manufacturing defects.
E. Vaginal infection.

EXPLANATION
The correct answer is C. Condoms provide an excellent method both of birth control and of prevention of sexually transmitted diseases (STDs). When they are properly and consistently used, they are approximately 98% effective. However, actual use or typical use of the condom varies, and, in practice, they are probably around 80% effective. Improper and inconsistent use accounts for almost all of the discrepancy between the effectiveness with "perfect" versus "typical" use. Proper condom use requires that a new condom is used for each act of intercourse, that some room is left at the tip, that the penis is withdrawn while still erect, that the condom is held on firmly to keep it from slipping off as the penis is withdrawn, and that the condom is used with water-based, not oil-based, lubricants.

Allergic reaction (choice A) can be a problem with latex condoms in men or women with latex allergies. However, the reaction itself should not cause condom failure.

Breakage (choice B) is rare with condoms. Most reports put condom breakage rates at less than 2% and most of these are due to incorrect use (e.g., not leaving room at the tip).

Manufacturing defects (choice D) are also rare. Condoms are regulated by the U.S. Food and Drug Administration, which tests numerous batches. Samples that fail testing lead the entire batch to be discarded.

Vaginal infection (choice E) is an unlikely cause of condom failure.
Q-322
A 29-yr-old previously successful woman was climbing stairs in her new home about a month ago when the whole house fell apart. She ended up in a hospital with a fractured left femur. The psychiatry team was consulted because the patient complained of nightmares and flashbacks and was afraid to go to sleep as a result. During the interview she is tearful and afraid that her fear of falling is preventing her from participating in her rehabilitation and that the team will discharge her from the hospital. Which of the following is the most appropriate treatment for this patient.

A. Insight oriented psychotherapy.
B. No therapy because the patient needs to take responsibility for her treatment.
C. Put a sitter in the patient’s room 24-hours a day to calm her anxiety.
D. Start an anti-depressant.
E. Start benzodiazepines.

EXPLANATION

The correct answer is D. The patient is having symptoms of posttraumatic stress disorder (PTSD), as well as depressive symptoms. Sertraline is an antidepressant approved for treatment of this disorder. Other antidepressants and anticonvulsants have also been shown to be effective in the treatment of PTSD.

Insight-oriented psychotherapy (choice A) is focused on getting insight into the underlying unconscious conflicts on the basis of exploration of transference feelings evoked during the process. It is not suitable for the treatment of acute PTSD.

No therapy (choice B) in a patient with obvious symptoms that are interfering with his or her treatment and social functioning would be unacceptable and considered neglect.

A 24-hour watch by a sitter (choice C) would be indicated if the patient is actively suicidal and has poor impulse control. Having a family member for support is encouraged, but enforcing a regressed and dependent position by a 24-hour watch would not be appropriate.

Benzodiazepines (choice E) can be used in for symptom relief in cases of acute stress reaction, but they are not indicated as long-term treatment of PTSD because of their addictive potential.
A 27-yr-old actor presents with a swollen left knee. The pain begins 36-hours earlier and has limited his ability to perform in his current play. He has had a fever and shaking chills over the past 24-hours. Physical examination reveals a temperature of 38.9°C (101.9°F) and a pulse of 104/min, the remainder of the physical examination is unremarkable except for a swollen, erythematosus left knee with obvious effusion. There is limited range of motion and arthrocentesis reveals 90,000/mm³ WBCs and 82% neutrophils. A gram stain reveals many neutrophils and no organisms are seen. Polarizing microscopy reveals no crystals. Which of the following is the most appropriate initial step in therapy.

A. Ceftriaxone.
B. Colchicine.
C. Indomethacin.
D. Nafcillin.
E. Nafcillin and ceftriaxone.

EXPLANATION

The correct answer is E. This patient has a monoarticular arthritis with a very high white cell count in the arthrocentesis strongly suggestive of a septic arthritis. Since the gram stain is unrevealing in this case (which you should be aware can happen) as to the specific organism, broad-spectrum antibiotics to cover the two most likely organisms is appropriate. This includes therapy for gonococcus (ceftriaxone) as well as nafcillin for Staphylococcus aureus septic arthritis.

Either ceftriaxone or nafcillin alone (choices A and D) would be insufficient.

Since the polarizing microscopy is negative, there is no indication for colchicine (choice B).

Indomethacin (choice C) may be an adjunctive therapy but is not the appropriate therapy in a patient with this many white blood cells in the joint fluid, consistent with a septic arthritis.
A 45-yr-old man presents with a three-day history of hemoptysis. He has had a cough and has also been complaining of sinus congestion and drainage. Furthermore he has noted blood in urine. He has no medical problems and takes no medications. An arteriole biopsy indicates necrotizing inflammation. Urine sediment shows red cell casts and dysmorphic red cells. Wegener's granulomatosis is suspected and steroids are started. Presence of which of the following entities will confirm the diagnosis:

A. Elevated angiotensin converting enzyme.
B. Anti-glomerular basement antibodies.
C. Anti-nutrophilic cytoplasmic antibodies.
D. Eosinophilia.
E. X-bodies.

EXPLANATION

The correct answer is C. Wegener granulomatosis is identified by the classic clinical triad of upper and lower respiratory involvement, supported by a positive antineutrophilic cytoplasmic antibody (ANCA) test. The pathologic lesion is an angiitis of small vessels with characteristic tissue necrosis surrounded by mononuclear inflammatory cells, forming noncaseating granulomas. In the lung, this process results in excavation and destruction of the lung parenchyma. The renal lesion is a focal glomerulonephritis that can progress to renal failure.

Sarcoidosis is a multisystem disease that involves the lung in 90% of cases. Cough is nonproductive, and hemoptysis is rare. An elevated angiotensin converting enzyme (ACE) level (choice A) has been associated with this illness.

Goodpasture syndrome is a progressive autoimmune disease of the lungs and kidneys that produces intra-alveolar hemorrhage and glomerulonephritis. It is caused by an antiglomerular basement membrane (anti-GBM) antibody (choice B), usually IgG, that reacts with glomerular and alveolar basement membranes.

Systemic illnesses such as scleroderma are associated with eosinophilia (choice D). This may lead to lung involvement and ultimately cause pulmonary hypertension.

Histiocytosis X is a generic term for a group of systemic disorders characterized by various degrees of fibrosis with focal infiltrations of tissue by nonmalignant histiocytes and eosinophils. Eosinophilic granuloma of the lung is localized and may cause dyspnea and a cough. Pathology shows cytoplasmic inclusions, the so-called X bodies (choice E).
A 42-yr-old man presents for his annual physical examination. He was last seen 2-years ago for a periodic health examination and was in good health. He is on no medications. His past medical history is significant for a cholecystectomy two-years ago and rheumatic fever at age fifteen. He has been smoking approximately ten cigarettes daily for the past 23-years. On physical examination his blood pressure is 154/56, pulse is 68/min and respirations are 14/min. He is afebrile. A head and neck examination is normal, his lungs are clear, he has a regular heart rhythm with II/IV blowing decrescendo diastolic murmur heard at the aortic area. His abdominal and rectal examinations are normal. Complete blood count, electrolytes and thyroid function tests are normal. Which of the following is the most appropriate advice for this man regarding future preventive health maintenance.

A. Antibiotic prophylaxis before dental works.
B. Annual chest x-ray films.
C. Annual echocardiogram.
D. Annual flexible sigmoidoscopy.
E. Annual prostate specific antigen test.

EXPLANATION

The correct answer is A. This patient should have antibiotic prophylaxis before undergoing dental work. The patient’s physical examination is consistent with asymptomatic aortic insufficiency, as indicated by his lack of symptoms combined with a characteristic diastolic murmur. This has occurred as a result of his childhood rheumatic fever. Patients with any significant cardiac valvular disease should be instructed to have antibiotic prophylaxis before dental work to reduce the risk of subacute bacterial endocarditis.

Although this man is at increased risk for lung cancer given his long history of smoking, chest x-ray films (choice B) have never been proven effective as early detection.

Although he does have underlying valvular heart disease, there is no indication for an annual echocardiogram (choice C) unless specific symptoms develop and warrant evaluation.

A sigmoidoscopy (choice D) is one of several choices that are appropriate colorectal cancer screening examinations beginning at age 50.

Prostate specific antigen testing (choice E) remains controversial in asymptomatic adults and is certainly not recommended in asymptomatic men younger than 50.
Q-326
A 2-yr-old girl is brought to the clinic with headache, vomiting and pallor. Her blood pressure is 130/80. On physical examination she is noted to have aniridia and a large abdominal mass. Abdominal screening reveals a poorly vascularized tumor in the upper pole of the right kidney. Which of the following is the most likely cause of this presentation.

A. Deletion of a gene on chromosome 11.
B. Fragile X-syndrome.
C. Translocation of chromosome 9 and 21.
D. Trisomy 13.
E. Turner syndrome.

EXPLANATION

The correct answer is A. The blood pressure of this child is significantly elevated for her age. The age, hypertension, abdominal mass, and aniridia suggest Wilms tumor, which arises because of the deletion involving chromosome 11.

Fragile X syndrome (choice B) is a common cause of mental retardation.

Translocation of chromosomes 9 and 21 (choice C) is called the Philadelphia chromosome and causes leukemia.

Trisomy 13 (choice D) causes severe birth defects, including CNS malformations, cleft lip, polydactyly, and mental retardation.

Turner syndrome (choice E) is a cause of short stature, infertility, and mild mental retardation.
Q-327

A 78-yr-old woman is complaining to the doctor in her nursing home about her new problem. She states that her old boy friend from 50-years ago called her and now harassing her by controlling her blood pressure, movements and thoughts. She is convinced that he was doing it initially by phone by sending special signals with a device that the C.I.A. uses but now he is able to control her by his thoughts. She stated that she could not tell the police because they probably would not believe her. This patient most likely has which of the following thought disorders.

A. Clang associations.
B. Ideas of influence.
C. Ideas of reference.
D. Noesis.
E. Obsessions.

EXPLANATION

The correct answer is B. Ideas of influence constitute a type of delusion in which a person believes that he or she is being controlled by another person or external force.

Clang associations (choice A) are disorders of thought in which the associations of words are similar in sound but not in meaning. Words have no logical connection, but there may be rhyming.

Ideas of reference (choice C) are delusions in which a person has a false belief that others (including people on TV or radio) are talking about him or her. In a broader sense, the behavior of others refers to oneself, other persons, or objects that have special significance and meaning.

Noesis (choice D) refers to the feeling of revelation in which a person experiences illumination associated with a sense of being chosen as a leader.

Obsessions (choice E) are pathologically persistent intrusive thoughts or impulses that cannot be eliminated from consciousness by logical effort and thus cause anxiety. The person is aware that they are not imposed from the outside but are a product of his or her own mind.
A 42-yr-old woman gravida 2, para 1 at 10-weeks gestation comes to the physician for her first prenatal visit. She has no complains. She has a history of trichomonas infection but no other medical problems. Examination is significant for a 10-week size uterus, non-tender uterus. During the speculum examination Pap smear test is performed and gonorrhea and chlamydia screening tests are taken. The next day the gonorrhea test returns as positive. Which of the following is the most appropriate pharmacotherapy.

A. Ceftriaxone.
B. Clindamycin.
C. Doxycycline.
D. Levofloxacin.
E. Metronidazole.

EXPLANATION

The correct answer is A. Neisseria gonorrhoeae is a known cause of cervicitis and can also play a role in the pathophysiology of pelvic inflammatory disease (PID). In pregnant women, it is implicated as a cause of preterm birth and chorioamnionitis. In past decades, transmission of the gonococcus at birth from the mother to her infant led to eye infection (gonococcal ophthalmia neonatorum) and blindness in many neonates. Universal neonatal eye prophylaxis with an antibiotic ointment has reduced the rates of gonococcal ophthalmia neonatorum considerably. Any woman who is found to be infected with the gonococcus during pregnancy should be treated. The treatment of choice is ceftriaxone, which is given as a one-time intramuscular injection. Cefixime can also be used as an oral, one-time dose medication that is better tolerated by some. Patients who cannot tolerate cephalosporins can be treated with spectinomycin as a single intramuscular dose. Any patient with gonorrhea should also be given antibiotics that will cover Chlamydia as well. Thus, this patient should be given not only ceftriaxone, but azithromycin (or erythromycin or amoxicillin) as well. It is also essential that the patient’s sexual partner or partners be treated and that a test of cure be performed approximately 4 weeks later to ensure that the organism has been eradicated.

Clindamycin (choice B) does not provide adequate coverage for gonorrhea and therefore would not be the most appropriate pharmacotherapy.

Doxycycline (choice C) is often used to treat Chlamydia in nonpregnant patients. It should not be used during pregnancy because of the effects on fetal teeth and bones.

Levofloxacin (choice D) is contraindicated during pregnancy because of a possible link with arthropathies in the offspring of women exposed to the drug.

Metronidazole (choice E) is used during pregnancy to treat bacterial vaginosis and Trichomonas. Current recommendations are that it should not be used during the first trimester. It is not used to treat gonorrhea.
Q-329
While running to catch a bus an old man twists his ankle and falls on his inverted foot. Antero-posterior, lateral and mortise x-ray films show displaced fractures of both malleoli. Which of the following would be the preferred mode of treatment.

A. Closed reduction and casting.
B. Skeletal traction.
C. Open reduction and internal fixation.
D. Replacement with a metal prosthesis.
E. Fusion of the ankle joint.

EXPLANATION
The correct answer is C. Precise alignment of the displaced fragments is needed to ensure that the tight mortise of the ankle joint is restored.

Closed reduction and casting (choice A) is unlikely to provide the necessary realignment.

Skeletal traction (choice B), in general, is indicated only in areas of the body where strong muscle groups pull broken bones into unacceptable positions.

Artificial joints are usually used for advanced articular disease. In the trauma setting, replacement with a prosthesis (choice D) is as a rule reserved for fractures where avascular necrosis is predictable.

Fusion of a joint (choice E) is the ultimate step when everything else has failed. It would not be the first choice for a relatively common fracture.
Q-330
An 80-yr-old woman complains of 4-month history of worsening gait and lower back pain that is worse on walking. She denies any trauma and is not incontinent. She has been fairly healthy and takes only iron supplement. On examination she has hypoactive muscle stretch reflexes in the legs. The plain x-ray of the lumbosacral region shows degenerative changes that seem age appropriate. Which of the following is the most likely diagnosis.

A. Acute lumber disc herniation.
B. Cervical stenosis.
C. Lumbar stenosis.
D. Myopathy.
E. Normal pressure hydrocephalus.

EXPLANATION
The correct answer is C. Lumbar stenosis is caused by degenerative changes in the lumbosacral spine. The history is that of vague low back pain with subtle physical examination findings referable to impingement on motor and sensory roots.

Acute disc herniation (choice A) is characterized by low back discomfort and pain extending in a radicular fashion. Examination is consistent with impingement on a single sensory or motor root.

Cervical stenosis (choice B) can cause a myelopathy and resultant gait problem, but this patient has degenerative changes in the lumbosacral region.

Myopathy (choice D) can cause an impaired gait, low back discomfort and hypoactive muscle reflexes, typically at the knee. Weakness tends to be symmetric and proximal.

NPH (choice E) causes an apraxic gait, dementia and urinary incontinence.
Q-331
A 24-yr-old man presents with a 4-month history of postprandial diarrhea, weight loss of 9 pounds and lower abdominal pain. He denies recent travel or oral antibiotic use. On physical examination his temperature is 38.0 C (100.4 F) and he has several oral aphathous ulcers. On abdominal examination there is tenderness and mild voluntary guarding in the right lower quadrant. A rectal examination reveals brown stool that is strongly guaic-positive. Which of the following most likely is causing patient's symptoms.

A. Gram negative organisms.
B. Folate deficiency.
C. Mucosal ulceration with no transmural involvement in the ascending colon.
D. Toxin producing organism.
E. Transmural inflammation in the region of terminal ileum.

EXPLANATION

The correct answer is E. This patient, with postprandial diarrhea, weight loss, low-grade fever, and right lower quadrant findings on physical examination, has the typical presentation of Crohn disease, which most commonly involves the terminal ileum. Inflammation in this disease is transmural, as opposed to the inflammation in ulcerative colitis that is limited to the mucosa of the large intestine.

Although the etiology of Crohn disease is not known, gram-negative organisms (choice A) have not been demonstrated to be causative.

Folate deficiency (choice B) does not cause a diarrheal illness. It can, however, result infrequently from Crohn disease if there is severe proximal small bowel malabsorption.

Mucosal ulceration in the ascending colon (choice C) may be seen during a colonoscopy in patients with Crohn disease, but the inflammation in fact is transmural.

Toxin-producing organisms (choice D), such as enterotoxigenic Escherichia coli and Vibrio cholerae produce a watery diarrheal syndrome without any other of the findings described in this patient.
Q-332
An 18-yr-old army recruit goes on a 24-hour forced march. When he urinates 2-hours following the end of the march his urine is red tincted. He goes to the infarnary where a dipstick test of urine is positive for hemoglobin. When the blood is spun in a small hematocrit machine available in the infarnary, the overlying serum has a red color and the hematocrit is 35%. Peripheral smear shows a few odd shaped RBC fragments. The patient's anemia is most likely due to which of the following.

A. Acute leukemia.
B. Autoimmune attack on red cells.
C. Inadequate hemoglobin synthesis.
D. Iron overlay.
E. Mechanical injury to red cells.

EXPLANATION

The correct answer is E. Many medical students and residents forget to think of traumatic hemolytic anemias when considering the differential diagnosis of anemia. In this case, the prolonged forced march has repeatedly compressed tiny blood vessels, causing fragmentation of some red cells. (This forced march may also predispose for rhabdomyolysis with release of myoglobin, which can also cause pink urine, positive "hemoglobin" on urine dipstick, and pink serum. Rhabdomyolysis could be differentiated from traumatic hemolysis by a very high creatine kinase enzyme level in the blood.) Typical red cell findings in traumatic hemolytic anemia include triangle and helmet shapes. The MCV may be low and the RDW high, reflecting a mixture of normal and fragmented erythrocytes.

Acute leukemia (choice A) would not cause fragmented red cells.

Autoimmune attack on red cells (choice B) is unlikely because the patient has no predisposing factors, such as other autoimmune diseases or recent medication use.

Inadequate hemoglobin synthesis (choice C) would cause chronic disease.

Iron overload (choice D) does not cause anemia.
Q-333

A 7-yr-old girl complains of increased urinary frequency, itching and dysuria on urination. Her urinalysis is consistent with a urinary tract infection. This is her 20th infection in the past year despite adequate antibiotic coverage. Further imaging of her bladder, kidneys and ureter reveals a vesicoureteral reflux. Which of the following is the most appropriate next step.

A. CT-scan of the pelvis.
B. Intravenous antibiotics for two-weeks.
C. Intravenous pyelogram.
D. Renal arteriogram.
E. Antireflux surgery.

EXPLANATION

The correct answer is E. Vesicoureteral reflux is a common anatomical cause of recurrent urinary tract infections in children. Patients with reflux have retrograde flow of urine into the ureter and/or kidney before voiding. This occurs because of an incompetent vesicoureteral valve. Many children outgrow mild degrees of reflux if they are maintained on prophylactic antibiotics. Moderate to severe cases of reflux frequently require surgery. Failure of antibiotics is also an indication for surgery.

A CT scan of the pelvis (choice A) is not a functional study and will not necessarily add to the diagnosis since reflux will not be demonstrated.

Intravenous antibiotics would be needed in the setting of persistent infection on oral antibiotics (choice B), however, surgical intervention will be definitive.

An intravenous pyelogram (choice C) would help in outlining the collecting system, but would not provide much additional information. However, a radionuclide scan could be very helpful in determining the degree of reflux present with a minimum of radiation exposure.

A renal arteriogram (choice D) on an already diagnosed case would not be of much value.
A 29-yr-old woman presents to her new primary care physician requesting medications to help her in recent spells of anxiety and depression. She wishes to be started on a medication that will not cause too much sedation. Examination of the patient's old records reveals two previous suicide attempts by overdose, once with acetaminophen at age 16 and other with aspirin during the college. Given this history which of the following antidepressant medication would most likely be contraindicated for this patient.

A. Buspirone.
B. Fluoxetine.
C. Nortriptyline.
D. Paroxetine.
E. Sertraline.

EXPLANATION

The correct answer is C. Nortriptyline is a tricyclic antidepressant, which is lethal in overdose and is the leading cause of overdose-related deaths in the psychiatric population. Overdose is associated with prolongation of the QT interval, leading to cardiac arrhythmia and death. Given this patient's history of previous overdoses, a tricyclic antidepressant would be contraindicated.

Buspirone (choice A) is an antidepressant medication whose pharmacologic action is not well understood, but which is not known to be lethal in high doses.

Fluoxetine (choice B), paroxetine (choice D), and sertraline (choice E) are all selective serotoninergic reuptake inhibitors (SSRIs). These antidepressant medications are generally safe and effective and are not lethal except in extremely high doses.
A family physician cares for a family consisting of a 45-yr-old husband, 43-yr-old wife and a 12-yr-old daughter. The family reports that recently 77-yr-old maternal grandmother who lived with them died after a prolonged respiratory infection. Autopsy confirmed that she had active pulmonary tuberculosis at the time of death, the organism is sensitive to all anti-tuberculosis drugs. In responding to grandmother's illness which of the following is the most appropriate step in management.

A. Obtain leukocyte count on all family members.
B. Obtain sputum culture on acid-fast bacilli.
C. Obtain chest CT-scan on all family members.
D. Place purified protein derivative test on all members.
E. Schedule bronchoscopy lavage for the adults.

EXPLANATION

The correct answer is D. The immediate step is to screen the family for TB exposure. The most effective manner in which to accomplish this is by placing PPDs on all members and working up those with a positive test.

The white cell count may be elevated for a variety of reasons and would not necessarily help in diagnosis or management (choice A).

Sputum cultures will take 6 months to grow and may be too cumbersome to obtain (choice B).

Chest CT scans may show the tuberculosis lesion but a more effective method would be to place the PPD and perhaps then scan those with a positive test (choice C).

A bronchoscopy would be too invasive an option at this point (choice E).
A 30-yr-old woman presents to the ER after a syncopal episode. 3-months ago she had fever, chills and a generalized weakness during a visit to Cape Cod. She uses oral contraceptives, she used cocaine 4-months ago. Her blood pressure is 110/65 and pulse is 43. Blood chemistries and chest x-ray are normal. An ECG reveals complete heart block but there is no evidence of ischemia or prior infarct. Which of the following is the most likely cause of this patient's complete heart block.

A. Infection of Borrelia burgdorferi.
B. Infection with HIV.
C. Infection by Ixodes dammini.
D. Myocardial infarction from cocaine use.
E. Myocardial infarction from a coronary thrombus.

EXPLANATION

The correct answer is A. This patient is exhibiting manifestations of secondary Lyme disease, caused by infection with the spirochete, Borrelia burgdorferi. She probably contracted the infection in Cape Cod. The three stages of Lyme disease are a skin rash (erythema chronica migrans) with flu like symptoms, cardiac and neurologic symptoms, and finally an arthritis. The cardiac symptoms arise from AV nodal conduction defects. Antibiotics are needed, but a temporary pacemaker may also be required.

HIV carditis (choice B) is typically not manifested by complete heart block. More often, it presents as a cardiomyopathy associated with congestive heart failure, generally occurring as a late complication of HIV infection. Pericardial disease may be due to Kaposi sarcoma, presumably due to acute hemorrhage.

Ixodes dammini (choice C) is the deer tick, whose bite transmits the spirochete. The vector itself does not cause Lyme disease. The vector is the size of a pencil eraser, and close examination is needed to detect the tick on the body.

Cocaine use (choice D) may lead to coronary atherosclerosis and predispose the patient to a myocardial infarct. However, the timing is typically more acute, and the timing in this patient would be incorrect.

An acute coronary thrombus (choice E) would present with substernal chest pain, diaphoresis, left arm pain, dyspnea, and ST elevation on the ECG. The patient's presentation is inconsistent with this diagnosis.
A 40-yr-old woman presents to the physician with a markedly painful, swollen, warm knee. Aspiration demonstrates milky fluid with a very high leukocyte count. No crystals are seen. Based on this information which of the following is the most likely pathogen.

A. Enterobacter.
B. Neisseria gonorrhoeae.
C. Pseudomonas aeruginosa.
D. Staphylococcus aureus.
E. Streptococci.

EXPLANATION

The correct answer is B. The most common bacterial cause of acute infectious arthritis in adults is Neisseria gonorrhoeae, the causative organism of the venereal disease gonorrhea. The initial sites of infection are mucosal surfaces such as cervix, rectum, and pharynx. From these sites, the organism spreads hematogenously to involve joints that can include the small joints of the hands, wrists, and ankles, and the larger joints of the elbows and knees. Patients present with joint swelling, pain, warmth, and tenderness; the onset may be rapid, e.g., over a few hours. Gonococcal arthritis may also (and commonly) occur as part of a dermatitis-polyarthritis-tenosynovitis syndrome.

Enterobacter (choice A) is a relatively uncommon cause of septic arthritis.

Pseudomonas aeruginosa (choice C) accounts for about 40% of the infectious arthritis not due to Neisseria gonorrhoeae.

Staphylococcus aureus (choice D) accounts for about 45% of the infectious arthritis not due to Neisseria gonorrhoeae.

Streptococci (choice E) account for about 9% of the infectious arthritis not due to Neisseria gonorrhoea.
Q-338
A front seat passenger in a car involved in a head-on-collision relates that he hits the dashboard with his knees. However, he is specifically complaining of severe pain in his right hip rather than knee pain. He lies in the strature in the ER with right lower extremity shortened, adducted and internally rotated. Which of the following is the most likely injury.

A. Femoral neck fracture.
B. Fracture of the shaft of the femur.
C. Intratrochanteric fracture.
D. Posterior dislocation of the hip.
E. Posterior dislocation of the knee.

EXPLANATION

The correct answer is D. The mechanism of injury is classic. As the knee hits the dashboard in the sitting position, the femoral head is driven backward and out of the socket. The position of the injured extremity is also typical, with the internal rotation produced by the posteriorly dislocated femoral head. This injury is an orthopedic emergency because of the tenuous blood supply of the femoral head.

Femoral neck (choice A) and intratrochanteric (choice C) fractures are seen in elderly patients who fall and "hurt their hip." They present with a shortened extremity that is externally rotated.

A fractured shaft of the femur (choice B) would produce pain right there (not in the hip) and would have an obvious deformity where the thigh has an angulation that is clearly abnormal.

Posterior dislocation of the knee (choice E) is also an orthopedic emergency because of the potential disruption of the popliteal artery, but the pain and the deformity would be at the knee.
A 21-yr-old college senior presents with a 2-month history of frequent episode of loose stool preceded by lower abdominal cramping. Over the past four-weeks the stools have become increasingly bloody. On a number of occasions he has the feeling of rectal fullness but is unable to pass any fecal matter. A sigmoidoscopy is performed and reveals inflammation in a circumferential manner from anal verge to the mid-sigmoid colon where the transition to the normal mucosa is seen. Which of the following is the most appropriate treatment for this patient.

A. IV hydrocortisone.
B. IV infliximab.
C. Oral azathioprine.
D. Oral prednisone.
E. Topical mesalamine.

EXPLANATION

The correct answer is E. The patient described here has ulcerative colitis confined to the distal colon, also known as ulcerative proctosigmoiditis. Since the disease is limited to the distal colon, topical agents such as mesalamine (or alternatively hydrocortisone) would be effective in reducing inflammation. Mesalamine is an anti-inflammatory drug used principally to control ulcerative colitis. Its active ingredient is also known as 5-aminosalicylic acid, which is available in the forms of rectal suspension, suppositories, delayed release oral tablets, and controlled release oral capsules. The mode of action is unknown, but is thought to involve topical (since mesalamine is poorly absorbed), rather than systemic, modulation of arachidonic acid metabolites, including prostaglandins, leukotrienes, and hydroxyeicosatetraenoic acids. It is usually well tolerated, but it can cause significant allergic reactions related to sulfite sensitivity.

IV hydrocortisone (choice A) is reserved for patients who do not respond to high doses of oral prednisone.

IV infliximab (choice B) is used for patients with severe refractory Crohn disease.

Oral azathioprine (choice C) is used in Crohn disease and ulcerative colitis in patients already refractory or dependent on steroids to control symptoms or maintain remission.

Oral prednisone (choice D) is not warranted in patients who have not been treated previously with safer medications, such as topical mesalamine or hydrocortisone or oral mesalamine or sulfasalazine.
A 4-yr-old boy is being evaluated for short stature. He has a history of multiple bone fractures in the past, he requires a wheelchair to emultate and he has hearing difficulty. On physical examination his weight is below the fifth percentile, his sclera are blue in color, there is marked deformity in the lower extremities. Which of the following is the most likely diagnosis:

A. Achondroplasia.
B. Constitutional delay of growth.
C. Developmental dysplasia of the hip.
D. Familial short stature.
E. Osteogenesis imperfecta.

EXPLANATION

The correct answer is E. The boy in this clinical vignette has osteogenesis imperfecta, which is a group of disorders caused by deficiencies in the synthesis of type 1 collagen. Although the hallmark of the disease is prominent skeletal deformity, other anatomic structures rich in type 1 collagen, such as joints, eyes, ears, skin, and teeth, are affected as well. The clinical expression of osteogenesis imperfecta constitutes a spectrum of disorders all marked by extreme skeletal fragility. Four major subtypes have been distinguished.

The type II variant is at one end of the spectrum and is uniformly fatal in utero or during the perinatal period. It is characterized by extraordinary bone fragility with multiple fractures occurring when the fetus is still within the womb. In contrast, the type I form, which is more often due to an acquired rather than to a hereditary mutation, permits a normal life span but with an increased number of fractures during childhood. These decrease in frequency after puberty. Other findings include blue sclerae caused by a decrease in collagen content, making the sclera translucent and allowing partial visualization of the underlying choroid; hearing loss related to both a sensorineural deficit and impeded conduction owing to abnormalities in the bones of the middle and inner ear; and dental imperfections (small, misshapen, and blue-yellow teeth) secondary to a deficiency of dentin. In type III, the bony deformity is pronounced and not necessarily due to fractures. Mobility is impaired, and most patients require a wheelchair at an early age. Stature may be severely compromised. Because of a progressive vertebral column deformity and rib fractures, restrictive lung disease is a common problem. A basilar impression causing compression of the brainstem and the craniocervical junction can produce central sleep apnea, headache, and upper motor neuron signs. Patients with type IV osteogenesis imperfecta generally have reduced stature, some bony deformity, and abnormal teeth that are opalescent and wear easily. The tendency to fracture is highest in childhood and lessens with adolescence. A distinguishing characteristic of type IV is a normal scleral hue.
The management of skeletal complications largely depends on orthopedic, physical, and occupational therapy approaches. The long-term goal is to maintain function and independence as an individual. These goals can be advanced in some by judicious use of intramedullary rods in the long bones of the legs. If mobility, especially ambulation, can be maintained, the demineralization associated with inactivity can be avoided. Unaffected parents of a child with osteogenesis imperfecta, as well as all affected individuals, should have genetic counseling.

Achondroplasia (choice A) is one of the chondrodystrophies that result in disproportionately short stature. Short, tubular bones form because of abnormal endochondral ossification in the limbs.

Constitutional delay of growth (choice B) is suggested by a child who is growing at a normal or mildly decreased rate. The patient is delayed in pubertal development, and the bone age significantly lags behind the chronologic age.

Developmental dysplasia of the hips (choice C) results from loss of contact between the acetabulum and the head of the femur.

Familial short stature (choice D) is characterized by a child with short parents, by a bone age consistent with the chronologic age, and by a growth curve that follows the normal pattern even though it is significantly below the 3rd percentile.
A 26-yr-old man is brought to the hospital by his family after sitting in his room with the lights out and the door closed for 2-days. He has not eaten over this time. About a week ago the family noticed that the patient becoming increasingly agitated and paranoid about cars driving by on the street in front of their house. He covered the windows of his bedroom with newspapers and unplugged the radio and television. At night he was heard pacing in his room and talking to himself. Although he had taken olanzapine for a psychiatric hospitalization about 6-months previously. The family told that he threw away the medication about a month ago. On admission the patient is sitting in the chair with his head hung low, he is disheveled and malodorous after having urinated on himself several times over the past two days. On physical examination the patient appears to be awake but firmly resist any attempts to be moved. He does not follow instructions and the nurse was unable to move his arm to obtain blood pressure measurement without assistance. Which term would best describe this patient's resistance to be moved.

A. Akathesia.
B. Cataplexy.
C. Echopraxia.
D. Negativism.
E. Stereotypy.

EXPLANATION

The correct answer is D. This patient is exhibiting the catatonic symptom known as negativism, which is a motiveless resistance to all attempts to be moved or to all instructions. Signs of catatonia include stupor, negativism, rigidity, posturing, mutism, stereotypies, mannerisms, waxy flexibility, and catatonic excitement. Catatonia may be associated with schizophrenia (catatonic type), mood disorders (with catatonic features), or general medical conditions.

Akathisia (choice A) is usually classified as an extrapyramidal side effect of antipsychotic medications. It is characterized by a subjective feeling of muscular tension (an inner sense of restlessness) that can cause distressing restlessness, pacing, or repeated movements. It may be mistaken for psychotic agitation, and thus inappropriately treated.

Cataplexy (choice B) is a temporary loss of muscle tone and weakness precipitated by a variety of emotional states. It is most characteristically associated with narcolepsy.

Echopraxia (choice C) is a pathological imitation of the movements of one person by another. It can be seen in catatonia, delirium, dementia, and other disorders.

Stereotypy (choice E) is a repetitive fixed pattern of physical action, movement, or speech. It may be seen in catatonia. This patient does not currently exhibit stereotypies.
Q-342
A mother brings her twelve-year-old daughter to the physician because the mother is concerned that her child has delayed physical development. In particular the mother is concerned because her daughter has not yet had menstrual period. The daughter began developing breast at age ten but has not had her first period. The daughter has no medical problems and takes no medications. Examination shows developing breasts and normal external female genitilia. Which of the following is the most appropriate response to the mother.

A. Breast development at age ten is abnormally early.
B. Breast development at age ten is abnormally late.
C. Evaluation for late menses should be started immediately.
D. Evaluation for late menses should be started at age 15.
E. Her child’s sexual development is none of her business.

EXPLANATION

The correct answer is D. Sexual development is variable from woman to woman, although there are certain ranges of normal. Thelarche, also known as breast-budding, is usually the first sign of secondary sexual development and this occurs on average between the ages of 8 and 10 years of age. The growth spurt usually follows after breast budding and menarche is one of the last stages, occurring, on average, between the ages of 12 and 13. This young woman began developing breasts at age 10, which is entirely appropriate. That she has not had her first menstrual period yet is not abnormal. The general rule is that evaluation for delayed sexual development should be started if there is no breast development by the age of 13 or menses by the age of 15. This general rule can be adapted to fit the circumstances if there are tempo or sequence abnormalities. In this case, with breast development occurring normally and development appearing to proceed in a standard fashion, the mother can be reassured and evaluation for late menses delayed until age 15, if it has not come before that time.

To state that breast development at age 10 is abnormally early (choice A) or that breast development at age 10 is abnormally late (choice B) is incorrect. In North America, thelarche occurs, on average, between ages 8 to 10. Therefore, this young woman, who began breast development at age 10, falls into the normal range.

To state that evaluation for late menses should be started immediately (choice C) is incorrect. The general rule for evaluation of delayed puberty is that evaluation should take place if thelarche has not occurred by age 13 or menarche by age 15. These ages represent roughly a 2.5 standard deviation from the mean and therefore warrant evaluation.

To tell this mother that her child’s sexual development is none of her business (choice E) would not be appropriate. While there are certain sexual issues where confidential discussion with an adolescent is appropriate, concerns regarding delayed sexual development are appropriate issues for a parent to be concerned with.
Q-343
A 72-yr-old man presents to the clinic for persistent and nagging low back pain that he has had for several weeks. The pain seems to be increasing in intensity, it is worse at night, it is unrelieved by rest or positional change and is not exacerbated by coughing, sneezing or straining to have a bowel movement. He is a chronic smoker and for the past three-months has a persistent cough with occasional blood streaky sputum as well as a 20-pounds weight loss. On physical examination he is distinctly tender to palpation at a particular spot on his lower thoracic spine. Which of the following is the most likely diagnosis.

A. Ankylosing spondylitis.
B. Herniated disc.
C. Metastatic tumor to the thoracic spine.
D. Multiple myeloma.
E. Primary malignant bone tumor.

EXPLANATION
The correct answer is C. The age, nature of the pain, physical findings, and associated symptoms are all highly suggestive of metastatic tumor, and the source is probably the lung.

Ankylosing spondylitis (choice A) happens to younger patients (in their early 30s) who have pain and stiffness in the mornings, and relief as they become active during the day.

Herniated disc (choice B) can virtually be excluded by the fact that the pain is not exacerbated by coughing, sneezing, or straining.

Multiple myeloma (choice D) is also a disease of old men, but they get anemia and multiple lytic lesions throughout the skeleton.

Primary malignant bone tumors (choice E) occur in much younger people, and the extremities are a more likely location.
Q 344
A 14-yr-old girl comes to the physician for an annual examination. She has no complaints. She became sexually active during the past year and uses condoms occasionally for contraception. She has asthma for which she occasionally takes an albuterol inhaler. She had an appendectomy at the age 9. Physical examination is normal including a pelvic examination. When should this patient begin having Pap smear testing.

A. Immediately.
B. Age 16.
C. Age 18.
D. Age 20.
E. Age 21.

EXAMINATION

The correct answer is A. Pap testing is used to screen women for cervical cancer. The development of cervical cancer is believed to be a gradual process in which the cervical cells gradually progress from dysplasia to carcinoma in situ to invasive cancer. Cervical cancer is certainly linked to sexual activity, as the human papillomavirus, which is transmitted through sexual contact, is believed to play a causative role. Sexual intercourse also allows exposure to other infectious diseases and carcinogens that may play a role in the process. Therefore, a patient should begin having Pap testing once she begins to engage in sexual intercourse. If a patient has not had sexual intercourse by the age of 18, Pap testing should begin then. Pap testing should be performed yearly, primarily because a single Pap test has a high false-negative rate (i.e., the Pap test has a low sensitivity). The sensitivity of Pap testing is often quoted as 80%. Therefore, 2 of 10 women with abnormal cervical cells will be missed with Pap testing. However, if the examination is repeated every year, as it should be, then the likelihood of missing the lesion over time is much lower.

To start at age 16 (choice B), 18 (choice C), 20 (choice D), or 21 (choice E) is too late for this patient. Although the progression to cervical cancer is believed to be a gradual one, there are more aggressive forms that are more rapidly progressive. Also, if one waits until age 16, 18, 20, or 21, and the patient misses that next appointment or has a false negative on the Pap test, then the disease will be given even further time to progress. Also, to wait until later to do Pap testing with this patient is to miss an opportunity for cervical cancer screening. The patient may not return for follow-up. Therefore, screening should be performed now.
Q-345

A 31-yr-old professional body builder presents complaining of three-weeks of worsening fatigue, low-grade fever and myalgias as well as gradual onset of jaundice over the past week. He admits to unprotected anal sex three-months earlier after a championship bodybuilding event. He denies any other homosexual activities. He has no other medical problems and is on no medications. On physical examination he appears acutely ill, he has a temperature of 39.2°C (102.7°F), blood pressure of 116/60, pulse is 114. He is deeply icteric and has multiple excoriations on his entire body. His liver edge is smooth and is very tender and measures 14cm in mid-clavicular line. There is no shifting dullness and a spleen tip is palpable 4cm below the left costal margin. Stool is brown and guaic-negative and there is no peripheral edema. Which of the following laboratory findings would most likely indicate the worst prognosis.

A. Prothrombin time of 19.6 seconds.
B. AST of 983 U/L.
C. ALT of 13,420 U/L.
D. Total bilirubin of 27.4 mg/dl.
E. WBC count of 18,400/mm³.

EXPLANATION

The correct answer is A. This patient has probable acute hepatitis. Features specifically suggesting acute hepatitis include his jaundice, itchiness leading to multiple excoriations, tender enlarge liver, and palpable spleen tip. He reports no risk factors for hepatitis A infection, such as drinking water in a foreign country with periodic epidemics of hepatitis A. He does have a risk factor for hepatitis B, which can be transmitted through blood products (now rare because of blood screening), contaminated syringes among drug users, and sexual contact (particularly when involving the rectum). The findings of a coagulopathy or of an encephalopathy confer the worst prognosis in patients with an acute viral hepatitis. Most patients with hepatitis B, even with severe laboratory abnormalities, may be followed conservatively so long as they do not develop a coagulopathy or exhibit signs of encephalopathy. These findings, in fact, suggest the possibility of fulminant hepatic failure.

Although the transaminases may rise to very high levels (choices B and C), they are not of prognostic value in viral hepatitis.

Similarly, severe jaundice (choice D) is of limited prognostic value, as is leukocytosis (choice E).
Q-346
A 20-yr-old man is brought to the clinic by his parents who are concerned that he is an alcoholic. They want him to check himself in for treatment. In discussion about his drinking habits, the young man brags that he can now drink more before he gets drunk. Which of the following terms best characterizes this phenomenon.

A. Blackout.
B. Confabulation.
C. Dereism.
D. Resistance.
E. Tolerance.

EXPLANATION

The correct answer is E. Tolerance describes the phenomenon of a drinker needing greater amounts of alcohol to get the same effect. It develops over time and is an indication of dependence.

A blackout (choice A) occurs during a period of alcohol intoxication for which there is a complete anterograde amnesia even though patient is awake and alert.

Confabulation (choice B) is associated with Korsakoff syndrome and is a result of chronic alcohol abuse. Because of retrograde and anterograde amnesia, the person fills in gaps in memory by imagined or untrue experiences that he or she believes happened, even though they have no basis.

Dereism (choice C) is mental activity that is not in accordance with reality or logic. It is mostly seen in psychoses.

Resistance (choice D) is a phenomenon associated with the development of transference. It refers to inhibition of free association and an opposition of goals of analysis.
A 30-yr-old man is seen for evaluation of nephrotic syndrome. He is not diabetic or hypertensive, he is a former user of injectable drugs (skin popper). He denies arthralgias, hematuria or rash. His blood pressure is 100/60. On examination the patient has anasarca and a large palpable liver. Multiple old skin ulcers are noted on both lower extremities. Lab analysis shows creatinine 1.6 mg/dl, potassium 3.7 Meq/l, BUN of 20 mg/dl. A 24-hour urine contains 12 gm of protein with no casts. A renal ultrasound reveals echogenic kidneys, each measuring about 13cm. HIV test is negative. Which of the following is the most likely diagnosis.

A. AIDS nephropathy.
B. Amyloid nephropathy.
C. Heroine nephropathy.
D. Minimal change disease.
E. Post-streptococcal glomerulonephritis.

EXPLANATION

The correct answer is B. Amyloidosis is a syndrome described in drug users who "skin pop" their drugs and have recurrent infections. These patients will present with a nephritic syndrome with a bland urine. They usually have large kidneys.

AIDS nephropathy (choice A) is usually seen in patients who are HIV-positive. It may take six months to make antibodies to the AIDS virus, but AIDS nephropathy is usually not seen so early on. These patients rapidly go onto dialysis.

Heroin nephropathy (choice C) is seen in drug users who use heroin IV. They usually have small kidneys and hypertension.

Minimal change disease (choice D) is usually seen in young patients. Although still possible, it would not be the most likely diagnosis.

Poststreptococcal glomerulonephritis (choice E) will present with hematuria and hypertension, which this patient did not have. It is usually seen about 14 days after a streptococcal sore throat and causes an acute nephritis.
Q-348
A 78-yr-old man is brought to his family physician because of progressive memory loss and occasional episodes of disorientation from the past 6-months. Recently he was found by the police wondering in the streets, unable to recollect his way home. A mental state examination reveals severe deficits in short-term memory but the patient retain the ability to follow three-stage command. Motor and sensory functions are intact and no tremor is observed. The patient is otherwise in good physical health and does not smoke or take medications. Blood and thyroid function test are within normal limits. MRI studies show diffuse cortical atrophy and ventricular dilatation. Which of the following is the most likely diagnosis.

A. Chronic sudural hematoma.
B. Dementia of Alzheimer's type.
C. Normal pressure hydrocephalus.
D. Parkinson's disease.
E. Pick dementia.

EXPLANATION

The correct answer is B. The clinical history, neurologic evaluation, and MRI findings are consistent with dementia of the Alzheimer type [Alzheimer disease (AD)]. The diagnosis of AD is mostly based on clinical parameters, i.e., history and careful neurologic evaluation, including mental status. Neuroimaging studies are usually useful in the differential diagnosis of dementia. Ventricular dilatation in AD is due to hydrocephalus ex vacuo, which is secondary to atrophy of the brain. There is no available laboratory test to definitely confirm or exclude this condition. In uncertain cases, a brain biopsy may be performed, which may demonstrate senile plaques and/or neurofibrillary tangles in the cortex. Short-term memory deficits and disorientation are early features of AD. These progressively worsen until the patient is unable to recognize the most familiar faces and objects or perform the simplest daily tasks. Patients with this condition eventually die bedridden of infectious complications, such as pneumonia and sepsis.
Chronic subdural hematoma (choice A) may indeed manifest with a dementing picture, but is detectable on CT/MRI as a subdural mass. This condition most frequently affects elderly patients, in whom cerebral atrophy may result in the stretching of "bridging" veins. Head trauma, sometimes of minimal severity, may lead to rupture of these veins.

Normal-pressure hydrocephalus (choice C) is characterized by marked ventricular dilatation in the absence of significant cortical atrophy. This is an infrequent yet important cause of dementia. The symptomatology of normal pressure hydrocephalus, in fact, may resolve with CSF shunting (e.g., ventriculoperitoneal shunting) in the early stages.

Parkinson disease (choice D) is caused by degeneration of the dopaminergic neurons in the substantia nigra. It manifests with the typical triad of resting tremor, akinesia, and rigidity. It responds to treatment with L-DOPA.

Pick dementia (choice E) is characterized clinically by flat emotional affect and language disturbances. MRI shows atrophy of the frontal and anterior temporal cortex, with sparing of the remaining lobes. A biopsy of the frontal cortex will show neuron loss with intracytoplasmic argyrophilic inclusions.
Q-349
A 54-yr-old obese man gives a history of burning retrosternal pain and heartburn that is brought about by bending over, wearing a tight belt or lying flat while sleeping at night. He gets symptom relief from over-the-counter antacids or H$_2$ blockers but has never been formally studied or treated. The problem has been there for several years and seems to be progressing. Which of the following is the most appropriate next step in management.

A. Barium swallow.
B. Cardiac enzymes and ECG.
C. Proton pump inhibitors.
D. Endoscopy and biopsies.
E. Laproscopic Nissen fundoplication.

EXPLANATION

The correct answer is D. The clinical picture is fairly convincing for long-standing gastroesophageal reflux. The main concern is the degree of peptic esophagitis that he may have developed, and the possibility of Barrett’s esophagus and premalignant changes. Endoscopy and biopsies will provide the answer.

Barium swallow (choice A) would provide anatomic evidence of hiatal hernia and evidence of reflux, but would not tell us whether Barrett’s esophagus has developed.

Cardiac enzymes and ECG (choice B) would be part of the workup (along with pH monitoring) if we were uncertain as to the genesis of ill-defined low retrosternal and upper epigastric pain. This man gives a classic presentation for reflux.

Proton pump inhibitors (choice C) might likewise be indicated for this man, but not until we know the severity and potential premalignant stage of his disease.

Nissen fundoplication (choice E) may some day be needed here, but one would not jump to a surgical solution based only on a clinical presentation.
Q-350

A 50-yr-old man is brought to the ER complaining of light-headedness. He has a history of lung cancer which was diagnosed one-month ago and found to be widely metastasized to the bone and the pericardium. On physical examination his blood pressure is 70/40 and his pulse is 100. His heart sounds are distant and soft. His ECG demonstrates low voltage and electrical alternans is present. A chest x-ray film shows that the cardiac silhouette has a water bottle appearance. Which of the following is the most appropriate intervention in this patient.

A. Beta-blocker.
B. Non-steroidal anti-inflammatory agents.
C. Steroids.
D. Pericardiocentesis.
E. Cardiac catheterization.

EXPLANATION

The correct answer is D. This patient is in pericardial tamponade, most probably as a result of his malignancy. Lung cancer is particularly likely to cause pericardial effusions. Furthermore, since this patient has metastases to the pericardium, he might be bleeding into the pericardial space. This tamponade may be the cause of his significant hypotension and the soft cardiac sounds. Electrical alternans, a phenomenon in which the QRS changes axis, is indicative of pericardial effusion, since the heart is moving freely in the fluid, causing a change in axis noted on the ECG. Emergently, this patient needs decompression of the pericardial space with the aid of pericardiocentesis, whereby a catheter directly drains the fluid in the pericardial sac.

Beta-blockers (choice A) would be of no benefit in treating cardiac tamponade.

Nonsteroidal anti-inflammatory drugs (NSAIDs) (choice B) can be useful in treating pericarditis, which may cause pericardial effusions. However, this is a longer term option and will have little utility emergently.

Steroids (choice C) may similarly be used in pericarditis, after NSAIDs have failed. However, this is an option to be explored after the pericardial fluid has been drained.

Cardiac catheterization is often used to confirm the diagnosis of tamponade (choice E). Typically the pressure equalizes across the right atrium and ventricle. However, emergently, this patient should have pericardiocentesis.
A 54-yr-old woman complains of severe lower abdominal pain and distention. The symptoms began approximately 24-hours ago when her abdomen became visibly swollen and she developed nausea and vomiting. She has not moved her bowels over the past 24-hours. Over the past 4-months she has lost 14-pounds and has noted progressive symptoms of constipation. On several occasions she has noted blood mixed in with her bowel movements which have become thinner in caliber. She denies any recent travel, use of antibiotics or fever. On physical examination she appears acutely uncomfortable and has a temperature of 38.3 (100.9 F). Her abdomen is diffusely distended and tender to palpation in left lower quadrant. There are hyperactive rushing bowel sounds. On rectal examination her stool is brown and guaiac-positive. An obstructive series reveals multiple small bowel air-fluid levels and a dilated colon proximal to the sigmoid colon.

Which of the following is the most likely diagnosis.

A. Amoebic abscess.
B. Colon polyp.
C. Diverticulitis.
D. Diverticulosis.
E. Sigmoid carcinoma.

EXPLANATION

The correct answer is E. This patient has symptoms of a chronic gastrointestinal process as demonstrated by her weight loss, change in bowel habits, and thinner caliber stools with bleeding. The thinner caliber stools specifically suggest that a mass lesion or luminal narrowing is present. Of the lesions listed, only colonic cancer would be likely to produce this pattern. In other settings, Crohn disease and tuberculosis of the colon could produce similar clinical patterns. This patient’s change in symptoms over the past 24 hours suggests that she may have developed an acute large bowel obstruction.

An amebic abscess (choice A) would be expected to give more focal findings and symptoms of high spiking fevers. Furthermore, there would usually be a history of travel to suggest this diagnosis.

A colon polyp (choice B) will very rarely produce obstructive symptoms and does not produce the symptoms of weight loss and persistent thin caliber stool.

Diverticulitis (choice C) is a result of a micro- or macroperforation of a diverticulum and results with an acute onset of local inflammatory signs, usually in the left lower quadrant, corresponding to the sigmoid colon diverticulosis.

Diverticulosis (choice D) may give her crampy lower abdominal pain and, on rare occasion, may produce obstructive symptoms. However, this patient’s symptoms of weight loss and bloody bowel movements with thinner caliber stools are more suggestive of colon carcinoma.
Q-352
A 20-month-old presents to the office with a two-day history of harsh, barking cough. His mother states that his cough sounds like a seal. She also states that he has not had a fever although he had a runny nose earlier in the week. On examination he is notably hoarse with inspiratory stridor, he is not drooling and is sitting on his mother’s lap comfortably, the rest of the examination is within normal limits. Which of the following is the most likely diagnosis.

A. Acute laryngotracheobronchitis.
B. Aspiration of foreign body in upper respiratory tract.
C. Epiglottitis.
D. Laryngomalacia.
E. Subglottic stenosis.

EXPLANATION

The correct answer is A. Acute laryngotracheobronchitis (viral croup) usually affects children younger than 3 years and has symptoms of a barking cough and inspiratory stridor. There is usually no fever, and often there are preceding upper respiratory tract symptoms.

Aspiration of foreign body (choice B) is seen in young children. This disorder is characterized by acute onset of coughing, choking, and wheezing if a complete obstruction occurs. Often, drooling and inspiratory stridor are noted in a partial obstruction.

Epiglottitis (choice C) is rarely seen now, since the Haemophilus influenzae type B vaccine has been widely given. It is characterized by sudden onset of fever, drooling, muffled voice, cyanosis, and soft stridor. Children will sit in a tripod position to give them the best airway possible. It is a true medical emergency.

Laryngomalacia (choice D), or underdevelopment of the supraglottic area, is a congenital disorder. There is persistent stridor that is first noted early in infancy.

Subglottic stenosis (choice E) often is congenital, or results from repeated endotracheal intubation. The presentation is often asymptomatic but can resemble that of airway obstruction.
Q 353
A woman who attends weekly psychotherapy sessions becomes furious at her psychiatrist who is about to leave for a vacation and is not going to reveal where he is going. She angrily says that, “you are just like my father who always has his own life outside the family”. Which of the following best describes this patient’s reaction.

A. Acting out.
B. Countertransference.
C. Identification.
D. Projection.
E. Transference.

EXPLANATION
The correct answer is E. Transference is defined by psychoanalysts as a patient’s unconscious feelings and behavior toward the analyst that are based on infantile wishes the patient has toward parental figures.

Acting out (choice A) is a defense mechanism by which a person expresses an unconscious wish or impulse through action in order to avoid being consciously aware of the accompanying affect. Giving in to an impulsive act relieves the tension and brings immediate gratification.

Countertransference (choice B) encompasses a spectrum of analyst’s reactions to the patient that are unconscious and based on personal conflicts of which the analyst may not be aware.

Identification (choice C) is a defense mechanism and also plays a role in normal ego development. Identification with a loved object serves as a defense against pain or anxiety related to threatened or real loss or separation from the object.

Projection (choice D) is a defense mechanism by which inner unacceptable impulses are perceived as though they were coming from the outside and are ascribed to someone else.
Q-354
A 41-yr-old gravida 4, para 3, at term is admitted to labor and delivery ward with regular contractions every two-minutes. Examination shows that her membranes are grossly ruptured and that her cervix is 5cm dilated. Over the following 3-hours she progresses to full dilatation and +2 station, a fetal bradycardia develops and the decision is made to proceed with vacuum assisted vaginal delivery. A 7-pound 8-ounce boy is delivered. APGAR score is 8 at 1-minute and 9 at 5-minute. Which of the following best represents an advantage of vacuum extractor over the forceps for expediting delivery.

A. Vacuum can be used for higher stations.
B. Vacuum can be used in breech presentation.
C. The vacuum can be used in face presentation.
D. The vacuum can be used with intact membranes.
E. The vacuum does not occupy space next to the fetal head.

EXPLANATION
The correct answer is E. Both forceps and the vacuum extractor can be used to expedite the delivery of a fetus. These instruments are most often used when there are fetal indications, such as a non-reassuring fetal heart rate tracing, or maternal indications, such as maternal exhaustion or maternal contraindications to pushing (such as maternal cardiac disease.) The choice of forceps or vacuum depends most on the experience and preference of the physician. In certain cases, one instrument is favored or mandatory. For example, forceps may be used in face presentation with a mentum anterior presentation; in such a case, vacuum is contraindicated. Those who favor vacuum delivery make several arguments. For example, as opposed to forceps, the vacuum extractor does not occupy space next to the fetal head; this should lead to less trauma to maternal tissues. Also, attempted delivery with the vacuum in a situation of true cephalopelvic disproportion (i.e., the fetus cannot be delivered through the maternal pelvis) will lead to a loss of suction and failure of the procedure; forceps do not necessarily dislodge and this could lead to continued efforts being made with increased likelihood of maternal or fetal morbidity or mortality.
To state that the vacuum can be used at higher stations (choice A) is incorrect. Both the vacuum and forceps should preferably be used only in low- or outlet- situations (i.e., with the fetal vertex at +2 station or lower.)

To state that the vacuum can be used for fetuses in breech presentation (choice B) is incorrect. Neither the vacuum nor forceps should be used when the fetus is presenting as a breech.

To state that vacuum can be used in face presentations (choice C) is not correct. Vacuum cannot be used when the fetus is presenting face first. Forceps may be used as long as the fetus is in mentum-anterior position (i.e., with the chin facing toward the maternal pubic symphysis.)

To state that the vacuum can be used with intact membranes (choice D) is incorrect. Neither forceps nor vacuum should be used with intact membranes.
Q-355

A 25-yr-old man is stabbed once in the right chest. The entrance wound is on the mid-axillary at the level of the fifth intercostals space. He arrives in the ER with moderately short of breath but he is fully awake and alert and is talking with a normal tone of voice and has no distended veins visible in his neck or forehead. His blood pressure is 130/75 and his pulse is 82/min. Physical examination of the chest shows the wound which is not visibly sucking air and demonstrates no breath sounds on the right side which is tympanic to percussion. There is no evidence of mediastinal displacement. Which of the following would be the most appropriate next step in management.

A. Cover the wound with a regular dressing and get a chest x-ray.
B. Cover the wound with vaseline gauze taped on three sides.
C. Endotracheal intubation.
D. Insert a chest tube at the right pleural base.
E. Insert an 18 gauge needle in the right pleural space in the second intercostals space.

EXPLANATION

The correct answer is A. The clinical picture is that of a pneumothorax, but there is no life-threatening situation that would prevent obtaining a radiologic diagnosis of the exact nature and extent of the problem. Then the appropriate therapy can be instituted.

Covering the wound with Vaseline gauze (choice B) is the standard advice for sucking chest wounds to prevent further inflow of air into the pleural space. This is not happening here.

Endotracheal intubation (choice C) is not needed if he has a good airway. A person who is fully awake and has a normal tone of voice has a normal airway.

A chest tube (choice D) should not be inserted blindly, not knowing yet what is going on. He may very well need a tube at the base if the x-ray shows a hemothorax, but we might prefer to put it at the top if all he has is air.

Insertion of a needle (choice E) is the correct answer when there is a life-threatening tension pneumothorax. In that case, he would have been in shock, with distended veins and mediastinal displacement.
Q-356
A day after hunting and skinning wild rabbits, a hunter developed an inflamed papule on one finger. The papule rapidly enlarges and then bursts discharging pus and forming a clean ulcer cavity productive of thin colorless exudates. Several days later the patient develops severe illness with atypical pneumonia and delirium. It is at this point that the patient seeks medical attention. The regional lymph nodes of the axilla of the affected arm are enlarged, reduced breath sounds and occasional rales are heard. Splenomegaly is noted. Blood studies show a mild leukocytosis. Which of the following is the most likely diagnosis.

A. Actinomycosis.
B. Brucellosis.
C. Melioidosis.
D. Plague.
E. Tularemia.

EXPLANATION

The correct answer is E. This is tularemia, the causative organism of which is Francisella tularensis. The classic clue in test questions is exposure to wild rabbits, although wild rodents and their arthropod vectors may also carry the disease. You should also be aware that this highly infectious organism should not be isolated except in special protective hoods. The description in the question stem is typical of the ulceroglandular form; less common forms include disease resembling typhoid fever, an ocular form secondary to eye inoculation, and a glandular form in which the initial site of infection is not obvious. Very severe cases may develop disseminated necrotic lesions of various sizes throughout the body. Agglutination tests can confirm the diagnosis after about the 10th day of illness. Untreated cases tend to last 3 to 4 weeks before resolving. Streptomycin is the antibiotic of choice; gentamicin and chloramphenicol can alternatively be used. Deaths occur in about 6% of untreated cases and are very rare in treated cases.

Actinomycosis (choice A) causes multiple draining sinuses.

Brucellosis (choice B) causes recurrent fevers.

Melioidosis (choice C) causes lung and disseminated infection, usually following contamination of wounds by infected soil or water.

Plague (choice D) causes lymph node and lung involvement after exposure to infected rodents and their parasites.
Q 357
A 22-yr-old sociologist returns from 6-months in Jamaica and noted a 6-pounds weight loss during first month back home. She reports that her appetite is normal. She has developed symptoms of mild abdominal cramping and bloating after meals and frequent greasy bowel movements. A physical examination is consistent with evidence of recent weight loss and her abdominal examination is normal. A stool specimen is guaiac-negative. There are scattered ecchymosis on all four extremities. Laboratory studies reveal an albumin of 2.9 gm/dl (normal is > 3.8 gm/dl) and INR of 1.9 and normal liver function test. A trial of gluten free diet is attempted and there is no change in symptoms over the subsequent three-weeks and she has an additional 4-pound weight loss. Stool cultures of enteric pathogens, ova and parasites are negative on three occasions. Which of the following is the most likely diagnosis.

A. Celiac sprue.
B. Enterohemorrhagic E.coli.
C. Enterotoxigenic E.coli.
D. Pancreatic insufficiency.
E. Tropical sprue.

EXPLANATION
The correct answer is E. This patient presents with signs of malabsorption as described by her loss of weight, frequent loose stools, and evidence of multiple vitamin deficiency. She is also hypoalbuminemic and has just returned from a tropical region. There are no risk factors or evidence, by history, for liver disease. The hypoalbuminemia, ecchymosis, and INR are explained by the malabsorptive process instead, which is consistent with a vitamin K deficiency. The findings are consistent with a tropical sprue. These patients often develop a B12 deficiency, as the terminal ileum is also affected more severely in the proximal small bowel.

The refractory response to a gluten-free diet and the abrupt onset makes the diagnosis of celiac sprue (choice A) less likely.

Enterohemorrhagic strains of Escherichia coli (choice B) can cause a hemorrhagic colitis, which would have guaiac-positive stool.

Enterotoxigenic strains of E. coli (choice C) can cause traveler's diarrhea and cholera-like disease with profuse watery diarrhea.

There is no evidence here for chronic pancreatitis (choice D), which usually will occur in patients with a long history of chronic alcoholism.
Q 358
A 65-yr-old woman consults a physician because of three-month history of weight loss, burning sensation of tongue, anorexia, fatigue and poorly localized abdominal pain. The woman appears pale to the physician. Intra-office hematocrit is 35% and peripheral smear show large erythrocytes and hypersegmented neutrophils. Serum folate is 2.4 nanogram/ml (normal > 1.9 nanogram/ml) and serum vitamin B12 is 100 pg/ml (normal 200-800 pg/ml). Stomach biopsy demonstrates chronic gastritis. Auto-antibodies to which of the following is most likely involved in this patient's condition.

A. Basement membrane.
B. Insulin receptors.
C. Intrinsic factors.
D. SS-B.
E. TSH receptor.

EXPLANATION
The correct answer is C. This patient has pernicious anemia, in which autoimmune gastritis causes a lack of the intrinsic factor needed to absorb vitamin B12. Autoantibodies that are often present include those directed against the microsomal fraction of parietal cells and those capable of neutralizing intrinsic factor. The result is that vitamin B12 can no longer be absorbed by the terminal ileum. Since some vitamin B12 is stored in the liver, deficiency tends to develop slowly. Vitamin B12 deficiency can cause megaloblastic anemia; neurologic abnormalities that tend to begin with loss of position and vibration sense; and GI manifestations including anorexia, intermittent constipation or diarrhea, and abdominal pain.

Antibodies to basement membrane (choice A) are associated with Goodpasture syndrome.

Antibodies to insulin receptors (choice B) are associated with insulin resistance.

Antibodies to SS-B (choice D) occur in association with Sjögren syndrome.

Antibodies to TSH receptor (choice E) are associated with Graves disease.
Q. 359
A group of illegal immigrants is smuggled across the border in a closed metal truck in the middle of summer. When apprised by the radio that border patrol is on their trail. The smugglers abandoned their charges in the middle of the desert in the locked truck and with little water to drink. The victims are found and rescued five days later, one of them is brought to the ER awake and alert with obvious clinical signs of severe dehydration. The serum sodium concentration is 155 Meq/L. Which of the following would be the best choice and rate of IV fluid administration.

A. 5 L of 5% dextrose in water over 2-3 days.
B. 5 L of 5% dextrose water over 5-10 hours.
C. 5 L of 5% dextrose water, half normal saline over 5-10 hours.
D. 10 L of 5% dextrose water, half normal saline over 5-10 hours.
E. 10 L of normal saline over 2-3 days.

EXPLANATION

The correct answer is C. A rough guideline to quantify water loss is that every 3 mEq/L that the serum sodium concentration is above normal, represents about 1 L of water deficit. With a value of 155, we can assume a water deficit of about 5 L. There is no advantage to the patient in remaining severely volume contracted for several days, thus the replacement should aim for correction in a matter of 5-10 hours rather than 2 or 3 days. However, because his loses were incurred slowly (over 5 days), his brain has had a chance to adapt to the tonicity change (he is indeed awake and alert). Thus, the tonicity correction should not happen with the same speed with which the volume is going to be corrected. That delay is achieved by choosing a fluid that is not pure water, but one that has some sodium in it to dampen the effect on tonicity. Half normal saline is a good choice.

5 L of D5W over 2 or 3 days (choice A) would be safe from the viewpoint of slowly correcting the tonicity, but it would unnecessarily prolong the state of volume depletion.

5 L of D5W over 5-10 hours (choice B) could well be deadly, because it would revert the tonicity to normal at a rate too fast for the brain to follow.

Choices D and E budget a volume replacement well beyond what is needed. Neither would be lethal, because D5W is not used, but neither of them is the best answer.
A 3-month-old infant is brought to a pediatrician's office because of increased lethargy and irritability. The parents state that the child rolled off the couch and fell on the floor one day prior to presentation. His parents report that the child has been previously healthy and is up-to-date on his vaccinations. He has been meeting his developmental milestones. His fontanelles are full. In the office the patient develops tonic clonic seizure. Which of the following is the most appropriate next step.

A. Obtain a head CT-scan.
B. Perform a retinoscopic examination.
C. Check serum levels of ammonia.
D. Administer an intravenous benzodiazapine.
E. Perform a lumbar puncture.

EXPLANATION

The correct answer is B. The child's story is worrisome for shaken baby syndrome, in which the symptoms may not correlate with the physical findings. This diagnosis should be considered in any infant presenting with a dissonant history suspicious of child abuse. The child's fontanelles are full, indicative of increased intracranial pressure. A retinoscopic examination will indicate if this is indeed the case, since blurred fundi would suggest increased pressure.

A retinoscopic examination can be done faster than a head CT (choice A). The patient may ultimately need a head CT but the eye examination should be done first.

Ammonia levels (choice C) should be checked if hepatic encephalopathy is a consideration. This is a possibility if Reye syndrome is on the differential. The increased fontanelle pressure leads to a diagnosis of trauma.

Benzodiazepines may be needed (choice D) in the short term to stop the seizure, but it is important to determine the cause of the seizure before intervening.

Because the patient has increased intracranial pressure (suggested by the full fontanelles), a lumbar puncture may cause uncal herniation and should be avoided (choice E).
A 42-yr-old consults a physician because he has a lump on his forearm. Examination of the forearm demonstrates a 3cm diameter nodule protruding above the surface of the forearm. The lesion is covered with apparently normal skin and is soft and freely movable. Its location appears to be subcutaneous. The lesion has been slowly growing over the past 2 years and the patient has experienced no discomfort. He has consulted the physician at this time because his wife keeps pestering him to do something about it. Which of the following is the most likely diagnosis.

A. Capillary hemangioma.
B. Dermatofibroma.
C. Intradermal nevus.
D. Lipoma.
E. Seborrheic keratosis.

EXPLANATION

The correct answer is D. This is probably a lipoma, which is a benign mass lesion composed of mature adipose tissue bound by a limiting membrane. (Another possibility is an epidermoid cyst, which can be indistinguishable clinically from lipoma.) Lipomas are very common, and patients may have more than one lipoma. Common sites include the trunk, nape of the neck, and forearms. The lesions are only rarely malignant, although a rapidly growing lesion should be biopsied to make sure of the diagnosis. They are usually asymptomatic; a small percentage are painful. They can be treated with surgical excision or liposuction.

Capillary hemangioma (choice A), also known as strawberry mark, is a bright red, vascular lesion that usually develops shortly after birth and then often involutes by late childhood.

Dermatofibroma (choice B) causes a firm, red to brown, small papule or nodule that is most frequently found on the legs.

Intradermal nevus (choice C) causes a flesh colored to black, elevated, lesion that is usually 3 to 6 mm in size.

Seborrheic keratosis (choice E) causes a pigmented, superficial, usually warty, epithelial lesion.
Q-362
A 43-yr-old woman comes to the office for evaluation of high blood pressure. She was informed that she has high blood pressure one-week ago during a routine screening in a health fare in a local shopping mall. She has been previously healthy and is on no medications. On examination today her blood pressure is 145/95. Which of the following is the most appropriate step in management.

A. Advise her to monitor her blood pressure twice a day and return in six-months.
B. Ask her to return for reexamination after her next menstrual cycle.
C. Ask her to return for reexamination in two-weeks.
D. Ask her to return for reexamination in four-months.
E. Measure her blood pressure after she exercises for five-minutes.

EXPLANATION

The correct answer is C. Blood pressure may be elevated in times of stress. Multiple determinations over several visits, and some form of home or workplace monitoring should be conducted prior to initiating pharmacological therapy in hypertensive patients.

A couple of weeks of home blood pressure monitoring should be adequate to establish the baseline blood pressure (choice A).

Menstrual cycles should not have an effect on the blood pressure and should not guide therapy (choice B).

Returning after 4 months of untreated hypertension would not be advisable (choice D).

Her blood pressure might be elevated after exercise, and would not aid in the diagnosis or management decision (choice E).
Q-363
A 57-yr-old man presents to the ER because of excruciating pain in his right big toe. He describes the pain as so severe that it woke him up form deep sleep. He has no chronic medical condition, does not take any medications and denies any similar episodes in the past. He admits to a few drinking binges over the past 2-weeks. His temperature is 38.2 C (100.5 F), blood pressure is 130/90 and pulse is 80/min. Examination shows an erythematous, warm, swollen and exquisitely tender right big toe. The skin overlying the first metatarsophalangeal joint is dark red, tense and shiny. Synovial fluid analysis reveals negatively bifringent needle shaped crystal with polymorph nuclear leukocytes. Lab studies show leukocytes 16,000/mm$^3$, uric acid 15 mg/dl, calcium 9 mg/dl. Which of the following is the most appropriate pharmacotherapy.

A. Allopurinil.
B. Ceftriaxone.
C. Indomethacin.
D. Probenecid.
E. Sulfinpyrazone.

EXPLANATION

The correct answer is C. This patient has the classic presentation of a patient with acute gouty arthritis with the sudden onset of severe pain (typically in the middle of the night), swelling, erythema and warmth of a single joint. Low-grade fever and leukocytosis may be seen. It is more common in men and it is associated with hyperuricemia, usually due to decreased renal excretion of uric acid. Common causes are thiazides and alcohol. Diagnosis is made by examination of joint fluid under polarizing light. Negatively birefringent, needle-shaped crystals within polymorphonuclear leukocytes, hyperuricemia, and acute monoarticular arthritis make the definitive diagnosis of gout. Indomethacin or colchicine is the treatment during an acute attack. Allopurinol, probenecid, and sulfinpyrazone are used for prophylaxis against further attacks.

Allopurinol (choice A) is a xanthine oxidase inhibitor that is used as an antihyperuricemic agent by individuals with recurrent gouty attacks. Common side effects include rash, headache, and gastrointestinal upset.

Ceftriaxone (choice B) is the treatment of acute gonococcal arthritis. It has no role in the treatment of gout.

Probenecid (choice D) is a uricosuric agent that increases the rate of urate excretion. It is used to prevent gouty attacks. It may precipitate nephrolithiasis.

Sulfinpyrazone (choice E) is another uricosuric agent that increases urate excretion. It is used to prevent gouty attacks. It, too, may precipitate nephrolithiasis.
A 27-yr-old woman gravida 2, para 1 at 20-weeks gestation comes to the physician for a prenatal visit. She has no complains. Her obstetric history is significant for a primary low transverse cesarian delivery because of a non-reassuring fetal tracings three-years ago. She has no medical problems. She takes prenatal vitamins and has no drug allergies. She is debating whether to have repeat elective cesarian delivery or to attempt vaginal birth after cesarian. She wants to know her chances for successful vaginal birth after cesarian. Which of the following is the most accurately represents the patient's likelihood of having a successful vaginal delivery.

A. 0%
B. 25%
C. 50%
D. 70%
E. 100%

EXPLANATION

The correct answer is D. The cesarean delivery rate in the U.S. is roughly 25%. Much effort has been put into trying to lower this rate. One third of all cesarean births are a result of elective repeat cesarean delivery. Therefore, much attention has been focused on vaginal birth after cesarean (VBAC). A few decades ago, there was an obstetric dictum that "once a cesarean, always a cesarean." This is no longer the case. Some women are allowed to attempt vaginal birth after a prior cesarean delivery. And, in fact, the attempt is often successful. Estimates are that approximately 70% of all women that attempt VBAC will be successful. This patient has had one prior cesarean delivery, and it was through a low transverse uterine hysterotomy. Right now, she has no contraindications to VBAC. Therefore, a VBAC attempt may be tried.

If the success rate of VBAC were 0% (choice A) or even 25% (choice B), the topic would be a non-issue. The fact that the success rate of VBAC is so high is what makes the choice between repeat cesarean and VBAC more complicated.

50% (choice C) is approximately the success rate in women who attempt VBAC who had a prior cesarean for dystocia. Women with a prior cesarean delivery for dystocia have a VBAC success rate of approximately 50% to 70%. Although this rate is still good, it is consistently lower than the rate for women with non-recurring indications, such as a non-reassuring fetal tracing.

Attempts at vaginal delivery are not 100% (choice E) successful even in women who have never had a cesarean delivery. In fact, the success rate for vaginal delivery in women who have not undergone previous cesarean delivery is about 70%--the same success rate as women attempting VBAC with a non-recurring indication.
Q-365

One week after an upper respiratory infection an adult develop conjunctival hyperemia, watery discharge and ocular irritation. While both eyes are involved when the physician is consulted, the symptoms began in one eye. In the morning of the doctor's visit the patient had difficulty in opening his eyelids on awakening as they were glued shut. Physical examination demonstrate hyperemic bulbar and tarsal conjunctiva. No prurulent fluid is seen. The periorcular lymph nodes on one side is enlarged. Which of the following pathogen is most likely to cause these symptoms.

A. Adenovirus.
B. Herpes simplex virus type I.
C. Herpes simplex virus type II.
D. Nisseria gonorrhoea.
E. Staphylococcus aureus.

EXPLANATION

The correct answer is A. This is viral conjunctivitis, which is an acute conjunctival inflammation most often caused by adenovirus. Most of the patients with this condition have either been recently exposed to someone with viral conjunctivitis or have recently had a viral upper respiratory infection. The presentation illustrated in the question stem is typical. Severe cases also additionally have photophobia and a foreign body sensation. Pseudomembranes of fibrin and inflammatory cells on the conjunctival surfaces can occur. Corneal involvement can leave residual scarring visible by slit lamp for up to 2 years after a severe case. Cases are self-limited but tend to be extremely contagious, so care should be taken to have both the patient and the physician wash their hands very thoroughly after touching the face.

Herpes virus (choices B and C) can cause corneal ulceration, hyperkeratosis, or scarring.

Neisseria gonorrhoeae (choice D) can cause conjunctivitis in both adults and neonates, and produces a purulent, rather than a watery discharge.

Staphylococcus aureus (choice E) is a common cause of bacterial conjunctivitis, and produces a purulent, rather than a watery discharge.
Q-366
A newborn infant is in respiratory distress and requires several attempts for resuscitation in delivery room because of difficulty breathing and frequent cyanosis. The neonatologist notes that during crying and after that her breathing improves. Her heart sounds are normal. Direct laryngoscopy is unremarkable as well. Deep inspiration by the neonate is ineffective. Which of the following is the most effective intervention.

A. Obtaining a chest x-ray film.
B. Obtain an ECG.
C. Obtaining an arterial blood gas.
D. Administering atropine.
E. Inserting an oropharyngeal tube.

EXPLANATION

The correct answer is E. The patient most likely has choanal atresia, which is the presence of a congenital membrane between the nose and the pharynx. Since most newborns are obligate nose breathers, spells of crying force mouth breathing, improving the ventilation. If unilateral, the atresia may not cause symptoms. Intubation via the oropharynx will provide immediate relief and surgery should then be performed to correct the atresia.

An x-ray film (choice A) would waste precious time in the acute setting and would not help in the diagnosis in any event.

An electrocardiogram (choice B) would be of no utility since this is not a cardiac issue.

An arterial blood gas (choice C) would indicate hypoxemia and strengthen the case for intubation.

Atropine (choice D) is used temporarily to increase the heart rate in sinus bradycardia and complete heart block.
A 54-yr-old woman presents to her primary care physician for a routine yearly health maintenance examination. She denies any new problems; her only significant medical history includes a 25-year history of schizophrenia, which has been well controlled with antipsychotic agents and a five-year history of hypertension for which she takes a diuretic. Vital signs and the physical examination are within normal limits, however, the patient is noted to have occasional irregular puckering and lip smacking movements. She denies having noticed the abnormal movements and her speech is normal. Which of the following is the most likely diagnosis.

A. Acute dystonia.
B. Akathesia.
C. Pseudoparkinsonism.
D. Tardive dyskinesia.
E. Tardive dystonia.

EXPLANATION

The correct answer is D. Tardive dyskinesia (TD) is a syndrome characterized by abnormal choreiform and athetoid movements occurring late in onset in relation to initiation of antipsychotic treatment. TD usually develops after months to years of treatment with antipsychotic agents, and is presumably much less likely to occur with the use of atypical antipsychotics. Risk factors for TD include older age, longer duration of antipsychotic treatment, and presence of an affective disorder. The abnormal involuntary movements usually involve orofacial muscles but may include the trunk and extremities. Regular examinations should be done to ensure that patients treated with these medications do not develop signs of TD.

Acute dystonia (choice A) is an abrupt reaction consisting of abnormal positioning or spasm of the muscles of the head, neck, limbs, or trunk. This form of extrapyramidal side effect (EPS) associated with antipsychotic medications can be terminated with administration of an anticholinergic agent.

Akathisia (choice B) occurs in approximately 50% of patients taking conventional antipsychotic agents. This form of EPS consists of the experience of a subjective feeling of restlessness. Patients may rock, pace, tap, or move restlessly while sitting. This side effect may be confused with anxiety, agitation, tardive dyskinesia, or worsening of psychosis. Treatment includes reducing the antipsychotic dose, switching to another agent, and the use of beta-blockers or benzodiazepines.

Pseudoparkinsonism (choice C) is a form of EPS consisting of some or all of the following: bradykinesia, masklike facial expression, slow speech, tremor, cogwheel rigidity, stooped posture, and shuffling gait.

Tardive dystonia (choice E) is a late-occurring dystonia that is a rare adverse event associated with antipsychotic treatment.
A 23-yr-old primigravid woman comes to the physician because of vaginal bleeding. Her last menstrual period was 6-weeks ago; she has no other symptoms. Examination shows a 10-week size uterus but is otherwise unremarkable. Pelvic ultrasound reveals a "snow storm" pattern consistent with a complete mole. Serum beta-hCG is markedly elevated over normal pregnant values. A chest x-ray film is negative. A dilatation and evacuation is performed and a pathological diagnosis is "complete hydatidiform mole". Which of the following is the most appropriate next step in management.

A. Evaluation in one-year.
B. Follow beta-hCG level to zero.
C. Dactinomycin.
D. Methotrexate.
E. Hysterectomy.

EXPLANATION

The correct answer is B. The term gestational trophoblastic disease encompasses a number of related diseases originating from the placenta. These diseases include complete and partial hydatidiform moles, invasive moles, placental site trophoblastic tumors, and choriocarcinomas. This patient presents with findings consistent with a complete mole. The most common symptom is vaginal bleeding and examination often demonstrates a uterus that is larger than expected for gestational dates. Laboratory evaluation often shows a significantly elevated beta-hCG and ultrasound reveals the absence of a fetus and the presence of a "snowstorm" pattern with multiple echogenic areas of villi and clots. Treatment is with dilation and evacuation of the mole. Once there is pathologic confirmation of the diagnosis, it is essential that the patient continued to be followed weekly until the beta-hCG value returns to 0. The patient should then be followed monthly for an additional year to ensure that the values stay at 0 and that there is no evidence of persistent or metastatic disease.
Evaluation in one year (choice A) would not be appropriate. This patient may have malignant gestational trophoblastic disease, in which case the beta-hCG values will remain elevated and not return to 0 after the evacuation. To postpone further evaluation for one year risks a significant delay in diagnosis and management of persistent or malignant disease.

Dactinomycin (choice C) is often used as an alternative therapy to methotrexate in patients with malignant gestational trophoblastic disease. As long as this patient’s beta-hCG values fall to 0 appropriately and stay at 0, there is no need to treat with Dactinomycin.

Methotrexate (choice D) is used as the first-line agent in patients with malignant trophoblastic disease. Again, there will be no need for chemotherapy in this patient as long as the beta-hCG values fall to 0 and stay at 0.

Hysterectomy (choice E) would not be indicated in a 23-year-old patient with benign gestational trophoblastic disease who desires future fertility.
Q-369
Several months after sustaining a crushing injury to his arm, a man complains of constantly burning, agonizing pain in that arm that does not respond to usual analgesic medications. The pain in his arm is aggravated by slightest stimulation of the area such as rubbing from the shirtsleeve. The arm is cold, cyanotic and moist but it is not swollen. Pulses at the wrist are normal and neurologic function of the three major nerves is intact. Which of the following is the most appropriate to provide diagnostic confirmation of the nature of the problem and eventual therapy.

A. Angiogram and subclavian vein bypass.
B. Cervical spine x-rays and cervical rib resection.
C. Doppler studies and arterial reconstruction.
D. Doppler studies and fasciotomy.
E. Sympathetic block and surgical sympathectomy.

EXPLANATION
The correct answer is E. The description is that of causalgia, also known as reflex sympathetic dystrophy. If sympathetic block relieves the symptoms, permanent cure will be obtained with surgical sympathectomy.

Venous occlusion (choice A) would produce swelling but not this kind of pain.

Cervical ribs (choice B) can produce neurologic and vascular symptoms in the arm, but they are related to activity and position and do not have the nature described here.

Normal pulses make arterial insufficiency (choice C) unlikely. Furthermore, there is no description of intermittent claudication.

Compartment syndrome (choice D) might have happened at the time of injury, but if that were the case, it would be too late to do a fasciotomy.
An asymptomatic 64-yr-old woman comes to the physician for a health maintenance examination. She has smoked two-packs of cigarettes daily for 27-years. She has been sexually active until 2-years ago when her sexual partner died. Her blood pressure is 110/70. Pulse is 60 and respirations are 16. Which of the following is the most appropriate screening test.

A. A chest x-ray film to screen for lung cancer.
B. ECG to screen asymptomatic coronary artery disease.
C. Examination of uterine adnexa for screening of ovarian cancer.
D. Pap smear for cervical cancer.
E. Sputum cytology for Lung cancer.

EXPLANATION

The correct answer is D. This patient is an asymptomatic 64-year-old smoker. The only screening test listed that is recommended by the U.S. Preventive Services Task Force is the Pap smear. Regular (every 1-3 years) Pap smears should be given to all women who are or who have been sexually active. They may be discontinued at age 65 if consistently normal. Other screening tests recommended for this woman would be a mammogram, clinical breast examination, a sigmoidoscopy (every 2-3 years) and/or an annual fecal occult blood test. Counseling to engage in physical activity, promote a healthy diet and to wear seatbelts is recommended. Tobacco cessation counseling and postmenopausal estrogen replacement counseling is recommended. Td toxoid boosters should be given every 10 years. Pneumococcal vaccine should be administered at least once and an influenza vaccination administered yearly after 65. Measurement of total serum cholesterol may be prudent. Periodic measurement of blood pressure, height, and weight is recommended.

Chest x-ray films (choice A) and sputum cytology (choice E) are not recommended to screen asymptomatic persons for lung cancer. Routine screening of asymptomatic smokers is not recommended.

An ECG (choice B) is not recommended to screen for asymptomatic CAD. It may be prudent in certain high-risk groups, but there is insufficient evidence to recommend for or against its routine use.

Examination of the uterine adnexa (choice C) to screen for ovarian cancer is not recommended. Routine screening for ovarian cancer by any method is not recommended.
A 62-yr-old woman with a history of alcoholic cirrhosis presents to the ER with her neighbor because of increasing lethargy. She has continued to abuse alcohol despite history of multiple esophageal variceal bleeds and prior admissions for hepatic encephalopathy. Her past medical history is also significant for duodenal ulcer, gout and hypertension. On physical examination she is lethargic and easily falls asleep when not being stimulated. Her temperature is 37.1 ºC (98.7 ºF), blood pressure is 128/82, pulse is 96 and respirations are 18. She has dry mucous membranes. A neurologic examination is non-focal but asterexis is present. Which of the following medications is most likely to be contributing to the patient’s clinical condition.

A. Colchicine.
B. Enalapril.
C. Furosemide.
D. Omeprazole.
E. Metoprolol.

EXPLANATION

The correct answer is C. Patients with known portal hypertension have multiple risk factors for hepatic encephalopathy, including dehydration, infection, electrolyte abnormalities (hypokalemia and metabolic alkalosis), sedative administration, and gastrointestinal bleeding. Many of these patients are on diuretics, such as furosemide, to control ascites related to their liver disease and hypoalbuminemia. The resulting dehydration from excessive diuretic use may precipitate an episode or exacerbate underlying hepatic encephalopathy.

The uricosuric agent colchicine (choice A) is used for gout. It can cause gastrointestinal symptoms, marrow depression, and peripheral neuritis, but would not be expected to cause a change in mental status or precipitate hepatic encephalopathy.

The ACE inhibitor enalapril (choice B) is used to control hypertension. It can cause angioedema, anaphylaxis, hypotension, neutropenia, and fetal morbidity. It very rarely, as an idiosyncratic reaction, will cause a (new) fulminant hepatic necrosis, but would not be expected to be a specific problem in a patient with underlying cirrhosis. In any event, the diuretic furosemide is a much more common cause of worsening hepatic encephalopathy.

The beta blocker metoprolol (choice D) is used to control either systemic hypertension or portal hypertension. It can cause depression, but only rarely causes mental confusion and would not be expected to precipitate hepatic encephalopathy.

The proton pump inhibitor omeprazole (choice E) is used for peptic ulcer disease and is generally well tolerated. It would not be expected to cause a change in mental status or precipitate hepatic encephalopathy.
Q-372
A 4-yr-old boy falls from the Jungle Jim at preschool and sustains minor abrasions and contusions and is taken care of by the school nurse. His parents take him the same afternoon to his regular pediatrician and demand a thorough checkup for possible internal injuries. The pediatrician complies and a complete physical examination is normal. His hemoglobin is 14 gm/dl and a urinalysis show the presence of microhematuria. Which of the following is the most appropriate next step in management.

A. CT-scan of the abdomen and pelvis.
B. Reassure the parents that microhematuria from minor trauma will resolve spontaneously.
C. Serial hemoglobin and hematocrit determinations.
D. Urologic workup starting with a sonogram.
E. Retrograde urethrogram and cystogram.

EXPLANATION
The correct answer is D. No one thinks this kid is going to bleed to death, or fears a major urologic injury. However, microhematuria after trivial trauma in children may be a sign of a congenital anomaly that makes the urinary tract unusually vulnerable. The warning should be heeded, and an anomaly sought. The first, noninvasive test should be the sonogram.

CT of the abdomen and pelvis (choice A) would be overreacting. No major intraabdominal or pelvic injuries are suspected.

Reassurance, on the other hand (choice B), would miss the significance of this laboratory finding.

Serial hemoglobins (choice C) misses the significance of the situation. We are not concerned with the magnitude of the bleeding (it is microhematuria, not gross hematuria).

Retrograde studies (choice E) would be too invasive to be used as the first test. Sonogram will probably give the diagnosis if there is a problem, and intravenous pyelogram could be added if needed.
Q-373

A hospitalist on duty is called to consult a case of a 53-year-old woman in a medical ICU. The patient has been hospitalized for five-weeks. The initial injury was a massive subarachnoid bleed complicated by ischemic infarct of her brain 3-days later. Since that time she had been persistently vegetative. She requires mechanical ventilation, external feeding to maintain her vital functions. It is discovered that during a previous admission to the hospital the patient clearly stated that she would want to be maintained on life support only if she is likely to regain meaningful quality of life. The medical team believes that she does not have a significant chance of regaining an acceptable level of function. The children maintain that the situation is reversible and want to continue care while the husband wants to withdraw care in fulfillment of his wife’s wish. Which of the following is the most appropriate next step.

A. Arrange a family meeting hoping to resolve the patient’s previously expressed wishes with those of husband and children.
B. Begin the withdrawal of care despite the reservation of the children after discussion with the hospital lawyer.
C. Consult a psychiatrist to speak to the children.
D. Notify the department of social services for the question of elder abuse.
E. Refer the case to the ethics committee for review.

EXPLANATION

The correct answer is A. Although it is clear that the physician is ethically bound to follow the patient’s wishes, which in this case appears to be the withdrawal of care, it is always better to do so with the resolve of the family. Oftentimes, feelings such as guilt will drive family members to insist on seemingly unreasonable or inappropriate action. A thoughtful discussion, whereby the family members are allowed to express their reservations in a supportive setting, often will produce a resolution among previous disparate views.

Although withdrawing care (choice B) appears to be what ultimately is the most appropriate action, it is worth trying first to have all of the interested parties “on the same page” before proceeding if this resolution can be achieved in a timely manner without causing suffering on the patient’s part.

Whereas consult services such as psychiatry (choice C) may be helpful on selected occasions, the first attempts to resolve conflict should fall on the primary medical team and primary care physicians.

Although physicians have the positive duty to report suspected elder abuse, there is no indication from the information present that the children have abused their mother (choice D).

Ethics committees (choice E) may be helpful in resolving conflicts, but, again, the primary medical providers should first attempt to resolve conflicts in order to respect the patient’s wishes in a thoughtful and timely manner.
A female infant is born by vaginal delivery at 39-weeks gestational age without any significant complication. There is no history of genetic disease in the family. She is noted to have port-wine stain on right side of her face that is 4cm in length and 3cm in width. Which of the following treatment modalities offer the best palliation for cosmetic purposes.

A. Cryosurgery.
B. Pulsed dye laser.
C. Radiation therapy with gamma particles.
D. Skin grafting.
E. Topical steroid therapy.

EXPLANATION

The correct answer is B. Port-wine stains are vascular malformations on the skin, and most commonly occur on the face. Over time, port-wine stains darken and pose psychological stress to the affected person because of cosmetic reasons. Port-wine stains rarely disappear on their own, and the most effective therapy is pulsed dye laser. Pulsed dye laser reduces the size of most port-wine stains, and in some cases can eradicate the stain completely. Factors affecting the response to pulsed dye laser include location, timing, and size. Smaller port-wine stains respond better than the bigger ones. The earlier the treatment takes place, the better the response.

Cryosurgery (choice A), radiation therapy (choice C), skin grafting (choice D), and topical corticosteroids (choice E) are not appropriate treatment for port-wine stains.
A 49-yr-old man presents to his physician for follow-up of a previous fasting serum cholesterol level of 299 mg/dl. Patient is otherwise well with only mild hypertension and he is attempting to control it with exercise and a low fat, low cholesterol diet. He has a family history of ischemic heart disease on his father side and he smokes a pack of cigarettes daily. The patient is a plant manager and he is happy with his job and has no home life issues with his wife and three children. A lipid profile was drawn at his visit and he is present for review of those results, which are as follows: total cholesterol 230 mg/dl, HDL 45 mg/dl, LDL 100 mg/dl. Which of the following is the most appropriate intervention at this time.

- A. No intervention is indicated.
- B. Educate the patient about diet and exercise.
- C. Educate the patient about diet and exercise and repeat the tests within a year.
- D. Initiate a low fat diet for the patient.
- E. Initiate drug therapy for control of his hyperlipidemia.

**EXPLANATION**

The correct answer is C. This patient has two risk factors (family history and tobacco) but has an LDL less than 130 mg/dL and a total cholesterol less than 239 mg/dL. He can therefore be managed by diet and exercise with a follow up profile being drawn in 1 year.

No intervention is indicated (choice A) is incorrect. The patient does have marginally elevated cholesterol and a suboptimal LDL component.

Educating the patient about diet and exercise (choice B) is partially correct, but he must have follow up.

Since the patient already adheres to a low-fat, low-cholesterol diet, initiating a mandatory low-fat diet (choice D) would be of little help.

Given the combination of this patient’s risk factors and cholesterol levels, there is no reason to initiate drug therapy to control his hyperlipidemia (choice E). His LDL would need to be greater than 130 mg/dL or his total cholesterol greater than 239 mg/dL to initiate drug therapy.
A 17-yr-old boy presents with chronic low back pain for the past 8-months. He was the most promising member of the high school swimming team but was forced to quit because of back pain. The pain began frequently at night and radiate to down the thigh sand is accompanied by pronounced stiffness of the lumbar spine. He denies any gastrointestinal or genital infection. His temperature is 37°C (98.6°F). Examination reveals moderate limitation of back motion and tenderness of the lower spine. A diastolic murmur along the left sternal border is heard on chest examination. Lab investigations show an elevated level of ESR and negative rheumatoid factor. X-ray film of the vertebral column and pelvic region show flattening of the lumbar curve and subchondral bone erosion involving the sacroiliac joint. Which of the following is the most likely diagnosis.

A. Ankylosing spondylitis.
B. Degenerative joint disease.
C. Reiter syndrome.
D. Seronegative rheumatoid arthritis.
E. Still's disease.

EXPLANATION

The correct answer is A. The patient’s young age, occurrence of pain at night, negativity of rheumatoid factor, and especially, bilateral involvement of sacroiliac joints are consistent with ankylosing spondylitis. This is one of the seronegative spondyloarthopathies, characterized by onset before 40 years of age, absence of circulating autoantibodies, frequent association with HLA-B27 histocompatibility antigen, and common involvement of the spinal column. Ankylosing spondylitis should be suspected in any young person complaining of chronic lower back pain and confirmed by radiographs or CT scans of sacroiliac joints. The disease usually progresses to involve the whole vertebral column, producing ankylosis and respiratory failure secondary to restrictive lung disease. Uveitis and aortic insufficiency are additional manifestations.
Degenerative joint disease (choice B) would be exceptional at such a young age, unless predisposing conditions were present. Degenerative joint disease is not associated with systemic signs and symptoms. Radiographs of affected joints show narrowed interarticular spaces, osteophytes, and increased density of subchondral bone. Sacroiliac joints are not involved.

Reiter syndrome (choice C) is one of the seronegative spondyloarthropathies. It develops as a sequela of gastrointestinal infections due to Salmonella, Shigella, or Campylobacter, or after sexually transmitted infection caused by Chlamydia or Ureaplasma. Arthritis of large joints (knee and ankle), conjunctivitis, and skin vesicular eruption are the hallmarks of this condition.

Seronegative rheumatoid arthritis (choice D) refers to those cases in which a typical picture of rheumatoid arthritis is associated with negative rheumatoid factor. Rheumatoid arthritis involves small joints, especially those of the hands.

Still disease (choice E) is a rare systemic form of arthritis with onset before age 17. It manifests with spiking fever and systemic symptoms that usually antedate arthritis. Associated manifestations include a morbilliform rash, hepatosplenomegaly, serositis, anemia, and leukocytosis.
A 58-yr-old woman on 4th post-operative day after a colon cancer resection has sharp left sided chest pain which increases with inspiration. She is noted to be hypoxemic and an arterial blood gases revealed a pH of 7.54, a pCO$_2$ of 20 mmHg and a pO$_2$ of 53 mmHg. A ventilation perfusion scan is consistent with massive left sided pulmonary embolus to the left main stem pulmonary artery. Despite 100% oxygen administration via a tight fitting facemask. She is unable to raise her oxygen saturation above 90%. She is intubated and positive end expiratory pressure (PEEP) is added two-hours later. She suddenly became hypotensive and her oxygenation is further impaired. Breath sounds are absent in right hemithorax and there are distended neck veins as well as tracheal deviation to the left. Which of the following is the most appropriate next step in management.

A. Obtain a repeat ventilation perfusion scan.
B. Obtain pulmonary angiography.
C. Start therapy with IV streptokinase.
D. Perform a needle thoracostomy in the right hemithorax.
E. Begin broad-spectrum antibiotics.

**EXPLANATION**

The correct answer is D. This question is describing someone who developed a tension pneumothorax while on positive-end expiratory pressure (PEEP), as demonstrated by jugular venous distention, tracheal deviation to the left, and the absence of breath sounds in the right hemithorax. Given these classic physical findings and the patient’s acute cardiorespiratory collapse, a needle thoracostomy to allow rapid right lung expansion is essential, and, in a situation such as this, should be done even before a chest x-ray film is obtained.

Repeated ventilation-perfusion scan (choice A), pulmonary angiography (choice B), and therapy with IV streptokinase (choice C) would all be appropriate if the patient’s problem was a second pulmonary embolus. However, a secondary pulmonary embolus would not cause absences of breath sounds in the right hemithorax, distended neck veins, or tracheal deviation.

Broad-spectrum antibiotics (choice E) would be appropriate if the patient had developed pneumonia, but this would be unlikely to cause the very sudden collapse in her status described in the question stem.
A 64-yr-old woman presents to her physician for management of his hypertension which has been treated successfully for several years. She has been recently hospitalized for pulmonary edema and an echocardiogram and at that time show a moderately depressed ejection fraction. She was diagnosed with congestive heart failure. Her medications include thiazide diuretic and a calcium channel blocker. She has allergy to furosemide. Her review of symptoms is positive for two-pillow orthopnea and occasional paroxysmal nocturnal dyspnea. On physical examination her blood pressure is 150/80 and his pulse is 80 and regular. Her lungs are clear and there are no extra heart sounds. Her extremities are without edema. Which of the following is the most appropriate management at this time.

A. Add an ACE inhibitor to her regimen.
B. Add an angiotensin-II receptor blocking agent to her regimen.
C. Add hydralazine to her regimen.
D. Increase the dose of calcium channel blocker.
E. Increase the dose of her thiazide diuretic.

EXPLANATION

The correct answer is A. This patient has both hypertension and congestive heart failure (CHF). An important concept to recognize in the treatment of medical conditions is that certain medications overlap syndromes and are efficacious in many areas. This "co-treatment" option maximizes each drug in a regimen and often addresses two or more issues simultaneously. In this case, ACE inhibitors have been shown to be very beneficial in prolonging the survival of CHF patients.

Adding an angiotensin II receptor blocking agent to a regimen (choice B) has become an alternative for ACE inhibitor therapy in patients who cannot tolerate these drugs for a variety of reasons. Although their efficacy in lowering blood pressure appears to be equivalent to that of ACE inhibitors, no data have shown their survival benefit to be similar to ACE inhibitors. Because such a clear mortality benefit has been demonstrated for ACE inhibitors, a compelling reason exists to use them preferentially in almost all patients with systolic dysfunction.

Adding hydralazine to her regimen (choice C) would certainly help to treat her blood pressure but will do nothing in terms of helping her CHF.

Increasing the dose of her calcium channel blocker (choice D) or her thiazide diuretic (choice E) would most certainly aid in lowering her blood pressure, but neither of these medications has any significant utility for treating either systolic or diastolic CHF.
A 21/2-yr-old child is being evaluated by a neurologist because of difficulty walking. Neurological examination demonstrates ataxia and mental retardation. The neurologist reports the presence of multiple telangiectasias involving the conjunctiva, ears, and antecubital fossa. The child also has a history of multiple respiratory infections. Immunoglobulin studies on the child would most likely demonstrate an absence of which of the following.

A. IgA and IgE.
B. IgA and IgG.
C. IgE and IgG.
D. IgE and IgM.
E. IgM and IgG.

EXPLANATION

The correct answer is A. The child’s condition is the autosomal recessive disease, ataxia-telangiectasia, which is a multisystem disorder of unknown etiology. The ataxia is noticed in early childhood, and with time, progresses to severe disability. Choreaathetoid movements, slurred speech, ophthalmoplegia, and progressive mental retardation characterize the disease as it advances. Telangiectasias, as described in the question stem, are a helpful diagnostic clue. These children also are vulnerable to recurrent sinopulmonary infections. Immunologic evaluation may demonstrate a lack of IgA and IgE, cutaneous anergy, and a progressive cellular immune defect. Other features of the syndrome include endocrine disorders and a predisposition for certain cancers (leukemias, brain cancer, and gastric cancer). Most of these patients die of their neurologic deterioration by age 30.

IgG (choices B, C, and E) and IgM (choices D and E) are not specifically affected in this condition.
Q-380

A 3-yr-old girl is being evaluated for developmental delays. Her parents report that the pregnancy was uneventful and that the delivery was without complications. The girl reached all milestones normally during her first year. Length, weight and head circumference were all well during her first year. During her second year the pediatrician noticed deceleration of head growth and her parents noticed a gradual decline in her fine motor ability, frequent hand wringing movements and loss of social engagement. Her movements became poorly coordinated. Which of the following is the most likely diagnosis.

A. Asperger disorder.
B. Attention deficit hyperactivity disorder.
C. Autistic disorder.
D. Pervasive developmental disorder not otherwise specified.
E. Rett’s syndrome.

EXPLANATION

The correct answer is E. The child described in this case description has the clinical features characteristic of Rett syndrome. During the first five months after birth, the infant has age-appropriate motor skills, head circumference, growth, and social interactions. At six to 30 months, the child has progressive encephalopathy with decline in previously developed motor and social skills. Associated features include seizures in up to 75% of affected children and irregular respiratory patterns. Long-term receptive and expressive communication and socialization abilities remain at a developmental level of less than one year. Rett syndrome occurs almost exclusively in females.

Asperger disorder (choice A) is characterized by at least two of the following indications of social impairment: markedly abnormal nonverbal communicative gestures, failure to develop peer relationships, lack of social or emotional reciprocity, and an inability to express pleasure in other people’s happiness. Restricted interests and patterns of behavior are also present.

Attention deficit/hyperactivity disorder (choice B) is characterized developmentally by an age-inappropriate poor attention span, age-inappropriate features of hyperactivity and impulsivity, or both.

Autistic disorder (choice C) is characterized by impairments in social interactions and communication, and restricted repetitive and stereotyped patterns of behavior, interests, and activities. Onset is prior to the age of three years.

Pervasive developmental disorder, not otherwise specified (choice D) is a diagnostic category that would be used when a child manifests a qualitative impairment in the development of reciprocal social interaction and communication but does not meet the criteria for other pervasive developmental disorders.
A 22-yr-old woman comes to the physician because of a missed menstrual period. She has a complex past medical history; she has hypothyroidism for which she takes thyroxine, she has an artificial heart valve for which she takes coumadin and she recently started tetracycline for acne. She does not think that she is pregnant because she is currently on oral contraceptive pills but if pregnant, she would keep the pregnancy. Physical examination including pelvic examination is unremarkable. A urine hCG is positive. Which of the following medications should the patient continue to take during the pregnancy.

A. Coumadin.
B. Oral contraceptive pill.
C. Tetracycline.
D. Thyroxine.
E. Discontinue all medications.

EXPLANATION

The correct answer is D. Hypothyroidism is associated with several complications regarding fertility and pregnancy. Women with overt hypothyroidism have increased rates of infertility. Women with uncorrected hypothyroidism that do become pregnant are at increased risk of having stillborn and low-birth-weight infants. Various studies have also shown that rates of preeclampsia, placental abruption, and heart failure may be increased in pregnant patients with hypothyroidism. Pregnancy often leads to an increased requirement for thyroid hormone replacement (thyroxine) as the pregnancy progresses. Pregnant women with hypothyroidism on thyroxine should have their thyroid stimulating hormone (TSH) level checked periodically to determine if the drug dosage is adequate. This patient, with her history of hypothyroidism, should continue her thyroxine during the pregnancy.

Coumadin (choice A) is contraindicated during pregnancy, as it is a known cause of birth defects. This patient needs anticoagulation, however, and should be placed on heparin, which does not cross the placenta.

It is possible to become pregnant while taking the oral contraceptive pill (choice B), as the pill has a small rate of failure. There is no known association between first trimester exposure and birth defects. Now that the patient has become pregnant, however, she should stop taking the OCP.

Tetracycline (choice C) is used to treat some forms of acne and, therefore, some women will become pregnant while on the medication. Its use is contraindicated during pregnancy, however, because it is associated with fetal teeth and bone malformations.

To state that the patient should discontinue all medications (choice E) is absolutely incorrect. While some medications are contraindicated during pregnancy, many are necessary and should be continued.
A 33-yr-old woman is involved in a high-speed automobile collision. She arrives in the ER gasping for breath, her lips are cyanotic and she has flaring nostrils, there are bruises over both sides of the chest and tenderness suggestive of multiple rib fractures. Her blood pressure is 60/45, pulse is 160 and feeble and central venous pressure is 25 cmH$_2$O. Her neck and forehead veins are distended. She is diaphoretic and has a hint of subcutaneous emphysema in the lower neck and upper chest. Her left hemithorax has no breath sounds and is hyperresonant to percussion. Trachea is deviated to the right side as are the heart sounds. Which of the following is the most likely diagnosis.

- A. Air embolism from tracheobronchial tree.
- B. Flail chest due to multiple rib fractures.
- C. Massive intrapleural bleeding from torn intercostals vessels.
- D. Massive mediastinal bleeding from ruptured aorta.
- E. Tension pneumothorax caused by lung puncture by broken ribs.

**EXPLANATION**

The correct answer is E. Although we typically associate tension pneumothorax with penetrating chest wounds, a blunt injury can produce lung puncture, as the jagged edges of broken ribs are driven in at the time of impact. All the classic findings of a tension pneumothorax are given in the vignette.

Tracheobronchial injuries (choice A) can indeed produce subcutaneous emphysema. They can also produce air embolism if major vessels and major elements of the airway are lacerated next to one another. When that happens, though, the clinical manifestation is sudden death, typically when the patient is placed on a respirator.

Flail chest (choice B) is also likely to occur with multiple rib fractures, but the clinical clue is paradoxical breathing, and the eventual problem is respiratory distress but no hemodynamic decompensation.

Massive bleeding, whether from torn intercostals or ruptured aorta (choices C and D) would indeed lead to hypovolemic shock, but the central venous pressure would be zero and breathing would not be particularly affected.
Q-383
An 8-month-old previously pre-term infant with bronchopulmonary dysplasia presents to the ER with lethargy. His regular medications include furosemide and spironolactone. His temperature is 37.4°C (99.3°F), blood pressure is 68/32, pulse is 110 and respirations are 10. He has poor skin turgor and dry mucous membrane. Laboratory chemistry evaluation reveals sodium 131 Meq/l, potassium 3.0 Meq/l, chloride 84 Meq/l, bicarbonate 38 Meq/l, BUN 36 mg/dl and creatinine 0.4 mg/dl. An arterial blood gas shows pH 7.52, PaCO₂ 49 mmHg, PaO₂ 92 mmHg. Which of the following is the most likely explanation of these findings.

A. Bartter syndrome.
B. Primary hyperaldosteronism.
C. Primary respiratory acidosis with metabolic compensation.
D. Pseudohyperaldosteronism.
E. Volume depletion.

EXPLANATION

The correct answer is E. The findings of dry mucous membranes, poor skin turgor, and tachycardia suggest that the infant is volume depleted. He has been taking the loop diuretic furosemide, which is used to treat bronchopulmonary dysplasia. Furosemide causes increased excretion of sodium (therefore water), potassium, and chloride in the urine. The body is therefore hypovolemic. Excessive loss of potassium causes the hydrogen-potassium pump across the cell membranes to transport hydrogen into the cells in exchange for potassium out of the cells. Transportation of hydrogen into the cells causes the number of hydrogen ions in the plasma to decrease and results in alkalosis. The chemoreceptors in the medullary respiratory center of the brain sense the metabolic alkalosis and respond by lowering the respiratory rate. Therefore, more carbon dioxide is retained in the bloodstream and partially corrects the metabolic alkalosis.
Bartter syndrome (choice A) is a rare autosomal-recessive disorder that manifests as hypokalemia, hypochloremia, and high renin and aldosterone levels.

Primary aldosteronism (choice B) is characterized by hypertension, hypernatremia, hypokalemia, and a suppressed renin-angiotensin system.

Primary respiratory acidosis with metabolic compensation (choice C) represents a primary process of respiratory failure and increased retention of carbon dioxide. The kidneys compensate by retention of bicarbonate in an attempt to correct the acidosis. However, compensatory mechanisms will never overcompensate for the primary process. Therefore, the pH should never be more than 7.40.

Pseudohyperaldosteronism (choice D), also known as the Liddle syndrome, is a rare disorder of renal transport of sodium and potassium that resembles primary hyperaldosteronism. Affected people present in infancy or early childhood with hypertension, polyuria, polydipsia, and hypokalemic metabolic alkalosis. The serum concentration of aldosterone is low.
Q-384
A 41-yr-old gastroenterologist attends an annual national conference in San Francisco. On his return home he develops fever with temperature as high as 39.4°C (102.9°F) over the past five days. He has also developed a severe non-productive cough with associated shortness of breath at rest. In addition he complains of headache and fatigue and his wife reports that he has become slightly confused at home. He has also has nausea and frequent loose stools. On physical examination his temperature is 39.1°C (102.1°F), blood pressure is 116/84, pulse is 96 and respirations are 28. On lung examination there are scattered loud ronchi on both lung fields. The abdominal examination is normal. Which of the following is the most likely diagnosis.

A. CMV pneumonia.
B. Legionnaire's disease.
C. Mycobacterium tuberculosis.
D. Pneumocystis carinii pneumonia.
E. Staphylococci pneumonia.

EXPLANATION
The correct answer is B. This patient has the multisystemic findings consistent with Legionnaires disease. These include the CNS findings of headache and confusion, pulmonary findings consistent with bilateral interstitial infiltrate, and the nonspecific gastrointestinal symptoms of nausea and diarrhea. He presumably acquired the infection while at the conference, where there were probably infected water droplets in the ventilation system.

There are no risk factors for HIV described, so cytomegalovirus pneumonia (choice A) or Pneumocystis carinii pneumonia (choice D) would be unlikely.

The multisystemic symptoms with an acute onset, in association with bilateral interstitial infiltrates, are not typical of the presentation of tuberculosis (choice C).

Staphylococcal pneumonia (choice E) may cause severe toxicity and significant pulmonary impairment but would not explain the CNS findings and gastrointestinal symptoms.
Q-385
A 23-yr-old dancer presents with the chief complain of weakness. She denies any other symptoms including nausea and vomiting. She denies diarrhea. Her blood pressure is 80/40. There is no edema and lungs are clear. Lab analysis of serum shows sodium 126 Meq/l, potassium 2.2 Meq/l, bicarbonate 29 Meq/l, magnesium 2.0 mg/dl, calcium 9.0 mg/dl. The most likely cause of patient's weakness is an abnormality in which of the following.

A. Bicarbonate.
B. Calcium.
C. Magnesium.
D. Potassium.
E. Sodium.

EXPLANATION
The correct answer is D. The low potassium is the most likely cause of the weakness. The patient may be a diuretic abuser or may vomit as part of an eating disorder.

The high bicarbonate (choice A) may reflect an alkalosis, but should not cause symptoms like this.

The magnesium (choice C) and calcium (choice B) values are close to the normal range.

The low sodium (choice E) is not likely to cause weakness.
A previously healthy 65-yr-old man comes to the medical attention because increasingly severe memory disturbance, loss of balance and urinary incontinence for ten-months. His vital signs are normal and mini-mental state examination show mild to moderate short term memory deficits. Lab screening test are within normal limits. Papilledema is absent on fundoscopic examination. MRI reveals dilated ventricular spaces while the cortical mental is normal without widening of sulci or narrowing of gyri. The white matter appears unremarkable with no evidence of demylenation. A lumbar puncture yields the following values: CSF pressure 120 mmH$_2$O, cell count 3 lymphocytes/mm$^3$, glucose 54 mg/dl, proteins total 29 mg/dl. Which of the following is the most appropriate next step in management.

A. Culture the CSF.
B. Trial with cholinesterase inhibitor.
C. Treatment with antidepressant drugs.
D. Treatment with levodopa.
E. CSF shunting procedure.

EXPLANATION

The correct answer is E. The discrepancy between ventricular dilatation and absence of cortical atrophy is the most important clue to the diagnosis of normal pressure hydrocephalus (NPH). The most characteristic manifestations of NPH include dementia, ataxia, and urinary incontinence. This form of dementia, although less frequent than Alzheimer disease and vascular dementia, has particular relevance since a shunting procedure in the early stages may lead to dramatic amelioration of the clinical symptoms. Long-standing NPH results in irreversible cortical atrophy.

Culture of CSF (choice A) is necessary in the presence of signs or symptoms of meningitis. The CSF values in this case rule out meningitis.

Trial with cholinesterase inhibitors (choice B) is warranted when a clinical diagnosis of Alzheimer disease (AD) is made. In AD, cortical atrophy is usually severe and readily appreciated in CT/MRI scans. Ventricular dilatation in AD is secondary to cerebral atrophy (i.e., hydrocephalus ‘ex vacuo’).

Treatment with antidepressant drugs (choice C) should be considered if the patient’s intellectual deterioration is due to depression. Depression may occasionally (especially in the elderly) manifest with a picture known as pseudodementia.

Treatment with levodopa (choice D) is the primary pharmacological intervention for Parkinson disease (PD). PD manifests with resting tremor, akinesia, and rigidity. Ataxia is not part of PD’s clinical picture.
A 26-yr-old primigravid woman at 35-weeks gestation comes to the labor and delivery ward because of painful uterine contractions and a gush of fluid. Sterile speculum examination reveals a pool of clear fluid in vagina that is nitrazine positive. When the fluid is examined under the microscope a ferning pattern is seen. Cervical examination show the patient to be 4cm dilated, 100% effaced and at 0 station. Fetal fingers can be felt along side the fetal head. External uterine monitoring shows contractions every two-minutes. External fetal monitoring shows a fetal heart rate to be in the 130s and reactive. Which of the following is the most appropriate next step in management.

A. Expectent management.
B. Oxytocin augmentation.
C. Forceps delivery.
D. Vaccum delivery.
E. Cesarean section.

EXPLANATION

The correct answer is A. This patient has a compound presentation, which happens when an extremity prolapses alongside the fetal presenting part. In this case, the compound presentation is the fetal vertex along with a fetal arm. Compound presentation occurs in approximately 1 in 1000 deliveries and is brought about when the pelvic inlet is not completely occluded by the fetal head. Most often this occurs with premature fetuses. A compound presentation can be allowed to undergo a normal labor and delivery. The prolapsed arm should be left alone, as it will not interfere with the labor and delivery in most cases. Often the arm will rise out the way as the vertex descends further.

Oxytocin augmentation (choice B) would not be appropriate management. This patient is in active labor, with painful contractions every 2 minutes and 4 cm of cervical dilation. Oxytocin is used in cases in which there is a need to augment labor (e.g., when contractions are not adequate) or to induce labor (e.g., when there are no contractions present.) This patient has adequate contractions.

Forceps delivery (choice C) is not indicated at this point. The patient’s cervix is not fully dilated, and the presence of the fetal arm, if it persists, would prevent proper application of the forceps.

Vacuum delivery (choice D) would not be appropriate. As with forceps, vacuum is not used unless the cervix is fully dilated and the vertex is at +2 to +3 station. This patient is only 4 cm dilated, and the vertex is at 0 station. There is no fetal or maternal indication at this point for vacuum delivery.

Cesarean delivery (choice E) is not indicated. As noted above, most women with a compound presentation, with a hand presenting by the fetal head, can undergo a normal labor and delivery.
A medicine consultant is requested on a 32-yr-old woman with paranoid schizophrenia who is a patient in a closed psychiatric unit. Several days after the patient’s admission she developed polyuria, vomiting, stupor, diarrhea and restlessness. She is currently taking resperidone 10mg given at bedtime but no other medications. Which of the following is the most likely diagnosis.

A. Anticholinergic crisis.
B. Acute dystonic reaction.
C. Serotonin syndrome.
D. Tardive dyskinesia.
E. Water intoxication.

EXPLANATION

The correct answer is E. This patient is showing the symptoms of psychogenic polydipsia, which is the excessive intake of water as a result of a psychiatric disorder. The symptoms of excessive water intake include polyuria, vomiting, and diarrhea. As the patient is on a closed psychiatric unit, the chances of reactions to excessive medications are rare, given the careful monitoring of medication intake on most psychiatric units. Surreptitious water consumption would be easy to overlook in a patient without a previous history.

Anticholinergic crisis (choice A) is not a possibility in a patient not receiving anticholinergic medications, such as diphenhydramine or Cogentin.

Acute dystonic reaction (choice B) is an adverse reaction of some antipsychotics, such as haloperidol or trifluoperazine, and is rare in a patient taking risperidone.

Serotonin syndrome (choice C) is a reaction of autonomic instability that is accompanied by fluctuations in blood pressure and flushing. It is associated with the mixing of monoamine oxidase inhibitors and serotonin specific reuptake inhibitors.

Tardive dyskinesia (choice D) is a syndrome of abnormal involuntary movements associated with chronic use of typical neuroleptics, such as haloperidol.
Q-389
A 27-yr-old male prisoner with a self-described history of physical abuse is brought to the ER by the prison staff. Patient explains that he has a severe leg pain after falling out of his bunk bed and that he is unable to walk. Neurologic examination shows normal deep tendon reflexes but the patient has decreased sensation to pain and pinprick. The following morning the patient is seen walking but complains that he cannot urinate and he is told by a nurse that he will have to have a catheter inserted. As his physician walks in unexpectedly on rounds the patient is seen sneaking back into bed from the direction of the rest room. Which of the following is the most likely diagnosis.

A. Antisocial personality disorder.
B. Conversion disorder.
C. Drug dependence.
D. Factitious disorder.
E. Schizophrenia.

EXPLANATION

The correct answer is D. Factitious disorder presents with physical symptoms that are consistent with true illness but are under the voluntary control of a patient. It is often dependent on a patient’s need to fulfill the “sick role” and be under the care of a physician. Often, multiple invasive procedures or examinations are done at the request of the patient before a diagnosis is reached.

Antisocial personality disorder (choice A) requires a pervasive pattern of violating the rights of others, as evidenced by failure to adhere to social norms and lawful behavior.

Conversion disorder (choice B) is associated with physical symptoms that are outside of the voluntary control of the patient and are related to a significant social event in the life of the patient.

There is no evidence of drug dependence (choice C) in the history of this patient, and dependence would not lead to the presentation given.

Schizophrenia (choice E) is a disorder of thought that requires persistent auditory hallucinations over the course of at least 6 months.
Q-390

A 76-yr-old man presents to the clinic for his semi-annual examination. The patient is well known to the clinic and has been having semi-annual examinations for the past three years to follow up his COPD. The patient is a long-term smoker with a 300+ packs/year history. He is status-post a right upper wedge resection two-years ago for adenocarcinoma and at that time had severe obstructive disease. A recent CT-scan of chest show apical bullae and severe emphysematous changes. The patient has moderate dyspnea on exertion and often has shortness of breath with minimal activity. On this visit the patient relates that he is even more short of breath at rest and he is almost unable to perform any physical activity as a result. Which of the following would most strongly suggest the need to initiate home oxygen therapy:

A. Exercise induced oxygen desaturation to less then 92%.
B. Resting arterial PaO₂ showing an alveolar arterial gradient of more then 12 mmHg.
C. Resting arterial oxygen pressure of less then 55 mmHg.
D. Resting oxygen pressure of greater then 40 mmHg.
E. Room air oxygen saturation of less then 92%.

EXPLANATION

The correct answer is C. The requirements for utilization of home oxygen therapy have been determined on the basis of placebo-controlled, randomized trials. In patients on a stable medical regimen, an arterial oxygen pressure of less than 55 mm Hg has been determined as the cutoff below which maximal benefit is obtained.

Exercise-induced oxygen desaturations to less than 92% (choice A) are common in patients with chronic obstructive pulmonary disease (COPD).

A resting arterial PaO₂ showing an alveolar arterial gradient of more than 12 mm Hg (choice B) is abnormal, but is not specific for COPD, and is not generally an indication for supplemental oxygen therapy.

Most COPD patients late in the disease have a resting PaO₂ of greater than 40 mm Hg (choice D). This is one of parameters that benefits from supplemental oxygen, but it is not used in the decision tree to initiate therapy.

Room air oxygen saturation of less than 92% (choice E) certainly indicates some element of V/Q mismatching, but not enough to merit continued supplemental oxygen.
A previously healthy 55-yr-old man is referred for neurologic consultation because of persistent headache and change in personality over the past two-months. He has smoked one pack/day of cigarettes for 30-years. Neurological examination reveals decreased sensation in the right upper extremity. Neuroimaging studies show a 5cm ill-defined mass in the left parietal white matter. A ring like zone of contrast enhancement is seen on T1-weighted MRI images surrounded by extensive edema appreciated by T2-weighted images. Lab investigations are within normal limits including negative antibodies to HIV.

Which of the following is the most likely diagnosis.

A. Abscess.
B. Demyelinating disease.
C. Glioblastoma multiforme.
D. Infarct.
E. Metastasis.

EXPLANATION

The correct answer is C. This is the most frequent clinical presentation of glioblastoma multiforme (GBM). This highly aggressive tumor is the most common primary malignant neoplasm of the CNS. It is composed of poorly differentiated astrocytes with areas of necrosis and microvascular proliferation. In the WHO grading system of brain tumors, GBM corresponds to grade IV astrocytoma (i.e., the most anaplastic form). Usually, patients present with a clinical symptomatology of less than 3 months’ duration. MRI and CT scans show the picture outlined in the questions stem. Of great importance in the differential diagnosis with other cerebral lesions are the poorly defined borders, ring-enhancing appearance, and location in the white matter. Most patients die within 1 year of diagnosis, even with the most aggressive surgical and radiation treatments.

Abscess (choice A) is an important differential consideration in ring-enhancing brain masses. The clinical history is usually helpful, since brain abscesses develop in the presence of some predisposing condition, such as otitis, sinusitis, or sepsis. Furthermore, abscesses tend to be well-demarcated, with a thin uniform rim of contrast enhancement. GBM has a more irregular and diffuse outline.

Demyelinating disease (choice B) would manifest with white matter changes identifiable as T2 hyperintensity on MRI. In multiple sclerosis, plaques of demyelination are sharply circumscribed and more frequently located in the periventricular regions.

Infarction (choice D) involves the gray matter in a specific vascular distribution corresponding to the affected artery. It presents with an acute symptomatology.

Metastasis (choice E) should also be considered in this case. Factors against a metastatic lesion include poor demarcation and location within the white matter. Metastases are usually sharply demarcated, multiple, and situated at the gray-white matter junction.
A 4-week-old infant presents with tachycardia, tachypnea, and poor weight gain. His arterial blood gas shows a pH of 7.34, a PCO₂ of 40 mmHg, and a PO₂ of 74 mmHg. A chest radiograph shows cardiomegaly. Echocardiography reveals a structurally normal heart, left ventricular dilatation, and a left ventricular ejection fraction of 20% and mild mitral and tricuspid regurgitation. IV administration of which of the following medication is the best initial step in management of this patient.

A. ACE inhibitor.
B. Corticosteroid.
C. Digoxin.
D. Epinephrine.
E. Furosemide.

EXPLANATION

The correct answer is E. This infant has acute congestive heart failure (CHF). CHF may be defined as inadequate contractile heart function for the specific hemodynamic needs. Clinical manifestations include respiratory distress, tachycardia, and/or hyperdynamic precordium, and cardiac enlargement evidenced by echocardiogram. The differential diagnosis of CHF includes left-to-right shunt (ASD, VSD, PDA, atrioventricular canal, or AV fistula), left-sided obstruction leading to myocardial dysfunction (severe coarctation or AS), or intrinsic myocardial dysfunction (myocarditis, cardiomyopathy, or infarct due to anomalous coronary artery). In acute CHF, treatment should begin immediately. IV furosemide is the drug of choice because its onset is very rapid. It can provide quick symptomatic relief and improve respiratory distress.

Angiotensin-converting enzyme inhibitors (choice A) are used for the long-term management of patients with CHF. In adults, they have been proven to reduce mortality and improve symptomatic relief. Although data are not available for children, they have been reported to improve hemodynamic functions.

Corticosteroids (choice B) may be useful in myocarditis but have no role in CHF per se.

Digoxin (choice C) requires a longer time to take effect on CHF, and it has only a modest influence on myocardial function.

Epinephrine (choice D) is not used in the treatment of CHF.
A 25-yr-old moderately obese woman with a history of bipolar disorder at the age of 19 complains that her recent struggles with her weight and eating have caused her to feel depressed. She states that she has recently has increased difficulty sleeping, has felt excessively anxious and agitated and has increasing thoughts of suicide. She often finds herself fidgety and unable to sit still for extended periods of time. Her family tells her that she is increasingly irritable. She has never previously attempted suicide. Her current medications include lithium carbonate and zolpidem as needed for sleep. Which of the following is more consistent with a diagnosis of major depressive disorder than bipolar depression during this episode.

A. Early onset of bipolar disorder.
B. Increased appetite.
C. Insomnia.
D. Increased thoughts of suicide.
E. Psychomotor agitation.

EXPLANATION

The correct answer is E. Major depressive disorder is a syndrome that requires a depressed mood or loss of interest or pleasure and causes clinically significant distress or impairment in occupational, social, or other important areas of functioning. The diagnosis of bipolar depression requires that the patient have also had a manic episode of bipolar disorder. Bipolar depression is associated with less psychomotor agitation compared to unipolar depression (major depressive disorder), and thus the patient's agitation is more consistent with a major depressive disorder diagnosis than with the depression of bipolar disorder.

Early onset of bipolar disorder (choice A) is a risk factor for the development of bipolar, rather than unipolar depression in later life.

Increased appetite (choice B) is more a symptom of the depression of bipolar disorder than major depressive disorder, as one of the criteria for major depressive disorder is loss of appetite or anorexia.

Insomnia (choice C) is found more often in bipolar depression than major depressive disorder.

Increased thoughts of suicide (choice D) is incorrect because bipolar depression carries a greater risk of suicide than major depressive disorder.
Q-394

A 27-yr-old primigravid woman at 39-weeks gestation comes to the labor and delivery ward with a gush of fluid and regular contractions. Examination shows that she is grossly ruptured, contracting every two-minutes and her cervix is dilated 4cm. Fetal heart rate tracings is in 140s and reactive. She is admitted to labor and delivery and over the following 4-hours she is progressed to 9cm dilatation. Over the past hour the fetal heart rate has increased from a baseline of 140 to a baseline of 160. Furthermore moderate to severe variable decelerations are seen with each contraction. The fetal heart rate does not respond to scalp stimulation. The decision is made to proceed with cesarean delivery. Which of the following is the reason for the cesarean delivery and the pre-operative diagnosis.

A. Fetal acidemia.
B. Fetal distress.
C. Fetal hypoxic encephalopathy.
D. Low neonatal APGAR score.
E. Non-reassuring fetal heart rate tracings.

EXPLANATION

The correct answer is E. Labor and delivery represents a process of stress for the fetus. With each uterine contraction, blood flow to the placenta decreases, and the fetus is exposed to transient hypoxia. As the labor progresses and more and more contractions occur, this hypoxia can eventually lead to a change from aerobic to anaerobic metabolism. This change can lead to a buildup of acid in the fetus, or fetal acidemia. However, most fetuses tolerate the stress of labor and delivery just fine. The fetus has a variety of protective mechanisms, including a blood buffering system and the diving reflex (a lowering of the heart rate in times of hypoxic stress), to protect it from becoming dangerously acidemic. Electronic fetal monitoring is used to determine whether the fetus is becoming dangerously acidemic or "stressed" during labor so that delivery can occur prior to hypoxic damage to organs. Unfortunately, electronic fetal monitoring is not a very specific tool for identifying fetal acidemia. Many fetuses with a non-reassuring fetal heart rate tracing do not have acidemia and are not in distress. However, it can be very difficult to distinguish non-acidemic fetuses with non-reassuring fetal heart rate tracings from acidemic fetuses with non-reassuring fetal heart rate tracings. Thus, the delivery of many fetuses is expedited because of the concern for fetal acidemia when, in fact, the fetus is not acidemic at all. Thus, it is most accurate to state, as is in this case, that the fetus was delivered because of the non-reassuring fetal heart rate tracing.
Fetal acidemia (choice A) is not the reason for delivery. In fact, there is a strong likelihood that this fetus is not acidemic at all.

Fetal distress (choice B) is not the reason for delivery. There is a strong likelihood that this fetus is perfectly healthy and will have high neonatal APGAR scores and no distress at all.

Fetal hypoxic encephalopathy (choice C) is not the reason for delivery. The desire to prevent hypoxic/acidemic damage to organs, including the brain, is the reason for expediting delivery. However, the non-reassuring fetal tracing does not indicate that hypoxic encephalopathy is necessarily occurring.

Low neonatal APGAR scores (choice D) can be a marker of fetal acidemia. However, many fetuses with non-reassuring fetal heart rate tracings do not have low neonatal APGAR scores.
A 62-yr-old man complains of perineal discomfort and reports that there are streaks of fecal soiling in his underwear. Four-months ago he had peri-rectal abscess drained surgically. Physical examination shows a perineal opening in the skin lateral to the anus and a cord like tract can be palpated going from the opening toward the inside of the anal canal. Brownish prurulent discharge can be expressed from the tract. Which of the following is the most likely diagnosis.

A. Anal fissure.
B. Anorectal carcinoma.
C. Fistula-in-ano.
D. Piloneedle cyst.
E. Thrombosed haemorrhoids.

EXPLANATION

The correct answer is C. The recent history of a drained perirectal abscess, along with the physical description of the current lesion, clearly identify this as a fistula-in-ano.

Anal fissure (choice A) typically occurs in young women, who have exquisite pain with defecation and blood streaks in the stool. The lesion is in the anal mucosa, not in the nearby perineal skin.

Anorectal carcinoma (choice B) always has to be ruled out in any patient with anorectal complaints, particularly those describing blood in the stool. In advanced cases, it can show up as an ulcerated, draining mass. But, it would not be a discrete opening with no obvious tumor mass, such as described here.

Pilonidal cyst (choice D) is a good distracter, because they get infected, hurt, drain pus, soil the underwear, and have a skin opening. However, the opening is always cephalad to the anus, near the midline; the drainage is pus, not feces; and there is no connection with recent perirectal abscess.

Thrombosed hemorrhoids (choice E) would produce excruciating pain, and appear as a small, red, angry, mass protruding out of the anus. If they drain spontaneously, blood and clot, not feces, come out.
Q-396
A 50-yr-old female politician who has an extreme paralyzing fear before walking to the podium to give a speech. She is so anxious about these situations that it is beginning to impair her professional activity. She is terrified of stuttering and making a fool of herself in front of unfamiliar people. Which of the following is the most likely diagnosis.

A. Agoraphobia.
B. Generalized anxiety disorder.
C. Panic disorder.
D. Post-traumatic disorder.
E. Social phobia.

EXPLANATION

The correct answer is E. This patient has a social phobia (performance anxiety). Social phobia is a fear of social or performance situations when the individual may be exposed to unfamiliar individuals or may be evaluated by others. It is a common disorder that affects men and women. It impairs everyday activities and relationships. Blushing, shaking, hypertension, and tachycardia occur when the individual is exposed to the feared situation. Beta-blockers are effective in preventing the symptoms.

Agoraphobia (choice A) is an irrational fear of places where escape may be difficult. It leads to avoidance of these situations and often causes the individual to be homebound. Systematic desensitization may be helpful.

Generalized anxiety disorder (GAD; choice B) is characterized by persistent intense worry over many events and activities that is present for at least 6 months. The individual finds it difficult to control the worry. Three of the following symptoms must be present: restlessness, difficulty concentrating, irritability, muscle tension, sleep disturbance, and easy fatigability. It usually begins before age 20. Treatment includes benzodiazepines, buspirone, and psychotherapeutic interventions.

Panic disorder (choice C) is characterized by unpredictable panic attacks that include palpitations, trembling, sweating, dizziness, dyspnea, chest pain, and the fear of losing control or dying. Tricyclic antidepressants, selective serotonin reuptake inhibitors, benzodiazepines, and psychotherapeutic interventions are helpful.

Posttraumatic stress disorder (PTSD; choice D) is an anxiety disorder characterized by exposure to a traumatic event, persistent re-experiencing of the event, avoidance of stimuli associated with the event, and increased arousal. It impairs important activities and relationships. Psychotherapy and medications are directed at the individual’s specific symptoms.
Q-397
A 23-yr-old professional basketball player presents to the team physician three-hours before game time complaining of abdominal pain. The symptoms began approximately 8-hours earlier in a diffuse fashion, two-hours later he began feeling nauseated and vomited twice. Over the past four-hours the abdominal pain has become more severe and more localized in the right lower quadrant. His examination now reveals well-localized pain in the right lower quadrant inferolateral to the umbilicus. Which of the following is the most likely diagnosis.

A. Acute obstruction of the appendiceal lumen by a fecolith.
B. Acute onset of iliocolitis.
C. Acute onset of ischemic colitis.
D. Acute onset of yersinia infection.
E. Obstruction of iliocecal valve by a mass.

EXPLANATION
The correct answer is A. Acute appendicitis is the second most common cause in the U.S., behind hernia, of severe acute abdominal pain that requires abdominal operation. Although it can occur at all ages, many patients, like this man, are teenagers or young adults. This patient’s presentation is typical for acute appendicitis, with initially poorly localized pain that is followed by nausea and vomiting. In classic appendicitis, the pain shifts to the right lower quadrant, where it becomes more localized. In most patients, acute obstruction of the appendiceal orifice by a fecolith initiates the acute appendicitis.

The acute onset of ileocolitis (choice B) will produce diarrhea or bloody stools.

There is no evidence to suggest an etiology for ischemic colitis (choice C), which will typically present with bloody diarrhea and often with left-sided abdominal pain.

Acute Yersinia infection (choice D) will produce acute right lower quadrant findings similar to those of acute appendicitis. However, it is accompanied by diarrhea, which is not described in this case.

There is no reason to suspect obstruction of the ileocecal area by any mass (choice E) in a 23-year-old man. Such an obstruction, should it occur, would typically present with abdominal distention as a result of bowel obstruction.
A 72-yr-old diabetic female patient is seen for hypertension. On physical examination she has clear lungs and soft abdomen and 1+ pedal edema. Her blood pressure is 188/100. Her creatinine is 1.6 mg/dl and BUN is 22 mg/dl. Her urine reveals +3 protein. Which of the following would be the most pharmacotherapy.

- A. ACE inhibitor.
- B. Alpha-blocker.
- C. Amlodipine.
- D. Beta-blocker.
- E. Thiazide diuretic.

EXPLANATION

The correct answer is A. ACE inhibitors are the preferred agents in the diabetic patient, as they lower both systemic blood pressure as well as intraglomerular pressure. This will lessen the amount of proteinuria and sclerosis. All of the other agents will lower blood pressure, but do not specifically lower intraglomerular pressure.
Q. 399
A 59-yr-old woman presents to the physician because of recurrent episodes of light-headedness upon getting up in the morning and occasionally upon standing up from a chair. She reports that on two occasions she has passed out soon after getting up from the bed. Her temperature is 37 C (98.6 F), blood pressure is 130/80, pulse is 70 and regular and respirations are 14. She takes a beta-blocker and a thiazide diuretic for moderate hypertension diagnosed 6-months ago. General examination and chest auscultations are unremarkable. Which of the following is the most likely cause of this patient’s symptoms.

A. Antihypertensive treatment.
B. Aortic stenosis.
C. Drop attacks.
D. Reflex syncope.
E. Transient ischemic attacks.
F. Vasovagal syncope.

EXPLANATION

The correct answer is A. Clinical history is crucial in the diagnostic approach to syncope. Furthermore, measurement of blood pressure should be performed first with the patient in a supine position, and then checked again upon standing. This patient’s episodes of lightheadedness and syncope can be best explained as an effect of antihypertensive therapy. Orthostatic hypotension is one of the most frequent side effects of antihypertensive drugs and should always be considered in the differential diagnosis of syncope of unexplained origin.

Aortic stenosis (choice B) may manifest with recurrent syncope. On physical examination, a characteristic "diamond-shaped" (crescendo-decrescendo) murmur is heard in the precordial region.

Drop attacks (choice C) refer to sudden loss of tone in the lower extremities and probably result from episodic cerebral vascular insufficiency. The patient remains fully conscious.

Reflex syncope (choice D) may occur after emptying a distended bladder (micturition syncope) or following prolonged coughing (tussive syncope).

Transient ischemic attacks (choice E) rarely manifest with loss of consciousness. This may be caused by severe atherosclerosis of the vertebrobasilar arteries.

Vasovagal syncope (choice F) occurs most frequently in adolescents and young adults. Pain, apprehension, emotional shock, or other precipitating stimuli are the usual triggers.
Q-400
A toddler is brought to the ER with burns on both of his buttocks. The areas are moist, have blisters and are exquisitely painful to touch. The parents explain that the child accidentally pulled a pot of boiling water over himself. Which of the following is the most important step in management.

A. Application of mafenide acetate to the burned areas.
B. Early excision and grafting of the burned areas.
C. Education of the parents on accident prevention.
D. Prompt administration and fluid resuscitation.
E. Referral to the proper authorities for suspected child abuse.

EXPLANATION
The correct answer is E. Scalding burns in children should always raise the possibility of child abuse, and the problem is virtually certain to have occurred when the pattern of the burns does not match the story given by the parents. In this case, had the child indeed pulled a pot of boiling water over himself, the burns would follow the distribution of water running from head to toe. Burns on both buttocks are classic for a child who is held by arms and legs, and dipped into boiling water.

Mafenide acetate (choice A) is not the topical agent of choice, unless deep penetration is needed. Silver sulfadiazine would be the proper choice for topical use. In this case, however, the burn itself is less important than the future welfare of the child.

Early excision and grafting (choice B) is indicated only in burns that are clearly third degree. In children, those would be deep red and dry. The description here is that of second-degree burns (moist, blisters, painful).

Education of the parents (choice C) assumes the injury was accidental. We have reason to believe it was intentionally inflicted.

Fluid resuscitation (choice D) would be minimal in a burn of this size. Assuming the entire surface of both buttocks is involved, it would still represent less than 10% of body surface and it is all second degree.
A physician is called to see a 69-yr-old woman who underwent cardiac catheterization via the right femoral artery early in the morning. She is now complaining of a cool right foot. Upon examination she has a pulsatile mass over her right groin without the loss of distal pulses. The auscultation reveals a bruit over the point where the right femoral artery was entered.

A. Cholesterol emboli syndrome.
B. Femoral aneurysm.
C. Femoral hernia.
D. Femoral pseudoaneurysm.
E. Retroperitoneal hematoma.

EXPLANATION

The correct answer is D. Femoral pseudoaneurysms represent an important vascular complication of cardiac catheterization. The combination of a pulsatile mass, femoral bruit, and compromised distal pulses make this diagnosis likely. The diagnosis can be confirmed by ultrasound of the groin.

Cholesterol emboli syndrome (choice A) is also an important complication to recognize in the post-catheterization patient. It usually presents, however, with skin findings in the distal extremities of livedo reticularis, ischemic ulcerations, cyanosis, gangrene, or subcutaneous nodules.

Femoral aneurysms (choice B), like the more common aortic and popliteal aneurysms, are true aneurysms that represent a dilation of the arterial wall itself, often associated with an underlying connective tissue disorder or atherosclerotic disease. While true aneurysms may also present as pulsatile masses in the groin and may be associated with distal embolization of clots, the proximity to cardiac catheterization makes pseudoaneurysm likelier.

Femoral hernias (choice C) occur when abdominal contents pass through the femoral canal, with the hernia sac lying below Poupart’s ligament. While it may present as a mass in the groin, a femoral hernia would unlikely be associated with a bruit or arterial vascular compromise.

Another important complication of cardiac catheterization via the femoral artery is a retroperitoneal bleed (choice E). This complication presents, however, as either new back pain, an unexplained drop in the hematocrit, or purpura over the flanks.
A 33-yr-old primigravid woman at 18-weeks gestation comes to the physician for a prenatal visit. Her prenatal course has been uncomplicated thus far, she has no complaints, she has no bleeding or fluid loss or contractions. She has hypothyroidism for which she takes thyroid hormone replacement. The patient states that a friend of her recently had a pre-term delivery. The patient is quite concerned about a pre-term delivery and wants to know whether home uterine activity monitoring is recommended. Which of the following is the most appropriate response.

A. Home uterine activity monitoring has been proven to cause pre-term birth.
B. Home uterine activity monitoring has been proven to prevent pre-term birth.
C. HUAM has not been proven to prevent pre-term birth.
D. HUAM should be started immediately.
E. HUAM should be started at 35-weeks.

EXPLANATION

The correct answer is C. Home uterine activity monitoring (HUAM) became a controversial area of obstetrics during the 1990s. Of all liveborn neonates, approximately 7% will be less than 2500 g (low birth weight). Approximately 1% will be less than 1500 g (very low birth weight). Most of the infant mortality rate comes from these low birth weight and very low birth weight neonates. Preterm labor and delivery is the cause of many of these cases. Thus, strategies to prevent preterm delivery are very much sought after. One such strategy is HUAM. With this technique, women are monitored at home with a tocodynamometer (a way to measure uterine contractions). The theory is that this home monitoring will allow for preterm labor to be recognized and treated in its earliest stages, which may help to prevent preterm births. In practice, however, this has not been proven to be the case. Numerous studies have been performed, and HUAM has not been proven to prevent preterm birth. A possible benefit of HUAM may be the early recognition of preterm labor, which would allow for the administration of corticosteroids to bring about fetal pulmonary maturity, even if a preterm delivery could not be prevented. This question has not been fully answered. At present, therefore, HUAM has not been proven to prevent preterm birth, and its use is not recommended.

To state that HUAM has been proven to cause preterm birth (choice A) is not correct. HUAM is a noninvasive technique for monitoring uterine activity, and it is used to try to prevent preterm birth. Side effects and complications are rare.

To state that HUAM has been proven to prevent preterm birth (choice B) is incorrect. This is the central area of controversy for this technique, namely that it has not been proven to prevent preterm birth.

To state that HUAM should be started immediately (choice D), or that HUAM should be started at 35 weeks (choice E) is incorrect. As explained above, HUAM has not been proven to prevent preterm delivery; therefore, its use is not currently recommended.
Q-403
A 10-yr-old male fell while riding his scooter down a steep hill. In the ER his injuries include a fractured wrist and a lacerated spleen which require surgical removal. Two-years later he was diagnosed with bacterial pneumonia. Which of the following is the most likely pathogen for patient’s pneumonia.

A. E.coli.
B. Klebsiella pneumonia.
C. Neisseria meningitides.
D. Streptococcus pneumoniae.
E. Staphylococcus aureus.

EXPLANATION
The correct answer is D. This patient underwent a splenectomy after his injury, and thus is susceptible to encapsulated organisms. S. pneumoniae is the most important pathogen in asplenic children. Less common causes of infection include Hemophilus influenzae type B, E. coli, Staph. aureus, and gram-negative bacilli such as Salmonella, Klebsiella and Pseudomonas. Asplenic children are also at increased risk for fatal malaria and babesiosis. This child should receive a pneumococcal vaccine.

E. coli(choice A) is a gram-negative rod and is an unlikely cause of community-acquired pneumonia. E. coli is part of the normal flora of the human gastrointestinal tract. It can be seen as a cause of aspiration pneumonia, sepsis, neonatal meningitis, or urinary infections. E. coli is also a frequent cause of several types of bacterial diarrhea, including enterohemorrhagic, enterotoxigenic and E. coli O157:H7, which causes hemolytic-uremic syndrome.

Klebsiella pneumoniae(choice B) is a gram-negative bacillus that is an important nosocomial pathogen. It is more prevalent in nursing homes and extended care facilities than in the community, and thus would be an unlikely cause of this patient’s pneumonia.

Neisseria meningitidis(choice C) is a gram-negative diplococcus with multiple serotypes that cause invasive disease. It is a frequent cause of bacterial meningitis and septicemia. Many people are asymptomatic carriers of this organism, since they are colonized in their nasopharynx. It is an encapsulated organism, so this patient would be at greater risk for this organism, but his highest risk is that of Strep. pneumoniae.

Staph. aureus(choice E) is a widely prevalent gram-positive coccus that causes lobar pneumonia most often in children under 1 year of age. Due to his splenectomy, his highest risk is still Strep. pneumoniae. Staph. aureus also frequently causes skin infections such as impetigo, cellulitis, toxic shock syndrome and scalded skin syndrome. Osteomyelitis, endocarditis, arthritis and septicemia are also commonly caused by this organism.
A 47-yr-old man presents for a follow up of his visit two-weeks ago when he was seen for an evaluation of his duodenal ulcer. At that time a test for helicobacter pylori was performed. The patient was otherwise well but was complaining of epigastric pain that was exacerbated by eating. An esophageogastroduodenoscopy revealed the presence of duodenal ulcer and biopsies were taken at that time. In addition the patient was told that he is needed to modify his diet such as decreasing his coffee intake and cutting down his tobacco use. The patient returns today to discuss his tests results which were positive for H.pylori organism. Which of the following is the most appropriate therapy at this time.

A. Amoxicillin orally.
B. Bismuth, metronidazole, tetracycline and omeprazole orally.
C. Metronidazole orally.
D. Omeprazole orally.
E. Sucralfate orally.

EXPLANATION

The correct answer is B. Helicobacter pylori plays a major role in the pathogenesis of peptic ulcer disease. The organism is present in 95% to 100% of patients with duodenal ulcers and in 75% to 85% of those with gastric ulcers. Eradicating the organism generally results in a cure for the disease. Therapy varies, but one of the more common regimens consists of antibiotics and a proton-pump inhibitor.

Oral amoxicillin (choice A) and oral metronidazole (choice C) are possible antibiotics used in combination therapy. They are not efficacious when given without the other agents in the combination.

The same is true for oral omeprazole (choice D). This proton-pump inhibitor is not efficacious in eradicating the organism when it is given without antibiotics.

Oral sucralfate (choice E) has no role in therapy of H. pylori infection. This drug coats pre-existing gastric erosions to prevent worsening of ulcers, not to prevent acid secretion.
A 7-day-old boy who is a product of uncomplicated gestation is brought to the physician because of hypospadiasis. The boy is otherwise healthy and is urinating without any difficulty. On physical examination the vital signs are stable, lungs are clear and the heart is beating at a regular rate. The only abnormal physical finding is the hypospadiasis. Urine analysis is negative for infection. Which of the following is the most appropriate next step.

A. Measuring serum creatinine level.
B. Schedule a renal ultrasound.
C. Obtain an IV pyelogram.
D. Cystography.
E. Performing a circumcision.

EXPLANATION

The correct answer is B. Children with hypospadias are prone to urinary tract infections and other urinary tract anomalies. They require careful evaluation. A renal ultrasound is a safe way of diagnosing neonatal urinary tract pathology.

Serum creatinine level (choice A) is a measure of renal function and is not needed in an otherwise healthy child.

An intravenous pyelogram (choice C) uses contrast and may cause kidney damage.

Similarly, cystography (choice D) may cause exposure to dye or radiation, and instrumentation may cause complications.

Circumcision (choice E) is not indicated, since in second or third degree hypospadias, the prepuce can be used to construct an absent distal segment of the urethra.
Q-406
A 32-yr-old man is brought into the ER because of heroine overdose. After the administration of naloxone and a complete physical examination which of the following lab studies is most appropriate in the evaluation of this patient to provide long-term follow up care.

A. Albumin level.
B. Echocardiogram.
C. Electroencephalogram.
D. HIV antibody test.
E. Plasma liver enzyme levels.

EXPLANATION
The correct answer is D. Because of the frequent use of needles in a patient with heroin dependence, it is absolutely necessary to rule out the possibility of HIV infection. This is especially true with a patient who is unable to provide a history during an episode of heroin overdose. Concomitant HIV infection and the need for diagnosis will make this laboratory study the most important of all the studies listed.

Albumin level (choice A) and other plasma liver enzyme levels (choice E) are not usually affected by an episode of heroin intoxication.

An echocardiogram (choice B) may be indicated in a chronic IV drug abuser if there is evidence of a murmur on auscultation of the heart, pointing to the possibility of bacterial endocarditis.

An electroencephalogram (choice C) is not necessarily indicated in a patient with heroin intoxication.
A 53-yr-old woman comes to the physician because of concerns regarding menopause. She has a period almost every month but her cycle is lengthening. She is worried because her mother, two older sisters and practically all her aunts have osteoporosis. She does not want to be on estrogen because she is concerned about cancer and thrombosis. Her physical examination is within normal limits. The patient is started on raloxifene. On this medication the patient is most likely to develop which of the following.

A. Breast cancer.
B. Elevated cholestrol.
C. Endometrial hyperplasia.
D. Hot flashes.
E. Osteoporosis.

EXPLANATION

The correct answer is D. Raloxifene is a medication that belongs to the class of drugs called selective estrogen receptor modulators (SERMs). These drugs, of which the most widely known are raloxifene and tamoxifen, have pro-estrogenic effects in some tissues and anti-estrogenic effects in other tissues. Raloxifene has been approved by the U.S. Food and Drug Administration for the prevention of osteoporosis. This patient, with her strong family history of osteoporosis, is a good candidate for prevention. However, although raloxifene acts as an estrogen agonist in the bone, it appears to have no effect on hot flashes or to actually cause hot flashes. Therefore, this perimenopausal patient is most likely to develop hot flashes while on raloxifene.

Although definitive proof is not available, it appears that raloxifene acts as an estrogen antagonist in the breast. Therefore, this patient would not be most likely to develop breast cancer (choice A) while on raloxifene. She would be more likely to develop hot flashes.

Raloxifene appears to lower cholesterol, especially LDL cholesterol, in patients. Therefore, elevated cholesterol (choice B) would be less likely while on this medication.

Raloxifene appears to act as an estrogen antagonist at the level of the endometrium; therefore, endometrial hyperplasia (choice C) would be less likely than hot flashes.

Raloxifene is used in the prevention of osteoporosis (choice E).
Q-408
A 27-yr-old man sustained penetrating injuries of chest and abdomen when he was repeatedly stabbed with a long ice pick. At the time of admission he had a right pneumothorax for which a chest tube was placed prior to undergoing a general anesthetic for exploratory laparotomy. The operation revealed no intra-abdominal injuries and was terminated sooner than had been anticipated. The patient remained intubated waiting for the anesthetic to wear off. Because he was not moving enough air he was placed on a respirator then he suddenly went into cardiac arrest and died. All through this time he had been hemodynamically stable and had never had any sign of hypotension or arrhythmias. Which of the following was the most likely cause of cardiac arrest.

A. Air embolism.
B. Fat embolism.
C. Myocardial infarction.
D. Pulmonary embolus.
E. Tension pneumothorax.

EXPLANATION
The correct answer is A. Truly sudden death, with no warnings whatsoever, brings to mind the possibility of air embolism. The mechanism in this case is suggested by the circumstances. The patient had deep penetrating injuries that may have involved a major vein and an adjacent bronchus. When he was placed on the respirator, the air was forced through from the tracheobronchial tree into the vein, and thus into the heart.

Fat embolism (choice B) is seen with multiple long bone fractures, and the symptomatology is respiratory failure.

Myocardial infarction (choice C) would be extremely unlikely in a young man who was never hypotensive, and never showed arrhythmias.

Pulmonary embolus (choice D) is seen late in the postoperative period after several days of reduced mobility. This man would have had no opportunity to develop clots in major veins in such short clinical course.

Tension pneumothorax (choice E) would be unlikely to develop with a chest tube in place. However, even if we assume the tube was clogged or kinked and thus not functioning properly, a tension pneumothorax does not cause sudden death: it causes progressive hemodynamic shock and respiratory distress.
Q-409

A 20-yr-old pregnant woman is experiencing rapidly progressive hearing loss. Several relatives in her family developed hearing loss before the age of 25. Otoscopic examination shows normal tympanic membranes bilaterally, hearing testing shows a conductive hearing loss with one ear being affected more severely then the other. Which of the following is the most likely diagnosis:

A. Acoustic neuroma.
B. Chronic otitis media.
C. Otosclerosis.
D. Meniere disease.
E. Presbycusis.

EXPLANATION

The correct answer is C. This is otosclerosis, which is an often hereditary (autosomal dominant) disease in which new, immature bone with abundant vascular channels cause ankylosis of the stapedial foot plate. This causes progressive conductive (and in severe cases sensory) hearing loss which may become clinically significant in the late teens to early twenties. (While otosclerotic lesions occur in up to 10% of Caucasian adults, significant hearing loss occurs in only about 10% of patients with bony lesions. ) Pregnancy may cause the condition to progress more rapidly. Many patients can be managed with hearing aids; severe cases may respond to removal of the stapes with implantation of a prosthesis.

Acoustic neuroma (choice A) would usually be unilateral, and would cause tinnitus, hearing loss, and sometimes dizziness and unsteadiness.

Chronic otitis media (choice B) would produce an obviously scarred or inflamed tympanic membrane.

Meniere disease (choice D) causes recurrent severe vertigo that may be accompanied by sensory hearing loss, tinnitus, and a feeling of fullness in the ear.

Presbycusis (choice E) is the common sensorineural hearing loss seen with aging.
Q-410
A 25-yr-old patient with asthma arrives at the ER with extreme shortness of breath. He has been compliant with his medications which are metaproterenol and inhaled betamethasone. Over the past 6-hours his wheezing and shortness of breath have become increasingly severe. At present his blood pressure is 136/84 and with deep inspiration falls to 116/56, his pulse is 126 and respirations are 32 and labored. There is retraction of sternoclidomastoid muscle and with inspiration there are soft wheezes and poor air movement diffusely throughout both lung fields. His peak expiratory flow rate is 60 L/min and he is immediately started on albuterol nebulizer and given IV hydrocortisone. His arterial blood gas revealed pH of 7.55, PCO₂ of 20 mmHg and PO₂ of 60 mmHg. 20-minutes later a repeat peak flow rate is still 60 L/min. A repeat arterial blood gas reveals that his blood pH is now 7.46, his PCO₂ is now 34 mmHg and PO₂ is 64 mmHg. Which of the following is the most appropriate next step in management.

A. Administer IV epinephrine.
B. Administer 100% oxygen via a tight fitting facemask.
C. Administer subcutaneous epinephrine.
D. Prepare for intubation.
E. Place a right thoracostomy tube.

EXPLANATION
The correct answer is D. This patient is having a very severe asthmatic attack, as demonstrated by his severe shortness of breath, use of accessory muscles of respiration, and variation in blood pressure with breathing (due to establishing a very negative intrathoracic pressure with forced attempts at inspiration). The initial pO₂ is markedly decreased at 60 (compared to the normal 100) mm Hg. His pCO₂ is also decreased at 21 mm Hg initially, due to "blowing off CO₂" with his increased respirations while trying to get enough oxygen. This causes his respiratory alkalosis with pH 7.55. He is then treated, but the treatment improves his pO₂ only slightly. Despite this, his pCO₂ rises, and his pH returns toward normal. This does not mean he is getting better. Instead, we are seeing worsening respiratory failure as his ability to ventilate decreases, causing the inappropriate rise in pCO₂ even though he is still very badly hypoxic. This patient should therefore be prepared for possible intubation if there is not immediate improvement.

Epinephrine (choices A and C) no longer is used in the management protocols of acute asthma because of its high rate of toxicity.

Administering 100% oxygen (choice B) may be an adjunctive therapy, but at this point the patient is probably saturating above 90% anyway.

There is no indication of a pneumothorax in this patient, so there is no need for a chest tube (choice E).
A 45-yr-old woman is admitted to the hospital after being diagnosed with post-streptococcal glomerulonephritis. The patient was well until three-weeks ago when she noticed severe body swelling and blood in her urine. Two-weeks prior to that she had severe upper respiratory tract infection with a sore throat and high fever. She sought no treatment at that time. She finally presents to the ER because her shoes no longer fit. On admission her creatinine level was 6.6 mg/dl and she was noted to have 1 gm of protein in her urine/day. The patient has a dialysis catheter placed and hemodialysis was started on hospital day three for hyperkalemia. Which of the following dietary supplements or regimens most likely benefit this patient.

A. Calcium supplementation.
B. High protein diet.
C. Low-fat diet.
D. Vitamin C supplementation.
E. Vitamin E supplementation.

EXPLANATION

The correct answer is A. Renal failure wreaks havoc on a number of metabolic functions. One of these is calcium homeostasis. Renal failure patients waste calcium and develop secondary hyperparathyroidism in an attempt to correct the hypocalcemia. This leads to bone calcium deficits and pathologic bone lesions. Calcium supplementation slows this process.

In this patient, a high-protein diet (choice B) would worsen her renal condition. There is evidence that high-protein diets are associated with worsening renal function in patients with diabetes or nephrotic syndrome.

Although the benefits of a low-fat diet (choice C) are well known in terms of cardiovascular benefit, there is little additional benefit that is extended to this specific patient.

Supplementation with vitamin C (choice D) or vitamin E (choice E) is often recommended to patients in the context of improving nutritional status during a chronic illness. Despite some anecdotal evidence, there is little substantial evidence that there is any benefit to such supplementation.
Q 412

The CT-scan shows the findings in a 28-yr-old man who sustained a closed head injury in a motor vehicle accident. The hyperdense areas anterior to the temporal poles, posterior to the left occipital lobe represent acute hematomas. This patient is at risk of developing which of the following forms of cerebral herniations.

A. Cerebellar tonsillar herniation.
B. Subfalcine (cingulate) herniation.
C. Reverse cerebellar herniation.
D. Transcalvarial herniation.
E. Tentorial uncal herniation.

EXPLANATION

The correct answer is E. Blood accumulating in the supratentorial compartment, as well as any rapidly growing space-occupying lesion in this region, may lead to displacement of the uncus over the edge of the incisura of the tentorium. This is a grave complication referred to as uncal or transtentorial herniation. The herniated uncus will compress the oculomotor nerve, the posterior cerebral artery, and the brainstem. The pathophysiologic consequences include oculomotor paralysis (manifesting with fixed and dilated pupil on the same side), ipsilateral infarction of the occipital lobe, and hemorrhages within the midbrain and pons. The latter may result in respiratory paralysis and death. This clinical case outlines the importance of two factors in brain injuries, i.e., development of edema and the fact that the brain is enclosed within rigid walls. Almost any pathologic process in the brain (e.g., bleeding, infarction, tumors) is associated with edema and swelling of the parenchyma, which inevitably leads to displacement of structures and compression of adjacent regions.

Cerebellar tonsillar herniation (choice A) refers to downward displacement of the cerebellar tonsils through the foramen of magnum. This results from space-occupying lesions in the infratentorial compartment, such as bleeding and tumors. It leads to compression of the medulla and death by cardiorespiratory arrest.

Subfalcine (cingulate) herniation (choice B) describes the lateral displacement of the cingulate gyrus beneath the falx cerebri. This event is caused by space-occupying masses in the cerebral hemisphere. It leads to compression of the anterior cerebral artery and infarction of dependent cerebral territories (mostly the medial portion of the frontal and parietal lobes).

Reverse cerebellar herniation (choice C) is a rare form of herniation due to midbrain lesions (again, hemorrhages and tumors) that push the midbrain upward through the incisura of the tentorium.

Transcalvarial herniation (choice D) may develop in open (i.e., accompanied by calvarial bone fractures) head injuries if brain parenchyma is displaced outside the cranial cavity through a calvarial defect.
Q-413
A 26-yr-old primigravid woman at 12-week gestation comes to the physician because of pain and swelling in her right thigh. She first noted the onset of the pain 2-days ago and since then it has grown worse. An ultrasound study performed on her leg extremity venous system reveals evidence of proximal thrombus in her right leg. She is started on low-molecular weight heparin injection. Which of the following is an advantage of low-molecular weight heparin over unfractioned heparin.

A. Low-molecular weight heparin has a shorter half-life.
B. Low-molecular weight heparin is cheaper.
C. Low-molecular weight heparin is less likely to cause birth defects.
D. Low-molecular weight heparin is less likely to cause thrombocytopenia.
E. Low-molecular weight heparin is less likely to cross placenta.

EXPLANATION
The correct answer is D. This patient has a deep venous thrombosis (DVT) in her right lower extremity. Pregnancy is a risk factor for the development of DVTs because of alterations in coagulation factors, venous stasis, and, often, decreased physical activity. It is essential that DVT during pregnancy be treated so that the thrombus does not proliferate or embolize and so that new thrombi do not form. Coumadin is contraindicated during the first trimester because of the risk of birth defects in fetuses exposed to this drug. Coumadin embryopathy is a syndrome consisting of nasal hypoplasia and stippled vertebral and femoral epiphyses. Second- and third-trimester exposure to Coumadin can lead to hydrocephaly, microcephaly, ophthalmologic anomalies, fetal growth retardation, and developmental delay. Low-molecular-weight heparin has been shown to be an excellent anticoagulant because it has a longer half-life and a more predictable dose-response relationship compared with unfractionated heparin, which allows once- or twice-daily dosing without the need for frequent laboratory monitoring of the prothrombin time and activated partial thromboplastin time. Low-molecular-weight heparin is also less likely to cause thrombocytopenia and hemorrhagic complications than unfractionated heparin.

Low-molecular-weight heparin does not have a shorter half-life (choice A) than unfractionated heparin. In fact, low-molecular-weight heparin has a longer half-life, and it is this quality that allows for once- or twice-daily dosing.

Low-molecular-weight heparin is not cheaper (choice B) than unfractionated heparin. Low-molecular-weight heparin itself is more expensive, but there is a cost advantage in that less frequent laboratory monitoring is needed.

Neither low-molecular-weight heparin nor unfractionated heparin is likely to cause birth defects (choice C). Neither crosses the placenta (choice E) and neither is associated with teratogenesis.
A 62-yr-old man with a 110 pack/year history of smoking presents with chest pain. He states that for the past few months he has been getting chest pressure localized to the substernal region radiating to the left arm on occasion. The pain occurs with mild exertion but never at rest. He further states that when he gets the pain it usually lasts about five-minutes but goes away with rest. He reports that his exercise tolerance is moderate and he gets dyspnea on exertion after a few blocks of walking. On physical examination he has no chest wall tenderness to palpation but a carotid bruit is heard and his dorsalis pedis pulses are decreased. He has no history of coronary disease but his family history is significant for his father having a myocardial infarction at age 56. He denies chest pain at this time. In addition to asserting his other coronary risk factor which of the following is the most appropriate diagnostic intervention.

A. Obtain a resting ECG.
B. Schedule for Echocardiogram.
C. Schedule the patient for an exercise treadmill test.
D. Schedule the patient for a non-urgent coronary angiography.
E. Schedule the patient for immediate coronary angiography.

EXPLANATION

The correct answer is C. This is a patient who has 3 clear risk factors for coronary artery disease (tobacco, family history and age) and based on his physical examination, likely has severe peripheral vascular disease. He has, by definition, typical chest pain, so called "new onset angina". He is a prime patient to have significant coronary disease, and thus we suspect ischemia as a cause for his pain. As a surrogate for coronary angiography, which actually shows anatomy, an exercise treadmill test allows us to detect ECG changes of ischemia with activity and thus stratify this patient as requiring intervention (such as percutaneous transluminal coronary angioplasty, or coronary artery bypass grafts), or perhaps angiography to better evaluate his anatomy.

A resting ECG (choice A) is appropriate, but not the most appropriate, given that he is pain-free at present and one would not expect to see any ECG changes associated with ischemia.

A cardiac echocardiogram (choice B) will likely be performed, given his dyspnea on exertion, but is not an appropriate test in the triaging of suspected ischemic chest pain. In some centers a "stress-echo", specifically a dobutamine echocardiogram, is used to evaluate ischemic potential.

A non-urgent coronary angiography (choice D) is also inappropriate since angiography is an invasive procedure reserved for people that have had equivocal results from less invasive diagnostic procedures, or are having signs of crescendo angina. This patient has new angina, but it is "typical" angina in that it is exertional.

An immediate coronary angiogram (choice E) is clearly not indicated as the patient is not having active ischemia or a myocardial infarction requiring reperfusion.
Q-415

A 36-yr-old woman comes to a psychiatrist for an initial appointment after relocating from her several states away due to a transfer of her job. She is on lithium for bipolar disorder and has been stable for several years after two manic episodes in her early thirties. She was previously seen by a psychiatrist every two-months and had blood drawn for routine monitoring related to her lithium treatment every 6-months. Since it has been about 8-months since her last appointment, the psychiatrist decides to order the lab work and to see the patient back in one-week to finish gathering history. To review the lab results and to provide the patient with another prescription which of the following lab studies would be most appropriate for the physician to order:

A. Liver transaminases.
B. Platelet count.
C. Thyroid stimulating hormone.
D. Urinalysis.
E. Vitamin B12 levels.

EXPLANATION

The correct answer is C. Lithium affects thyroid function and thyroid-stimulating hormone (TSH) levels should be monitored every 6-12 months. Lithium often causes a generally benign and often transient decrease in the concentration of thyroid hormones. About 30% of patients receiving long-term treatment with lithium will have elevated TSH levels. If symptoms of hypothyroidism emerge, treatment with levothyroxine may be indicated. During routine monitoring of lithium maintenance treatment, lithium plasma concentration and serum creatinine should also be measured periodically.

Liver transaminases (choice A) are not affected by lithium treatment. Lithium is almost entirely eliminated by the kidneys. During treatment with valproate, another mood stabilizer, liver transaminases are monitored. A significant portion of patients treated with valproate will have an elevation in liver transaminases, which is usually asymptomatic and resolves with discontinuation of the drug.

Platelet count (choice B) is not affected by lithium treatment. However, treatment with valproate may cause thrombocytopenia and platelet dysfunction. Platelet count is usually monitored during treatment with valproate.

Urinalysis (choice D) would not be helpful in the routine monitoring of maintenance treatment with lithium. Lithium may cause polyuria and diabetes insipidus, which should be monitored clinically. When polyuria is significant, renal function should be evaluated and followed up with a 24-hour urine collection for creatinine clearance and with consultation with a nephrologist.

Vitamin B12 (choice E) is often ordered in the evaluation of dementia, psychosis, and mood disorders. It would not be a routine part of lithium maintenance monitoring.
A 59-yr-old man presents to his primary care physician with shortness of breath. The patient has been coming to this office for many years for treatment of osteoarthritis. He has a long smoking history of greater than 150 packs/year. He routinely takes only a non-steroidal anti-inflammatory agent for pain. He presents with five-days of fever and chills as well as productive cough. He has not been hospitalized recently and lives at home with his wife and no sick contacts. The patient reports a slowly worsening and progressive shortness of breath even with minimal exertion. There is no associated chest pain or pressure. The patient’s pulmonary status is evaluated with pulmonary function testing. Which of the following are the most representative results for this patient with moderate COPD.

A. FEV1 2.1 L, FEV1/FVC 0.9, residual volume 2 L, total lung capacity 7 L.
B. FEV1 0.9 L, FEV1/FVC 0.8, residual volume 3.5 L, total lung capacity 9 L.
C. FEV1 2.6 L, FEV1/FVC 0.8, residual volume 1.3 L, total lung capacity 5 L.
D. FEV1 1.3 L, FEV1/FVC 0.9, residual volume 0.9 L, total lung capacity 9 L.
E. FEV1 0.9 L, FEV1/FVC 0.9, residual volume 1 L, total lung capacity 12 L.

EXPLANATION

The correct answer is B. Chronic obstructive pulmonary disease (COPD) is the prototypical obstructive lung disease. Typical intrathoracic obstruction causes a decreased amount of flow on exhalation [forced expiration in 1 second (FEV1)], an increased amount of air left in the lungs at the end of a maximal expiration (residual volume), and an increased total lung capacity (TLC). The ratio of FEV1 to forced vital capacity (FVC) stays relatively unchanged until late in the COPD course, when FVC drops precipitously.

FEV1 2.1 L, FEV1/FVC 0.9, residual volume 2.0 L, total lung capacity 7 L (choice A) is representative of normal PFTs.

FEV1 2.6 L, FEV1/FVC 0.8, residual volume 1.3 L, total lung capacity 5 L (choice C) is representative of restrictive lung disease.

FEV1 1.3 L, FEV1/FVC 0.9, residual volume 0.9 L, total lung capacity 9 L (choice D) is consistent with restrictive lung disease, except for the increased TLC.

FEV1 0.9 L, FEV1/FVC 0.9, residual volume 1.0 L, total lung capacity 12 L (choice E) is consistent with obstructive lung disease, except for the low residual volume, which is more reflective of severe restrictive physiology.
A 41-yr-old ma presents to his physician for a routine physical examination. He is new to this office and brings his previous medical records with him. He has no significant past medical history but he does have a strong family history for cancer and heart disease. His father and brother both had myocardial infarction before age 55 and his sister, mother and aunt had breast cancer. He exercises regularly and eats well with most of his diet being low in saturated fats and cholesterol. He smokes one pack of cigarettes/week. His review of systems is unremarkable. He is very anxious and would like only minimal interventions done because of his good health. Which of the following is an age appropriate screening test in this patient.

A. Fasting lipid profile.
B. Non-fasting total cholesterol level.
C. Oral glucose tolerance test.
D. Prostate examination.
E. Sigmoidoscopy.

EXPLANATION

The correct answer is B. The current recommendations for routine, age-appropriate screening are based, in some measure, on data from clinical trials. Depending on the source of the recommendations, there is considerable variability in these recommendations. One of the more agreed on recommendations is that, at least every 5 years, a random cholesterol level should be checked.

A fasting lipid profile (choice A) is usually obtained only after a screening cholesterol is shown to be greater than 240 mg/dL.

An oral glucose tolerance test (OGTT) (choice C) is given to pregnant women to screen for gestational diabetes. There is no current recommendation for using OGTT in routine screening practice in any age group.

The incidence of prostate cancer is age-related and becomes reasonably prevalent after age 50. Therefore, prostate examinations (choice D) are recommended annually after age 50. Like prostate cancer, colon cancer is also age-related and begins to have significant incidence after the 5th decade.

Sigmoidoscopy (choice E) is indicated every 3-5 years after age 50 to monitor for lesions up to the splenic flexure. Colonoscopy is necessary to survey the entire colon.
Q-418

A 16-yr-old female presents to the ER with severe right-sided abdominal pain. Her last menstrual period was two-weeks ago and felt to be normal. She displays painful difficulty in positioning herself on the examination table. Her temperature is 38.5 C (101.3 F), blood pressure is 128/75, pulse is 80 and respirations are 22. Examination of the throat reveals mild pharyngitis. Her abdomen is diffusely tender specifically the lower abdomen. Rectal examination reveals tenderness anteriorly on the right side. Stool is guaiac-negative. The pelvic examination is performed and there is evidence of cervical tenderness and questionable fullness in the right adnexal area. Which of the following is the most likely diagnosis.

A. Ovarian cyst.
B. Pyelonephritis.
C. Pelvic inflammatory disease.
D. Costipation.
E. Endometriosis.

EXPLANATION

The correct answer is C. Pelvic inflammatory disease (PID) can be a difficult diagnosis to make in a teenage girl. There may be a history of abnormal uterine bleeding and dysmenorrhea. The teenager may not always be forthright with information about sexual activity. Most patients with PID have signs of abdominal pain, lower abdominal tenderness, and the pelvic examination reveals cervical motion tenderness. In addition, the pelvic examination may reveal purulent cervical discharge, and an adnexal mass or tenderness may be present. Fever over 38.0 C is frequently present. Laboratory tests may reveal an elevated white blood cell count and a sedimentation rate greater than 15 mm/hr. The most common pathogens in PID are the gonococcus and Chlamydia. Less frequently, PID is caused by a mixed infection with anaerobic and aerobic bacteria. In this case, the emergency physician was initially concerned the patient might have an ectopic pregnancy, but a serum hCG was performed and the result was negative. An ectopic pregnancy may have been more likely if there had been adnexal fullness and tenderness on one side without pain on cervical motion.
An ovarian cyst (choice A) would not cause cervical motion tenderness. Adnexal tenderness would be present, but not fullness. Cervical cultures for gonorrhea and Chlamydia would be negative. A pelvic ultrasound would be helpful in differentiating an ovarian cyst from a tubo-ovarian abscess.

In the absence of back pain or costovertebral tenderness, pyelonephritis (choice B) would be unlikely. There is no mention of the results of a urinalysis or urine culture tests.

Constipation (choice D) would be unlikely to result in right lower quadrant pain. In older children and adolescents, constipation may be a cause of left upper quadrant pain or referred pain to the left lower chest area. It is always important in a pediatric cases of abdominal pain to obtain a history of bowel movements.

Endometriosis (choice E) usually has a much more chronic history of pain episodes. Frequently there may be intermenstrual bleeding episodes. A family history of endometriosis may be helpful. Importantly, the presence of cervical motion tenderness favors a diagnosis of pelvic inflammatory disease.
A 45-yr-old woman presents to the physician because her husband complains that she snores very loudly while sleeping. She describes how often she feels tired throughout the course of the day and never feels very rested. Her physical examination appears normal except for obesity. She is 165cm (5'5") tall and weighs approximately 77 kg (170 lb). According to her husband she seems to stop breathing at times during the night. Which of the following is the most likely diagnosis.

A. Catalepsy.
B. Kleine-Levin syndrome.
C. Narcolepsy.
D. Primary hypersomnia.
E. Sleep apnea.

EXPLANATION

The correct answer is E. Sleep apnea is characterized by multiple periods of cessation of breathing during sleep (apnea), daytime sleepiness, and loud snoring. Its prevalence often correlates with obesity.

Catalepsy (choice A) is a disorder in which a person maintains the position of the body into which he or she is placed. It is most often seen in severe cases of catatonic schizophrenia.

Kleine-Levin syndrome (choice B) is a disorder most commonly seen in adolescent boys, in which there are alternating periods of bulimia and hypersomnia.

Narcolepsy (choice C) is a disturbance of sleep known as a dyssomnia, in which normal daytime activity is interrupted by brief, recurrent, uncontrollable episodes of sleep.

Primary hypersomnia (choice D), by definition, is a complaint of excessive sleepiness for at least a month characterized by either prolonged sleep episodes or daytime sleep episodes that occur almost daily.
A 24-yr-old woman comes to the physician because of right quadrant abdominal pain. She has had pain off and on for the past month but it is now increasing. She has no other symptoms and no medical problems. Examination reveals mildly tender right adnexal mass. Pelvic ultrasound shows a 5cm right adnexal complex cyst. Urine hCG is negative. The patient is taken to the operating room for laparotomy and right ovarian cystectomy. Microscopically the cyst has cartilage, adipose tissue, intestinal tissue, hair and a calcification that appears to be a tooth. There is also a large amount of thyroid tissue. Which of the following is the most likely diagnosis.

A. Corpus luteum.
B. Ectopic pregnancy.
C. Gastric carcinoma.
D. Struma ovarii.
E. Thyroid carcinoma.

EXPLANATION

The correct answer is D. Cystic teratomas, also known as dermoid cysts, are the most common benign ovarian neoplasm. They account for approximately 1/3 of all ovarian neoplasms. They may be composed of a variety of cell types and have a mixture of tissues, as this patient has. When thyroid tissue makes up more than 50% of the teratoma, the dermoid is then referred to as struma ovarii. Approximately 3% of ovarian teratomas fall into this category and there is an association of struma ovarii with carcinoid tumor. Struma ovarii is unilateral in approximately 90% of patients and most (80%) are benign. Rarely struma ovarii is a cause of hyperthyroidism and patients with this manifestation may have symptoms of hyperthyroidism, as well as elevated levels of thyroid hormones and decreased levels of thyroid stimulating hormone (TSH). Treatment of struma ovarii is by surgical removal of the tumor.

A corpus luteum (choice A) is a common cause of complex cysts in young women. However, a corpus luteum does not contain thyroid tissue, hair, teeth, and other such tissues.

Ectopic pregnancy (choice B) can cause an adnexal mass, and a live ectopic may have various tissues in it when examined microscopically. However, this patient has a negative hCG, which effectively rules out ectopic pregnancy unless there is a laboratory error. Also, this cyst has tissues that are found in struma ovarii.

Gastric carcinoma (choice C) can metastasize to the ovary. In fact, 5% of all ovarian malignancies are metastases from other sites. The cancers that most frequently metastasize to the ovary are colon, breast, stomach, and pancreas. When a gastric carcinoma metastasizes to the ovary, it is termed a Krukenberg tumor and has the pathognomonic "signet-ring" cells.

Thyroid carcinoma (choice E) rarely metastasizes to the ovary and rarely would be found in combination with the other tissue elements that this patient’s cyst has.
Q-421

A 9-month old infant is brought in by her parents because she has an umbilical hernia. Physical examination shows an umbilical defect about 1cm in diameter with a small bulge when the girl cries. The hernial contents can be easily reduced. The hernia is not painful and the girl is otherwise asymptomatic. Which of the following is the most appropriate next step in management.

A. No therapy unless the hernias persists beyond the age of two-years.
B. Repeated injections of sclerosing agents.
C. Elective laparoscopic surgical repair.
D. Elective open surgical repair.
E. Urgent surgical repair.

EXPLANATION

The correct answer is A. Small umbilical hernias can close spontaneously up to the age of 2 years. Therefore, if they are asymptomatic and not posing an immediate risk of strangulation, they should be left alone. Obviously, every other answer offered in this question is wrong, because they all advocate aggressive therapy. However, we shall also review other ways in which they might be incorrect.

Sclerosing agents (choice B) are not appropriate to manage a hernial sac that communicates with the rest of the peritoneal cavity. Occasionally, if a surgical hernia repair is done when a large distal sac has to be left in place, it might be advisable to destroy the peritoneal lining with sclerosing agents so that it does not secrete fluid.

Laparoscopic hernia repair (choice C) makes sense when the size of the incision or incisions can be significantly reduced by the use of laparoscopy (for instance a bilateral inguinal hernia repair). In this case, however, one would need bigger incisions to introduce a TV camera and operating instruments than one would need to directly close a 1-cm superficial defect.

Elective open surgical repair (choice D) is what this little girl will need if she still has the hernia past her second birthday.

Urgent repair (choice E) would have been indicated if the hernia were tender, or if the girl had been vomiting or getting distended at the same time that the hernia became irreducible.
A 16-yr-old girl with an incomplete vaccination record received one dose of MMR vaccine during a doctor’s visit. One month later she learn that she is 9-weeks pregnant and she is concerned about the potential birth defects resulting from MMR vaccine. Which of the following most closely approximates the risk of birth defects resulting from MMR vaccine exposure during the first trimester.

A. 1%
B. 3%
C. 5%
D. 8%
E. 10%

EXPLANATION

The correct answer is A. There are no reported cases of congenital rubella syndrome (CRS) caused by exposure to the rubella vaccine during pregnancy. Among 226 pregnant women known to have received the rubella vaccine from 1971 to 1986, none of the infants developed any congenital malformation that is compatible to or similar to CRS.

It is recommended, however, that women of childbearing age should receive the rubella vaccine only if they state that they are not pregnant and that they have been counseled not to become pregnant for 3 months because of the theoretical risk of exposure to the rubella virus through vaccination. Should pregnancy occurs within 3 months after vaccination, the woman should be counseled about the theoretical risk. But, this is not an indication or a reason to terminate the pregnancy.
Q-423
A 45-yr-old chronic alcoholic presented to the ER five-years earlier with 24-hours of epigastric pain nausea and vomiting. He gradually recovered from his acute episode over the next five years. He is repeatedly admitted for similar symptoms. He then presents with gradual onset of weight loss, mid abdominal pain radiating to his back and steatorrhea. Which of the following has most likely occurred.

A. Cholangiocarcinoma.
B. Exocrine insufficiency of pancreas.
C. Gastric outlet obstruction.
D. Pancreatic carcinoma.
E. Scarring of the entire length of the bile duct.

EXPLANATION

The correct answer is B. Severe epigastric pain radiating to the back and accompanied by nausea and vomiting suggests pancreatitis. Pancreatitis is most likely to be encountered in alcoholics (such as this man) and patients with biliary tract disease. This patient has a history of recurrent alcoholic pancreatitis. The development of gradual weight loss, chronic pain radiating to the back, and steatorrhea suggests that he has now developed chronic pancreatitis. This condition is often complicated by both endocrine and exocrine insufficiency of the pancreas, secondary to loss of much of the tissue of the pancreas to the disease process.

Cholangiocarcinoma (choice A) produces jaundice, has a very poor prognosis, and usually occurs in patients with a prior history of primary sclerosing cholangitis.

Gastric outlet obstruction (choice C) would present with postprandial vomiting and early satiety.

Pancreatic adenocarcinoma (choice D) may also occur in this patient but is generally present in older individuals.

There is no evidence of scarring of the common bile duct (choice E), which would produce jaundice.
Q-424
A 70-yr-old man presents to his physician with an episode of apparently bloody urine. He denies prior episodes and has been previously healthy. He is not on any medications. In the office urinalysis confirms gross hematuria without proteinuria or casts. The patient denies any pain. The physical examination is normal. Which of the following is the most appropriate next step.

A. Pelvic CT-scan.
B. Trimethoprim-sulfmethoxazole.
C. Cystoscopy.
D. Renal angiogram.
E. Transrectal prostatic biopsy.

EXPLANATION

The correct answer is C. Hematuria may be caused by disorders such as tumors, urethritis, cystitis or prostatitis. The best way to narrow the differential is by direct visualization of the bladder and urethra with cystoscopy. This is relatively non-invasive and painless and is the fastest option.

A CT scan (choice A) may be helpful for detecting a renal tumor, pelvic abscess or mass. But the chances of missing a small lesion in the urological system are high and a cystoscopy must be completed first.

A course of trimethoprim-sulfamethoxazole (choice B) is used to treat urinary tract infections and prostatitis. Urinary tract infections are generally not painless.

A renal angiogram (choice D) would be needed to evaluate hypertension or worsening renal function in order to detect ailments such as renal artery stenosis.

A prostatic biopsy (choice E) may be needed if prostate cancer is suspected. Certainly the patient has the risk factor of increased age. However, with no history of urinary retention, this can be deferred until the cystoscopy.
Q-425
A 72-yr-old alcoholic man is brought to the ER by his children. They state that he has become increasingly confused over the past week and is unsteady on his feet. On physical examination ataxic gait, bilateral paralysis of lateral gaze and vertical and horizontal nystagmus are noted. Which of the following is the most appropriate next step in management.

A. Administration of IV dextrose.
B. Administration of IV mannitol.
C. Administration of IV thiamine.
D. CT-scan of the brain with contrast.
E. Lumbar puncture and examination of CSF.

EXPLANATION
The correct answer is C. This patient has Wernicke encephalopathy. This acute disorder occurs most commonly in chronic alcoholics and consists of a clinical triad of ophthalmoplegia, ataxia, and global confusion. Affected patients may complain of double vision or difficulty with balance. There is almost always horizontal nystagmus on lateral gaze. Vertical nystagmus may be present in 50% of cases. Bilateral, often asymmetric, lateral rectus palsies are characteristic and may develop rapidly. Bilateral ptosis or an apparent internuclear ophthalmoplegia occurs rarely. The treatment is immediate IV thiamine. If given quickly enough, recovery begins promptly. Nearly all patients with Wernicke encephalopathy recover from the global confusional state, but many are left with a residual disorder of memory (Korsakoff syndrome).

If IV dextrose (choice A) is given before thiamine, the encephalopathy may worsen.

IV mannitol (choice B) is helpful in conditions associated with increased intracranial pressure.

CT of the brain with contrast (choice D) is an appropriate step but not the next appropriate step in management. IV thiamine should be given first. CT scan of the head is helpful to evaluate for structural lesions, such as subdural hematoma.

Lumbar puncture and examination of CSF (choice E) is not the most appropriate next step either. In the workup of this patient, a lumbar puncture may help evaluate for a chronic infection, such as syphilis or tuberculosis or other processes causing those symptoms.
Q-426
A 23-yr-old woman calls her physician for the result of her Pap test. She has a history of chlamydia, she has never had an abnormal Pap. She has occasionally had unprotected intercourse. The physician informs her that the Pap is normal; the patient is relieved but wants to know whether this result could be wrong. The physician explains that the Pap test detects abnormal tests in roughly four of every five women who have abnormal cervical cells. Which of the following represents sensitivity of Pap test?

A. 0%.
B. 1%.
C. 20%.
D. 80%.
E. 100%.

EXPLANATION

The correct answer is D. The Pap test is an excellent method of screening for cervical cancer. It has a relatively low-cost and is noninvasive and effective. Use of the Pap for screening over the past 50 years has resulted in a 70% decrease in the mortality from cervical cancer. However, the test is not without its flaws. The primary drawback of the test is its high false-negative rate. In the case of the Pap, a false-negative is a woman who has abnormal cervical cells but is declared to have a normal Pap smear. These false-negative results can be caused by any of the steps in the process, including errors in sampling, preparation, screening, and interpretation. The larger the number of false-negative results, the lower is the sensitivity of a test. Sensitivity of a test is calculated by dividing the number of patients who have the disease and test positive for the disease by the total number of patients that have the disease. In the above example, four women who have abnormal cervical cells will test positive for abnormal cervical cells. This number (4) should then be divided by the total number of women with truly abnormal cells (5). This gives a result of 4/5 or 0.8 or 80%.

To state that the sensitivity of the Pap test is 0% (choice A) or 1% (choice B) is incorrect. If this were the case, it would mean that the Pap test would correctly identify none or only 1 of every 100 women with truly abnormal cervical cytology. This would make the Pap test a very poor or completely meaningless screening test.

A screening test that is 20% (choice C) sensitive is also a very poor screening test. A screening test should ideally have high sensitivity and specificity. A test that is has only 20% sensitivity would identify only 20 of every 100 women with a given disease. This would make it a very poor screening test.

A screening test that has 100% (choice E) sensitivity for a disease would be ideal. If the Pap test were 100% sensitive, it would mean that every woman with abnormal cervical cells would be correctly identified. However, this is not the case because of the possible errors that were described above. Also, efforts to increase the sensitivity of a screening test often lead to a loss of specificity and an increase in the percentage of false positives.
Q-427
A 70-yr-old woman with an aortic sclerosis is admitted with chest pain. An infarct is ruled out by cardiac enzymes but the patient has recurrent symptoms with heparin is weaned off. On hospitalization day-two she has right arm pain but absent brachial pulse on the right and a cold still right arm. Hematocrit is 34% and platelets are 30,000/mm$^3$, her partial thromboplastin time is 64 seconds. Which of the following is the most likely cause of this patient’s absent brachial pulse.

A. Embolization from aortic sclerosis.
B. Heparin induced thrombocytopenia.
C. Paradoxical embolus.
D. Hypercoagulable state from immobilization.
E. Vasospasm of the brachial artery.

EXPLANATION
The correct answer is B. Heparin-induced thrombocytopenia (HIT) is the result of platelet aggregation caused by heparin-induced antibodies. It is seen in 1% to 5% of patients on heparin. Therapy is discontinuation of the heparin and use of another anticoagulant, such as lepirudin. When the platelet count falls below 50,000/mm$^3$ the heparin should be stopped. HIT can lead to limb-threatening thromboses, as in this patient, and constitutes a medical emergency. Arterial thrombosis is a manifestation of the HIT syndrome.

Septic emboli or marantic emboli (choice A) may cause an ischemic limb as a result of occlusion of an artery. Treatment involves treatment of the underlying condition; valve replacement may be needed. Aortic sclerosis is the result of calcification or sclerosis of the aortic valve and is not associated with embolic events.

Paradoxical emboli (choice C) may be the result of a deep venous thrombosis passing through a patent foramen ovale and may be a cause of arterial occlusion as the clot moves from the venous to the arterial system. Treatment requires closure of the patent foramen ovale, either surgically or through catheterization.

Hypercoagulability from immobilization (choice D) typically causes deep venous thromboses. In such a situation, placement of a vena cava filter must be considered. Conditions predisposing a patient to hypercoagulability include trauma, stasis, and conditions such as cancer.

Brachial artery vasospasm (choice E) is a rare occurrence and should be transient. The patient may complain of hand discomfort, but, given the transient nature of the condition, a pulse should still be palpated and the extremity should not be cool. A patient with Raynaud’s phenomenon may exhibit such symptoms.
Q-428

A 30-yr-old woman has had a history since adolescence of multiple vague physical complaints including headache, nausea, bloating, abdominal pain, fatigue, dysmenorrhea, fainting and dysuria. She is now seen in a physician's office where she describes her current abdominal symptoms as the worst imaginable. On physical examination no abdominal stiffness or masses are noted, tenderness elicited but the site varies and it is not reproducible even in a minute or two later. On talking with the patient she does not seem concerned about her specific life events and leaves the physician with an impression that she has an underlying personality disorder, possibly borderline or antisocial. Which of the following is the most likely diagnosis.

A. Conversion disorder.
B. Hypochondriasis.
C. Malingering.
D. Munchausen syndrome.
E. Somatization disorder.

EXPLANATION

The correct answer is E. This patient has somatization disorder. The physical complaints are usually vague and not adequately explained by a physical disorder. Formal criteria for the diagnosis have been defined and include onset before age 30, symptoms involving at least four different body parts, two or more gastrointestinal symptoms, at least one reproductive or sexual symptom, and at least one neurologic symptom other than pain. Patients may have coexistent personality disorders, notably histrionic, borderline, and antisocial. Treatment is difficult, and the condition tends to wax and wane throughout life. Suicide is a definite risk with overtly depressed patients who have long-standing disease.

Conversion disorder (choice A) refers to the development of specific, usually dramatic, physical complaints in response to psychologic stress.

Hypochondriasis (choice B) is much more common than somatization disorder and is usually not as severe. (Note: in real life, the distinction may be difficult.)

Malingering (choice C) is feigning illness to avoid a specific social, school, or work situation. The specific situation involved can usually be elicited on questioning.

Munchausen syndrome (choice D) involves more elaborate and deliberate mimicking of medical conditions.
A 23-yr-old man is admitted to the medical service with a very severe asthma attack. He is also nauseous and has vomited twice today. Patient has a long history of severe asthma with multiple hospitalizations and one intubation three-years ago. Two days prior to the admission he was exposed to dust while moving a file cabinet in his basement, since that time he has worsening shortness of breath. He has tried home albuterol and ipratropium nebulizers as well as his standard cromolyn therapy but none of these interventions have successfully relieved these symptoms. In the hospital the man’s peak flow rate has decreased to almost 50% from baseline. Which of the following agents is most likely to be added to the patient’s therapy to alleviate his present symptoms.

A. Beclomethasone.
B. Disodium cromoglycate.
C. Hydrocortisone.
D. Prednisone.
E. Theophylline.

EXPLANATION

The correct answer is C. It would be most appropriate to add an IV steroidal agent, such as hydrocortisone, to augment the action of bronchodilators by reducing inflammation surrounding the airways.

Beclomethasone (choice A), a surface-acting steroid dispensed in aerosolized form, is used when the side effects of systemic steroids need to be avoided. Such agents, however, also have minimal utility in the acute treatment of bronchospasm.

Disodium cromoglycate (choice B) is a mast cell stabilizer that is used only for the prevention of bronchospasm due to asthma. Once bronchospasm is established, this type of agent has little utility.

An IV steroid is preferred over an oral steroid, such as prednisone (choice D), since this patient has a history of recent nausea and vomiting and, therefore, may have impaired absorption of oral medications. In addition, the time course of onset of an oral agent is too long to have any effect in an acute situation.

Theophylline (choice E), a methylxanthine phosphodiesterase inhibitor, is useful for the chronic control of asthma, but it has lesser utility in the acute treatment of bronchospasm.
Q-430

A 22-yr-old pregnant woman develops the gradual onset of severe low back pain during her tenth week of pregnancy. She begins taking ibuprofen for relief of her symptoms. She previously had a bleeding ulcer and was prescribed misoprostol which she began taking for prevention of ulcer recurrence. 48-hours later she has severe vaginal bleeding and it is determined that she had a completed abortion. Which of the following is the most likely explanation for this occurrence.

A. Antiphospholipid induced thrombosis.
B. Cyclo-oxygenase uterine contractions.
C. Factor-VIII deficiency induced hemorrhage.
D. Lipoxygenase induced uterine contractions.
E. Prostaglandin induced uterine contractions.

EXPLANATION

The correct answer is E. This patient has taken the prostaglandin misoprostol, which is designed to prevent ulcer occurrence with the use of NSAIDs. It is strictly prohibited during pregnancy since it has the predictable effect of inducing uterine smooth muscle contractions. This has actually become part of an "at-home" abortion method using the combination of oral methotrexate and misoprostol.

Antiphospholipid antibodies (choice A) may induce thrombosis of placental vessels and cause recurrent second-trimester abortions. However, there is no history to suggest this diagnosis in this patient.

Cyclooxygenase and lipoxygenase (choices B and D) are enzymes that are involved in arachidonic acid metabolism.

Similarly, there is no evidence given to suggest an underlying factor VIII deficiency (choice C).
A 52-yr-old carpenter complains of swelling in his right knee. It began two-days earlier. He denies any history of arthritis or trauma in that region. Until the swelling began he had been jogging for approximately two-miles daily. Over the past 48-hours his knee has become swollen and painful to weight bearing. His temperature is 38.2°C (100.7°F) and the knee has a tender effusion which is erythematous and warm. There is a limited range of motion. Which of the following would be most relevant in this patient's history.

A. Family history of rheumatoid arthritis.
B. History of bacterial gastroenteritis.
C. History of hepatitis B exposure.
D. History of a recent upper respiratory tract infection.
E. Unprotected sex with a prostitute.

EXPLANATION

The correct answer is E. A monoarticular arthritis with acute onset such as this patient has should raise the question of acute infectious arthritis. In this regard the major differential is between staphylococcus and gonococcus. The gonococcus is usually obtained through sexual contact and is now the most common cause of bacterial arthritis in adults. The organism spreads from infected mucosal surfaces to joints with the small joints of wrist, hands, knees and ankles most commonly affected. Involvement of the axial skeleton is uncommon. Patient with gonococcal arthritis may demonstrate features of disseminated gonococcal infection with a five-seven day history of fever and shaking chills. A variety of skin lesions may also be present including patechia, pustules, papules, hemorrhagic bullae or necrotic lesions. A history of migratory arthralgias and tenosynovitis may also precede the development of persistent inflammatory arthritis in one of a few joints.

Rheumatoid arthritis (choice A) rarely presents with monoarticular arthritis and is uncommon in men. Although a bacterial gastroenteritis (choice B) does not cause a monoarticular arthritis it may cause Reiter's syndrome with diffuse arthralgias and conjunctivitis. Hepatitis B (choice C) may be associated with serum sickness like illness which affects multiple joints with arthralgias. Upper respiratory tract infections (choice D) are not associated with monoarticular arthritis.
A 4-yr-old boy presents with severe pain in both of his legs. On physical examination his temperature is 37.7 °C (99.8 °F), blood pressure is 108/68 mmHg, pulse is 96 and respirations are 17/min. He is noted to have marked pallor on his lips and palpebral conjunctiva. Numerous purpura and patechiae are noted on his skin. His spleen is palpable 3cm below his left costal margin. Laboratory evaluation reveals a white blood cell count of 1,600/mm$^3$, hemoglobin 6.1 gm/dl and platelets 36,000/mm$^3$. Which of the following diagnosis is most consistent with these findings.

A. Acute lymphocytic leukemia.
B. Aplastic anemia.
C. Henoch schonlein purpura.
D. Immune thrombocytopenic purpura.
E. Thrombotic thrombocytopenic purpura.

**EXPLANATION**

The correct answer is A. The boy most likely has ALL. The signs of ALL results from suppressed marrow function and invasion of the organs by leukemic blasts. Anemia is present at diagnosis and in most of the patients can cause fatigue, pallor and angina or even heart failure. Thrombocytopenia is usually present and many patients have clinically evident bleeding at diagnosis in the form of patechiae, purpura, ecchymosis, bleeding gums, epistaxis or hemorrhage. Most patients with ALL are significantly granulocytopenic. In addition to suppressing normal function, marrow function, leukemic cells can infiltrate normal organs. Enlargement of spleen the lymphnodes, spleen and liver is common at diagnosis. Bone pain thought to result from leukemic infiltration of periostium or expansion of the medullary cavity is a common complain. ALL is most common form of cancer and the second leading cause of death in children younger then 15-years. ALL has a maximal incidence between two to ten years of age with a second gradual rise in frequency later in life.
Children with aplastic anemia (choice B) do not usually have bone pain splenomegaly or hepatomegaly.

Henoch shonlein purpura (choice C) is a vasculitis and presents with lower extremity purpura without thrombocytopenia.

Immune thrombocytopenic purpura (choice D) is a childhood disease that often follows an acute infection. It is characterized by a decrease in circulating platelets less then 100,000 in the absence of toxic exposure or a disease associated with low platelet count. It occurs as a secondary effect of peripheral platelets destruction as well as decreased platelet production. It usually resolves spontaneously with in two months.

Thrombotic thrombocytopenic purpura (choice E) is a systemic disorder characterized by occlusion of the microcirculation by platelet clumps. The complete clinical picture is present in fewer the 30% cases includes consumptive thrombocytopenia, microangiopathic hemolytic anemia, fever, renal dysfunction and fluctuating neurologic deficits.
A 39-yr-old woman gravida 3, para 2 at 40-weeks gestation comes to the labor and delivery ward after a gush of fluid and regular painful contraction every two-minutes. She is found to have rupture of membranes and to have a cervix that is 5-cm dilated, a fetus with vertex presentation and reassuring fetal heart rate tracing. She is admitted to the labor and delivery ward; 2-hours later she states that she feels hot and sweaty. Temperature is 38.3 C (101 F), she has mild uterine tenderness, her cervix is now 8-cm dilated and the fetal heart rate tracing is reassuring. Which of the following is the most appropriate management of this patient.

A. Administer antibiotics to the mother after vaginal delivery.
B. Administer antibiotics to the mother now and allow vaginal delivery.
C. Perform cesarian delivery.
D. Perform cesarian delivery and then administer antibiotics to the mother.
E. Give intra-amniotic injection of antibiotics.

EXPLANATION

The correct answer is B. Chorioamnionitis is an infection that can develop at any time during or before delivery. The most common findings of chorioamnionitis in this patient are fever and uterine tenderness and elevated fetal heart rate are also often seen. The patient has an elevated temperature and uterine tenderness which makes the diagnosis of chorioamnionitis. It is essential that antibiotics be started immediately because prompt initiation of antibiotics, once the diagnosis of chorioamnionitis is made results in better maternal and fetal outcome. It is also essential that broad-spectrum antibiotics should be chosen because mixed infections are common including aerobes and anaerobes. The most commonly chosen regimen is ampicillin or penicillin with gentamicin. In terms of mode of delivery, vaginal delivery is acceptable in patients with chorioamnionitis while it is desirable to have an expeditious delivery. Chorioamnionitis is not an indication for cesarian delivery.

Choices A, C, D and E are incorrect.
Q-434

After a grand mal seizure a 32-yr-old epileptic woman notices pain in her right shoulder and she cannot move it. She goes to a minor emergency clinic where she has a limited physical examination and an antero-posterior x-ray film of her shoulder. The film is read as negative and she is diagnosed as having sprain and is given pain medication. The next-day she still has pain and cannot move her arm. She comes to the ER holding her arm close to the body with her hand resting on her anterior chest wall. Which of the following is the most likely diagnosis.

A. Acromio-clavicular separation.
B. Anterior dislocation of shoulder.
C. Articular cartilage crushing.
D. Posterior dislocation of shoulder.
E. Torn teres major and teres minor muscles.

EXPLANATION

Correct answer is D. The mechanism of injury is massive contraction of all muscles in the area and missed diagnosis on a single view of AP-film are classic for the posterior dislocation of the shoulder. Axillary view x-ray films are necessary to make the diagnosis.

Acromio-clavicular separation (choice A) would have been obvious on physical examination and on x-ray films taken.

Anterior dislocation (choice B) is far more common then posterior dislocation, however it happens with regular trauma, has a very typical posture that arm is held close to the body but the forearm and the hand are rotated out as ready to shake hands and is easily seen on x-ray films.

Crushing of the articular cartilage (choice C) and tearing of shoulder girdle muscle (choice E) are not common injuries following seizures.
A 56-yr-old man has been having bloody bowel movements on and off for the past several weeks. He reports that the blood is bright red, it coats the outside of the stool and he can see it in the toilet bowl before he wipes himself. When he does so there is also blood on the toilet paper. After further questioning it is ascertained that he has been constipated for the past two-months and the caliber of the stool has changed. They are now pencil thin rather then usual diameter of an inch or so that were costmary to him. He has no pain. Which of the following is the most likely diagnosis.

A. Anal fissure.
B. Cancer of the cecum.
C. Cancer of the rectum.
D. External hemorrhoids.
E. Internal hemorrhoids.

EXPLANATION

The correct answer is C. Combination of blood coating the outside of stool, change in bowel habits and change in stool caliber spells out cancer of rectum in this age group.

Anal fissure (choice A) is typically seen in young women who have very painful bowel movements with streaks of blood. Pain is the dominant symptom in this condition.

Cancer of the cecum (choice B) leads to anemia because of occult blood in the stool but blood is rarely seen, further there is no change in bowel habit and stool caliber when the tumor is so proximal in the colon.

External hemorrhoids (choice D) hurt and itch but they rarely bleed.

Internal hemorrhoids (choice E) do not bleed but they do so without changing the pattern of bowel movement or the caliber of the stool.
Q-436

A 45-yr-old woman who wears high-heeled pointed shoes complains of pain in the forefoot after prolonged standing and walking. Occasionally she also experiences numbness, tingling sensation and burning in the area. Physical examination shows no obvious deformity and a very tender spot in the third interspace between the third and the fourth toe. There is no redness, limitation of motion or signs of inflammation. Which of the following is the most likely diagnosis.

A. Gout.
B. Helix rigidus.
C. Metatarsophalangeal articulation pain.
D. Morton's neuroma.
E. Plantar fascitis.

EXPLANATION

The correct answer is D. The location and circumstances are classic for Morton's neuroma, a benign neuroma of third plantar inter-digital nerve.

Gout (choice A) happens to obese, elderly males. Redness and other signs of inflammation are very evident.

Helix rigidus (choice B) is osteoarthritis of first metatarsophalangeal joint. There is deformity and limitation of motion. The joint is tender on physical examination.

Metatarsophalangeal articulation pain (choice C) is also associated with misalignment of joint surface. There is pain when examining the joint and there is no history of numbness, burning or tingling.

Plantar fascitis (choice E) produces sharp pain on physical examination when pressing the plantar surface of the heel.
A new technique for screening lymphomas is being developed. This involves taking blood from candidates, attaching antibodies to a unique antigen CD33-test and analyzing the blood through flow cytometry. Those showing positivity on the test with the presence of the antigen CD33-test are thought to have lymphoma. This is further collaborated with a bone marrow biopsy. After the appropriate human subjects ethics committee has approved this study the study is undertaken in 100 patients. The results are as follows:

<table>
<thead>
<tr>
<th>CD33-TEST</th>
<th>BIOPSY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>25</td>
</tr>
<tr>
<td>Negative</td>
<td>40</td>
</tr>
</tbody>
</table>

Which of the following is the new test's sensitivity.

A. 33.3%
B. 38.5%
C. 57.1%
D. 62.5%
E. 100%

EXPLANATION

The correct answer is D. The sensitivity of a test is the probability that the results will be positive in patients who actually have the disease. It reflects the test ability to accurately diagnose all cases of the disease when data is arranged as above. The sensitivity is $A/A+C$ in a two-by-two table.

The specificity of a test is the probability that the test result will be negative in those without the disease.

If the patient has the disease but has a negative test result, the result is termed as false negative. It is $D/B+D$.

The positive predictive value of a test is the probability that an individual who gets a positive test result actually has the disease. It is $A/A+B$.

The negative predictive value of a test is the probability that an individual who gets a negative test result does not have the disease. It is $D/C+D$.

The sensitivity would be 100% if the screening test were as accurate as the gold standard biopsy and would become new gold standard.
A 5-month-old infant has a urine output of less than 0.1 ml/kg/hr, shortly after undergoing major surgery. On examination he has generalized edema, his blood pressure is 94/48, pulse is 140 and respirations are 20. His BUN is 38 mg/dl and serum creatinine is 1.4 mg/dl. Initial urinanalysis show a specific gravity of 1.018 and +2 protein. Microscopic examination of the urine sample reveals 1 WBC/hpf, 18 RBC/hpf and 5 granular casts/hpf. His fractional excretion of sodium is 3.2. Which of the following is the most appropriate next step in diagnosis.

A. CT-scan of the abdomen and pelvis.
B. Cystourethrography.
C. IV pyelography.
D. Renal biopsy.
E. Renal ultrasonography.

EXPLANATION

The correct answer is E. The infant developed ARF in the immediate post-operative period as manifested by increase is BUN and serum creatinine and decrease in urine output. ARF can be classified into pre-renal, renal and post-renal. Pre-renal causes include hypovolemia due to severe dehydration, hemorrhage and secondary to hypotension due to shock. Renal causes include acute tubular necrosis, parenchymal disorders e.g. glumerulonephritis and vascular disorders e.g. renal artery thrombosis or renal vein thrombosis. Post-renal causes include urethral obstruction and ureteral obstruction.

The infant most likely has ATN which is caused by ischemia or toxic injury to the nephrons. Ischemia can be caused by hypovolemia, low cardiac output states or renal vasoconstriction. Toxins include contrast agents, antibiotics, uric acid and myoglobin. ATN is characterized by mild proteinuria, microscopic hematuria and the presence of coarse granular casts in the urine.

A fractional excretion of sodium greater then 2%-2.5% in neonates is consistent with renal causes of ARF.

Renal ultrasonography is the imaging study of choice for this patient because it provides both anatomic and structural information about the kidneys. The study is non-invasive and can be easily done by the bedside. Doppler studies can also be done with ultrasound technology to assess the blood flow in the renal vessels, the aorta and the inferior vena cava.
Q-439
A 60-yr-old pediatrician develops headache of sudden onset, slurring of speech and confusion. He is brought to the ER where he arrives with a Glasgow coma scale score of 8. An emergency CT-scan of the head shows well-demarcated lobar bleeding involving the left frontal lobe, centered in the cortex and extending into the underlying white matter. The patient history is negative for hypertension or vascular risk factors. Which of the following is the most probable underlying cause of the patient's bleeding.

A. Berry aneurysm rupture.
B. Bridging vein tears.
C. Cerebral amyloid angiopathy.
D. Middle meningeal artery laceration.
E. Undiagnosed hypertension.

EXPLANATION

The correct answer is C. Cerebral amyloid angiopathy is due to deposition of A-beta amyloid, the same form that is associated with Alzheimer's disease in the small arteries and arterioles of the leptomeninges and brain. Intracerebral bleeding related to CAA occurs in the neocortex in a lobar distribution that is frontal, parietal, temporal and occipital lobe. The hematoma is readily identifiable by CT-scan and is centered in the cerebral cortex. Most patients are over 60 and blood is usually absent from the CSF. Patient suffering from CAA bleeding may not have Alzheimer's disease.

Berry aneurysm rupture (choice A) is the most common cause of subarachnoid bleeding. Berry aneurysm develops in the circle of Willis but most cases present as incidental autopsy findings. Increased risk of rupture is directly related to the size of the aneurysm. Hypertension is most important risk for rupture.

Bridging veins tears (choice B) causes sub-aural hemorrhages usually resulting from head traumas in patients with cerebral atrophies. Cerebral atrophy leading to stretching of bridging veins which are more likely to rupture even after slight traumatic events.

Middle meningeal artery laceration (choice D) is the most common cause of epidural hemorrhage which is virtually always traumatic in origin. CSF is free of blood in fact in patients with suspicion of epidural hematoma should not undergo spinal tap because of increased risk of fatal cerebral herniation.

Undiagnosed hypertension (choice E) primarily affects intraparenchymal arterioles and small arteries. Hypertensive bleeding is therefore intraparenchymal, basal ganglia, pons and cerebellum are the most commonly affected sites. Cortical bleeding is usually not related to hypertension.
Q-440
A 68-yr-old woman presents with obviously incarcerated umbilical hernia. She has gross abdominal distention, clinically dehydrated and reports persistent fecaloid vomiting for the past three-days. Although tired, weak and thirsty she is awake and alert and her sensorium is not particularly affected. Lab investigation reveals a serum sodium concentration of 118 Meq/l. Which of the following is the most likely physiological explanation for the serum sodium.

A. She has acute water intoxication.
B. She has been vomiting and trapping hypertonic solutions in the bowel lumen.
C. She has vomited and sequestered sodium-containing fluids and has retained endogenous and ingested water.
D. There must be a lab error because such a serum sodium would have produced coma.
E. Volume deprivation leads to renal wasting of sodium.

EXPLANATION

The correct answer is C. Gastrointestinal fluids have a sodium concentration very close to that of plasma. As they are lost internally or externally they should be replaced with isotonic sodium containing fluids but that is not what patients typically do at home. Thirsty, and unable to eat solid sodium containing foods they drink water, coke and tea, fluids without significant amounts of sodium which the body avidly retains because of severe volume depletion. Endogenous water from catabolic activities is also retained, dilutional hyponatermia eventually develops.
Q.441
An elderly man is involved in an automobile collision in which he hyperextends his neck. He develops paralysis and burning pain on both upper extremities while maintaining good motor functions in his legs. Which of the following is the most likely diagnosis.

A. Anterior cord syndrome.
B. Central cord syndrome.
C. Posterior cord syndrome.
D. Reflex sympathetic dystrophy.
E. Spinal cord hemisection.

EXPLANATION

The correct answer is B. the mechanism of injury is hyperextension and relative sparing of the lower extremity in the presence of upper extremity deficits are classic for the central cord syndrome.

In anterior cord syndrome (choice A) all functions are lost except for positional and vibratory sense. Those injuries occur with blow out fractures of vertebra bodies.

Posterior cord syndrome (choice C) is quite rare ands would show loss of positional and vibratory sense.

Reflex sympathetic dystrophy (choice D) produces agonizing burning pain, thus it is a good distracter for this question but it typically follows crushing injuries of the affected extremities and does not affect motion.

Hemisection of the spinal cord (choice E) produces loss of one set of functions on one side and a different set of functions on the other side. In addition it follows a clear-cut penetrating injury rather then hyperextension of the neck.
Q-442
A 7-yr-old boy who has had pain in his right leg for 4-months is being evaluated. The pain is worst at night and is unrelenting. It can usually be relieved by ibuprofen. On physical examination there is localized tenderness on the anterior aspect of the right thigh. There is also mild atrophy of the affected limb. A radiograph of the femur reveals a radiolucent nidus with surrounding reactive sclerotic bone. Which of the following is the most likely diagnosis.

A. Brodie’s abscess.
B. Ewing’s sarcoma.
C. Osteosarcoma.
D. Osteoid osteoma.
E. Stress fracture.

EXPLANATION

The correct answer is D. Osteoid osteoma usually affects the patients between ages of 5-24 years. This lesion can occur in almost any bone although it is most common in lower extremities. It also may occur in the posterior element of spine. Patients usually present with pain which is characteristically worst at night and relieved with aspirin. Since aspirin is no longer commonly used in children it is relieved with naproxen or ibuprofen. The process may cause growth disturbance such as leg length discrepancy or bowing of an extremity or scoliosis. Radiograph usually show a sclerotic lesion and sometimes a localized lytic defect or nidus < 1-cm in diameter within the sclerotic bone. The nidus is best demonstrated with CT-scan. The differential diagnosis most often includes Brodie’s abscess or stress fracture. Histologically the lesion consists of nidus of immature woven trabecular bone and osteoblasts surrounded by dense sclerotic bone.

Treatment usually involves surgical excision. Medical management with salisylates has been described and is especially useful with lesions that are difficult or unsafe to reach as the lesions in the inner aspect of the acetabulum. Newer technique for surgical excision includes percutaneous excision under CT-guidance and open surgical excision and radionuleide guidance. Pain relief after surgery is usually immediate.
Brodie’s abscess (choice A) is a chronic localized bone abscess. Subacute cases may present with pain, fever and periosteal elevation where as chronic cases are afebrile and present with chronic dull pain. The most common site of involvement is the distal part of tibia. The lesion is typically single and located near the metaphysis although about 75% of the patients are younger then 25. Radiograph shows a radiolucent irregularly shaped area with no adjacent osteoblastic reaction. Surgical debridement and culture directed antibiotics are often curative.

Ewing's sarcoma (choice B) is a malignant tumor of bone arising in the medullary tissue. It most commonly occurs in cylindrical bones. Prominent symptoms include pain, fever and leukocytosis. Radiographs have a typical “onion skin” appearance.

Osteosarcoma (choice C) usually presents with a painful mass. Radiography reveals both bone destruction and production as well as periosteal elevation.

Stress fracture (choice E) may go undetected in standard radiographs but a bone scan will show increased uptake.
Q-443

A 45-yr-old man with alcoholic cirrhosis is bleeding from a duodenal ulcer. He has required 6-units of blood in the past eight-hours and all the conservative measures to stop bleeding including irrigation with cold saline, IV vasopressin and endoscopic use of laser have failed. He is being considered for surgical intervention. Laboratory studies done at the time of admission when he had received only one-unit of blood have shown bilirubin of 4.5 mg/dl, a prothrombin time of 22 seconds and a serum albumin of 1.8 gm/dl. He was mentally clear when he came but has since then developed encephalopathy and now is in coma. Which of the following best describes his operative risk.

A. Acceptable as he now is.
B. Amenable to improvement if he receives vitamin K.
C. Amenable to improvement if he is given albumin.
D. Prohibitive unless he is dialyzed to normalize his bilirubin.
E. Prohibitive regardless of attempts to improve his condition.

EXPLANATION

Correct answer is E. The lab studies show extremely marginal liver function which would be tipped into overt liver failure by an anesthetic and an operation. He is not a surgical candidate.
A 53-yr-old man comes to the physician because of progressive weakness and weight loss over the past 2-months. He says that he also began noticing areas of his skin getting darker even thou it is winter and he is never in the sun. He takes no medications and has no other medical condition. Physical examination shows no abnormalities except for orthostatic hypotension and hyperpigmentation of his skin. Lab studies show sodium 130 Meq/l, chloride 95 Meq/l, potassium 6.5 Meq/l, bicarbonate 20 Meq/l, leukocyte count 5000/mm$^3$, segmented neutrophils 40%, band forms 4%, lymphocytes 40%, monocytes 6%, eosinophils 9.5%, basophils 0.5%. Which of the following is the most likely diagnosis.

A. Addison's disease.
B. Conn's syndrome.
C. Cushing's disease.
D. Cushing's syndrome.
E. Syndrome of inappropriate anti-diuretic hormone secretion (SIADH).

EXPLANATION

The correct answer is A. The patient most likely has Addison's disease which is primary adrenocortical deficiency. It is a rare disease that is caused by progressive destruction of the adrenal gland mostly from idiopathic atrophy. Surgery, infection and hemorrhage. The clinical symptoms include hypotension, weakness, weight loss, hyperpigmentation and nausea and vomiting. Lab findings include hyponatremia due to aldosterone deficiency, hyperkalemia and normocytic anemia with eosinophilia and lymphocytosis. The diagnosis is made with ACTH stimulation test. Cortisol and aldosterone levels do not increase when the ACTH is given. The treatment is glucocorticoid and mineralocorticoid replacement.
A 67-yr-old man with emphysema presents for a routine checkup. He reports that his symptoms remain stable with frequent coughing and dyspnea despite compliance to his medications which include oral prednisone, inhaled aminophylline, metaproterenol and rotating course of antibiotics. On physical examination he has a barrel chest and distant breath sounds in both lung fields with soft expiratory wheezes. An arterial blood gas reveals arterial pH of 7.32, a PCO₂ of 47 mmHg and a PO₂ of 53 mmHg. Which of the following is most likely to prolong his survival.

A. Continuous home oxygen therapy.
B. High dose oral prednisone.
C. Influenza vaccine.
D. Pneumococcal vaccine.
E. Tracheostomy.

EXPLANATION

The correct answer is A. The patient has resting hypoxia and therefore would benefit in terms of survival with the continuous use of low flow home oxygen therapy. Care must be taken as to not deliver high concentration of oxygen, as that would suppress his respiratory drive. Oxygen saturation in these patients would be maintained just above 90%. Continuous home oxygen therapy in this patient would not only improve his symptoms but also prolong survival.
A patient has sudden onset of frightfulness and pain. He curls up his legs towards his abdomen. Over the next few hours he continued to have episodes of pain and cries with tears but between these times he acts normally. The patient’s mother fears that something is terribly wrong and brings him to the hospital. His past medical history was unremarkable, previous week he had a cold and a runny nose, his stools had been normal that day. On examination he is quite and his abdomen is surprisingly soft and normal. In the ER he had a semi-soft stool with some blood mixed with mucous. The classic presentation of intussusception is most likely to occur in which of the following age groups.

A. Birth - four weeks of age.
B. 6 - 12 months of age.
C. 3 - 5 years of age.
D. Early adolescence.
E. Late adolescence.

EXPLANATION

The correct answer is B. Intussusception usually occurs in 6 -12 months age group. It characteristically presents with episodes of crying and distress interspaced with periods of normal behavior and playing. More then 50% of children pass stool mixed with mucous and blood, “the current jelly stool”. Usually the abdomen is soft and non-tender but sometimes with advanced intussusception there may be signs of peritonitis and a sausage like mass may be palpable in the upper abdomen. A barium enema is performed for the diagnosis and treatment of intussusception.
Q-447
A 21-yr-old man is dropped out of college. On questioning he states that he is so afraid of having a panic attack that he is no longer willing to sit in the class because he would not be able to leave. The same fear also lead him to not go to shopping or to the movies because he is afraid that he will have a panic attack in ticket line or in the theater. Which of the following is the most likely diagnosis:

A. Agoraphobia.
B. Conversion disorder.
C. Obsessive-compulsive disorder.
D. Social phobia.
E. Somatization disorder.

EXPLANATION

The correct answer is A. The patient has agoraphobia although this condition was originally defined as fear of open spaces or of the market place. A more functional modern definition is a fear of panic attacks in situation from where it would be difficult to gracefully remove oneself. Like the patient in question stem a patient fear may involve multiple settings and may progress to a point of markedly hampering daily functioning. A panic attack may or may not be experienced in the past in the particular setting that are of concerned to the patient. Some cases resolve spontaneously, other follow a waxing and weaning course. Behavioral therapy is used to encourage patients to modify their activities. Antidepressents are useful in patients with co-existing depression.
Q-448

A 25-yr-old woman gravida 2, para 2 comes to the physician to discuss birth control options. She and her partner have tried to use condoms however they have found it difficult to use them consistently and she would like to try another form of contraception. She has no medical problems, takes no medications and has no family history of cancer. Her examination is within normal limits. After a discussion with the physician she chooses to take the oral contraceptive pill. She stays on the pill for the next 3-years. She now has more significantly decreased risk of developing which of the following malignancies.

A. Bone cancer.
B. Breast cancer.
C. Cervical cancer.
D. Endometrial cancer.
E. Liver cancer.

EXPLANATION

The correct answer is D. Numerous studies have demonstrated that use of oral contraceptive pills significantly decreases woman's likelihood of developing endometrial cancer. Overall use of oral contraceptive pills decreases the risk up to 50% with its greatest effects in those using the pills for more than 3-years. One theory to decrease the risk of endometrial cancer is that the oral contraceptive pill provides almost continuous exposure to progestins. The major factor in the development of endometrial cancer is exposure to estrogen whether endogenously produced e.g. due to obesity or chronic anovulation or exogenously e.g. chronic unopposed estrogen replacement therapy. By providing almost daily exposure to progestins, the oral contraceptive pills works to counteract the effects of estrogen. Over time women on oral contraceptive pills develop thinner endometrial linings and has lower risk for developing endometrial cancer.
Q-449
A 55-yr-old woman falls in the shower and hurts her right shoulder. She shows up in the ER with her arm held close to her body but the forearm is rotated outwards as she is going to shake hands. She is in pain and will not move the arm from that position. Her shoulder looks square in comparison with round unhurt opposite side and there is numbness over a small area over the deltoid muscle. Which of the following is the most likely diagnosis.

A. Acromi-clavicular separation.
B. Anterior dislocation of the shoulder.
C. Fracture of the upper end of the humeral shaft.
D. Posterior dislocation of the shoulder.
E. Scapular fracture.

EXPLANATION
The correct answer is B. Anterior dislocation of the shoulder is the most common dislocation of that joint. The position is classic as is the lack of the rounded contour of humeral head and the area of numbness represents the injury to axillary nerve, common complication of anterior shoulder dislocation.
Q-450
A 3-week-old female infant is born at 38-weeks gestation through an uncomplicated vaginal delivery presents to the ER with 2-day history of fever. The infant had been healthy since birth. Her temperature in the ER is 40°C (104°F). She appears to be quite lethargic. A culture taken from the infant grows group B streptococcus in 24-hours. Which of the following infections is most consistent with this presentation.

A. Endocarditis.
B. Gastroenteritis.
C. Meningitis.
D. Pneumonia.
E. Pyelonephritis.

EXPLANATION
The correct answer is C. Group B streptococcus infection in neonates has two distinct patterns, early onset and late onset. Early onset infections involve the respiratory tract causing GBS pneumonia (choice D), it typically happens in the first week of the life. Late onset GBS infection often affects the CNS causing meningitis (choice C), it mostly happens between weeks 2 and 4 of the life.
A 71-yr-old woman presents to the physicians office complaining of one-week of crampy lower abdominal pain with bloody diarrhea. She has previously been followed for symptoms of stable exertional angina and hypertension. She had an uncomplicated myocardial infarction three-years ago. Her symptoms began one-week earlier and mild post-prandial abdominal cramping followed by diarrhea which became bloody after two-days. She has not traveled recently and is a retired librarian. Her temperature is 38.6 C (101.4 F), blood pressure is 120/84 and pulse is 96. She has moderate tenderness to palpation of the left lower quadrant. A rectal examination reveals bloody stools and no masses. Which of the following is the most likely diagnosis.

A. Arterio-venous malformation.
B. Diverticulitis.
C. Diverticulosis.
D. Ischemic colitis.
E. Ulcerative colitis.

EXPLANATION

The correct answer is D. The elderly woman with a history of atherosclerotic vascular disease as demonstrated by a history of myocardial infarction and exertional angina has developed colitic symptoms as explained by the left lower quadrant pain and bloody diarrhea. This is typically due to ischemia of small branches of inferior mesenteric artery. The diagnosis is suspected clinically and generally confirmed with a flexible sigmoidoscopy, since many cases involve the recto-sigmoid region.
Q-452
A 10-yr-old boy diagnosed with attention deficit hyperactivity disorder comes to the new doctor for the first time. His mother reports that they moved to the city recently but he was started on a medication for ADHD by his previous doctor. After learning with the medication that patient has been taking the doctor becomes concerned about the liver function of the patient. Which of the following medication is the patient most likely taking.

A. Clonidine.
B. Desipramine.
C. Dextroamphetamine.
D. Methylphenidate.
E. Pemoline.

EXPLANATION
The correct answer is E. Pemoline is a sympathomimetic agent approved for the treatment of ADHD. Given the rate of reported cases of hepatic failure which range from 4-17 times higher than expected in general population. Pemoline can be used only if informed consent with discussion of risks and benefits has been obtained from patient or legal guardians.
A 45-yr-old woman reports that she has been having increasing involuntary loss of urine which is especially pronounced when she is feeling nervous or while sitting at her desk, jogging does not worsen the incontinence. She has not had these symptoms in the past and is otherwise healthy. She is not taking any medications and has never been pregnant. On physical examination she is afebrile with stable vital signs, her abdomen is benign. Vaginal examination reveals no prolapse. Sensation in all extremities is intact with good motor strength. Her gait is normal and reflexes are intact. Her work-up reveals a negative urinalysis and blood culture and urine cultures are all negative. Serum glucose levels and glycosylated hemoglobin level is normal. Which of the following test would be the most appropriate next step in diagnosis.

A. IV pyelogram.
B. Stress testing.
C. Q-tip test.
D. Cystometry.
E. Cystoscopy.

EXPLANATION

The correct answer is D. The patient most likely has detrusor instability or dyssynergia. She does not seem to have infectious, systemic or neurologic disorder, since she can tolerate jogging without problem, she does not probably have stress induced incontinence. The diagnosis is probably be made by cystometry to assess her urodynamics. This test is also used to measure bladder capacity and tone.
Q-454

A 4-yr-old boy who has a ventriculo-peritoneal shunt for congenital hydrocephalus develops fever, headache, irritability, lethargy, photophobia and vomiting. His temperature is 39.6 °C (103.2 °F), he is noted to have nuchal rigidity with the presence of kernig’s and bruzinksis sign. The shunt tract is erythematous on the surface. A lumbar puncture is performed and shows a WBC count of 40,000/mm³ and 85% neutrophils, a glucose concentration of 48 mg/dl and a protein concentration of 169 mg/dl. Which of the following is the most likely pathogen.

A. Hemophilus influenzae.
B. Nisseria meningitides.
C. Pseudomonas auresginosa.
D. Staphylococcus epidermidis.
E. Streptococcus pneumoniae.

EXPLANATION

The correct answer is D. Unlike meningitis occurring in normal children, ventriculo-peritoneal shunt infections are most commonly caused by coagulase negative staphylococcus, such as staphylococcus epidermidis. Staphylococcus epidermidis causes 40-60% of all CSF infections in persons with ventriculo-peritoneal shunts. Coagulase negative staphylococcus presents a threat to persons who have indwelling devices or catheters. Most S.epidermidis isolates are resistant to multiple antibiotics including nafcillin and oxacillin. Vancomycin is the drug of choice for S.epidermidis infections. Removal of the indwelling medical device and parenteral antibiotic treatment are often necessary.

Kernig’s sign is positive when the thighs flex at the right angle and complete extension of the leg is not possible and causes exquisite pain. A positive Bruzinski’s sign is when bending of the neck causes flexion of the hip. Both signs are used to test nuchal rigidity in evaluating patients for meningitis.
Q-455

A 25-yr-old primigravid woman comes to the physician for her first prenatal visit. Her last menstrual period was seven-weeks ago. She has some nausea and vomiting but otherwise has no complaints. Past medical and surgical history is unremarkable. Her family history is significant for cystic fibrosis with an affected aunt. Her husband has an affected cousin. Physical examination is unremarkable. Given her family history, she is concerned about having a child with cystic fibrosis. She inquires about cystic fibrosis screening. Which of the following is the most appropriate response.

A. Screening is available.
B. Screening is inappropriate in her case.
C. Screening is mandatory.
D. Screening is not available.
E. Screening is unnecessary, she has 1 in 4 chance of having a child with cystic fibrosis.

EXPLANATION

The correct answer is A. Cystic fibrosis is an autosomal recessive disease that is common in North-American Caucasians of European ancestry. In this population the frequency of disease is 1 in 2500 live births. The carrier rate is about 1 in 25 individuals. The outcome of patients with cystic fibrosis is highly-variable, some will die in infancy with complications of meconium ileus whereas others will live beyond the age of fifty. Clinical manifestations include pulmonary disease e.g. bronchiectasis, pancreatic insufficiency and failure to thrive. The gene for the disease is known however there are more than 500 mutations that cause CF. The most common mutation that causes 75% of cases in Caucasians is referred to as delta-F 508. The CF gene has been cloned and it is possible to perform screening on couples. Genetic techniques can also be used to determine whether the fetus has the relevant mutations. In this patient with her husband and her family history, screening would be available and appropriate.
Q-456
A 57-yr-old woman presents to her physician for follow-up of her fasting serum cholesterol level of 236 mg/dl. She is post-menopausal since age 52 and has not been on hormone replacement therapy. She has a positive family history of coronary artery disease and she has smoked one half pack of cigarettes/day for the past 20-years. During her last physical examination a lipid profile was ordered and she presents today for evaluation of those results. Which of the following lipid panel would most strongly suggest the need of pharmacologic therapy in this patient.

A. Total cholesterol 180 mg/dl, LDL cholesterol 140 mg/dl.
B. Total cholesterol 184 mg/dl, LDL cholesterol 100 mg/dl.
C. Total cholesterol 230 mg/dl, LDL cholesterol 100 mg/dl.
D. Total cholesterol 245 mg/dl, LDL cholesterol 165 mg/dl.
E. Total cholesterol 285 mg/dl, LDL cholesterol 100 mg/dl.

EXPLANATION
The correct answer is D. For these patients in home, a fasting panel has been obtained. A step-wise approach to the intervention based on LDL and patient's risk factor has been used. The patient with 2+ risk factors (this patient) and an LDL of greater than 160 mg/dl warrants medical therapy.
A 28-yr-old woman with a history of paranoid schizophrenia is brought to the hospital by a friend. The woman had been an in-patient at a psychiatric hospital for several months. After being discharged she had been maintained on haloperidol decanoate shots. For the past couple of days after the last injection she has appeared strange. She is stiff, cannot swallow or talk and appears tremulous. The friend is concerned that she has some kind of infection since she has a fever. On examination her temperature is 38.7°C (101.7°F), blood pressure is 157/104 mmHg, pulse is 122/min and respirations are 24/min. She has increased tone in her neck and extremities and appears tremulous, diaphoretic and confused. Her leukocyte count is 19,600/mm³ and CPK is markedly elevated. A work-up for infection is negative. Which of the following is the most likely diagnosis.

A. Acute dystonic reaction.
B. Lethal catatonia.
C. Malignant hyperthermia.
D. Neuroleptic malignant syndrome.
E. Serotonin syndrome.

EXPLANATION

The correct answer is D. Neuroleptic malignant syndrome is a rare complication of neuroleptic therapy that confers high mortality if not treated promptly. It is defined by development of severe muscle rigidity and elevated temperature in association of at least two or more of the following: Dysphagia, tremors, diaphoresis, tachycardia, change in level of consciousness, leukocytosis, elevated or labile blood pressure and elevated creatinine phosphokinase as an indicator or muscle injury. Predisposing factors include high neuroleptic doses, intramuscular injection, lithium treatment.
Acute dystonic reaction (choice A) is one of the extra-pyramidal side effects experienced by 10% of the neuroleptic treated patients within the first hours and days of therapy. Typically last for hours or respond to anticholinergic drugs.

Lethal catatonia (choice B) is a syndrome associated with major depressive disorder, mania and mixed affective states or schizophrenia. It requires the presence of at least two of the following: Motor immobility, extreme motor activity, extreme negativism, peculiar voluntary movement, echolalia or echopraxia. Autonomic instability or hyperthermia can complicate it. Lethal catatonia can be a result of general medical condition when it does not occur during the course of delirium or the above mentioned mental disorders.

Malignant hyperthermia (choice C) has several features in common with NMS such as muscle rigidity, hyperthermia and elevated CPK as well as good response to dantrolene. However malignant hypertehrmia is induced by inhalant anesthetics and the susceptibility is inherited.

Serotonin syndrome (choice E) is generally a result of interaction between serotonergic agents of MAO inhibitor. It is characterized by restlessness, myoclonus, changes in mental status, diaphoresis, hyper-reflexia, tremors and shivering.
Q-458
A 74-yr-old woman who has been followed for the past 25-years for chronic obstructive pulmonary disease presents complaining of 48-hours of temperature to 38.6 °C (101.4 °F) and worsening shortness of breath. She has a chronic productive cough which has become more copious. On physical examination she has ronchi and increased fremitus in the posterior mid lung field. A gram stain reveals many epithelial cells and multiple gram-positive and gram-negative organisms, no neutrophils are seen. Which of the following is the most likely organism causing the symptoms.

A. E.coli.
B. Haemophilus influenzae.
C. Klebsiella pneumonia.
D. Mycobacterium tuberculosis.
E. Mycoplasma pneumonia.

EXPLANATION
The correct answer is B. The patient with long history of COPD has evidence of community acquired pneumonia. The common organisms causing pneumonias in patients with COPD are streptococcus pneumoniae, haemophilus influenzae and moraxella catarrhalis.
A 30-yr-old man is brought to the ER because of fever, headache and seizure of abrupt onset. His temperature is 39.4°C (103°F). Patient is disoriented to place and time. Physical examination reveals mild nuchal rigidity. On admission lab studies show 10,200/mm³ neutrophils in the peripheral blood while a lumber puncture is significant for moderately increased CSF pressure, lymphocytes 500/mm³ and presence of RBCs. Electroencephalographic studies demonstrate bitemporal periodic complexes on a slow background. Neuroimaging shows multifocal hemorrhagic lesions in the temporal lobe. Which of the following is the most appropriate next step in management.

A. Supportive treatment until CSF culture results are available.
B. Cerebral angiographic studies.
C. Treatment with acyclovir.
D. Treatment with antimycotic agent.
E. Treatment with antimicrobial agent.

EXPLANATION

The correct answer is C. The clinical presentation outlined in this question is consistent with herpes simplex encephalitis which is usually due to herpes simplex type I, is thought to cause encephalitis following transport to the brain along with trigeminal nerve. This usually occurs in persons harboring latent form of the virus in the Gasserian ganglion. Bitemporal hemorrhagic necrosis is characteristic of herpes encephalitis. Most patients develop symptomatology of abrupt onset with fever, headache, nuchal rigidity and confusion. Motor and sensory deficits are often observed on physical examination. Treatment should be promptly started whenever there is a reasonable suspicion of herpes encephalitis, infact acyclovir and similar drugs are highly effective against this form of encephalitis. Herpes encephalitis usually fatal without treatment. In this case note the typical CSF changes associated with viral encephalitis.
Q-460
A previously healthy 37-yr-old woman comes to the physician for recurrent episodes of double vision and drooping of her eyelids for last month. Such episodes occur without apparent reason, last for hours and resolve spontaneously. She also reports occasional hoarseness and difficulty swallowing which also comes and goes. Vital signs and physical examination are normal. Which of the following is the most appropriate next step in diagnosis.

A. Blood, urine and CSF analysis.
B. MRI of the head.
C. EEG recording.
D. Electromyography under repetitive stimulation.
E. Muscle biopsy.

EXPLANATION

The correct answer id D. the clinical manifestations are of myasthenia gravis. This disorder has three general features, the fluctuating nature of muscle weakness, predominant involvement of the ocular muscles with diplopia and ptosis and positive clinical response to administration of cholinergic drugs. Crisis of weakness involving respiratory muscles is the most frequent cause of death before the advent of positive pressure respirators. The disease is autoimmune mediated and results from autoantibodies to the muscular nicotinic receptors. Beside the pharmacological test a progressive decrease in amplitude of muscle potential is the diagnostic feature of myasthenia gravis. Electromyography is therefore very useful in the diagnosis of this condition.

Blood, urine and CSF analysis (choice A) are entirely within the normal limits in myasthenia gravis, although they are indeed frequently performed in the initial screening.

MRI of the head (choice B) and EEG recording (choice C) would be entirely useless in this setting. Since this disorder is due to impaired cholinergic transmission of the neuromuscular junction, skeletal muscle biopsy (choice E) is within the normal limits at the light microscopic levels. Occasionally muscle biopsy is performed to rule out other cause of muscle weakness such as myopathic processes.
A 4-yr-old boy presents with 5-day history of fever and increased irritability. His temperature is 40.2 C (104.3 F), blood pressure is 98/68, pulse is 112 and respirations are 24. On physical examination he is noted to have bilateral cervical lymphadenopathy, cracked lips, strawberry tongue and bilateral conjunctival injection. His palms and soles are erythematous. There is polymorphous macular rash generalized on his body. Which of the following is the most appropriate pharmacotherapy.

A. Amoxicillin.
B. Aspirin and corticosteroid.
C. Aspirin and IV immunoglobulins.
D. Corticosteroids.
E. IV immunoglobulins.

EXPLANATION

The correct answer is C. Kawasaki disease is a systemic vasculitis of unknown origin that remains a leading cause of acquired heart disease in infants and children. It is a multisystemic disease also known as mucocutaneous lymph node syndrome. Clinical and echocardiographic features remains the basis of the diagnosis. An unidentified infectious origin and T-cell activation play a prominent role in disease pathogenesis. Tumor necrosis factor-alpha receptors level correlate with the degree of vascular damage and likelihood of coronary artery aneurysm formation. The cardiovascular complications account for most of the morbidity and mortality. Fever, bilateral non-exudative conjunctivitis, mucous membrane changes, injected pharynx, cracked lips and strawberry tongue, extremity changes, edema, desquamation or rash and cervical lymphadenopathy are common at presentation. The acute manifestation include myocarditis, valvular insufficiency erythemas, pericardil effusions, congestive heart failure with coronary abnormalities. These develop in 15-25% of patients. Leukocytosis and an elevated C-reactive protein are associated with coronary artery aneurysm. Treatment include aspirin at 80-100 mg/kg/day and IV immunoglobulins.
A 68-yr-old man is admitted to the hospital for delirium associated with a urinary tract infection. Upon adequate treatment of his infection his mental status improves significantly though it is noted to remain partly disoriented. He also has impairment in short-term memory, difficulty in naming simple objects and impaired concentration. His family members confirm an 8-month history of gradual progressive decline in cognitive ability which they attribute to old age, however, the man is no longer able to manage his finances and has gotten lost while driving to the grocery store on two occasions. Prior to discharging from the hospital the nursing staff reports that the patient continues to have urinary incontinence though his infection has completely resolved. He is also noted a to have a very unsteady gait requiring assistance when walking. No other signs or symptoms are present. Which disorder is most likely account for patient's dementia.

A. Crutzfeldt Jacob disease.
B. Huntington disease.
C. Normal pressure hydrocephalus.
D. Parkinson's disease.
E. Pick disease.

EXPLANATION

The correct answer is C. Normal pressure hydrocephalus (choice C) is a potentially reversible cause of dementia that causes gait disturbances (unsteady or shuffling gait), urinary incontinence and dementia. Enlargement of the ventricles with increased CSF pressure is found. The therapeutic lumbar puncture may improve symptoms.

Crutzfeldt Jacob disease (choice A) is a rare diffuse degenerative disease that usually affects people in their fifties and usual course is about 1-year. The terminal stage is characterized by severe dementia, generalized hypertonicity and profound speech disturbances. It is one of the several diseases presumably caused by "prions".

Huntington disease (choice B) is a hereditary disease associated with progressive degeneration of the basal ganglia and cerebral cortex. It is transmitted in an autosomal dominant pattern. The onset of Huntington disease occur between 35-50 years or later in rare cases. The disease is characterized by progressive dementia, muscular hypertonicity and bizarre chorioriform movements.

Parkinson's disease (choice D) is characterized primarily by motor dysfunction but dementia may be a part of the disorder. The characteristic motor symptoms are bradykinesia, flat facies, resting tremors, shuffling gait are caused by degeneration of nigrostriatal dopaminergic tract.

Pick's disease (choice E) causes a slowly progressive dementia. It is associated with focal cortical lesions prominently in the frontal lobe. Pathological examination of the brain reveal intraneuronal inclusions called "pick bodies".
Q-463
A 32-yr-old HIV-positive primigravid woman comes to the physician for a prenatal visit at 30-weeks. Her prenatal course has been noted for a use of ziduovidine during the pregnancy. Her viral load has remained greater the 1000 copies/ml of plasma throughout the pregnancy. She has no other medical problems and has never had surgery. Examination is appropriate for 30-week gestation. She wishes to do everything possible to prevent transmission of HIV to her baby. Which of the following is the most appropriate next step in management.

A. Offer elective cesarean section after amniocentesis to determine lung maturity.
B. Offer elective cesarean section at 38-weeks.
C. Offer elective cesarean section at 34-weeks.
D. Recommend forceps assisted vaginal delivery.
E. Recommend vaginal delivery.

EXPLANATION

The correct answer is B. A significant body of evidence has developed that transmission rates of HIV from mother to infant can be decreased through the use of medications and cesarean delivery. The pediatrics clinical aid trail groups and ziduovidine regimen is shown to decrease rate of transmission form 25% to 8%. This regimen consisted of ziduovidine being given antepartum and intrapartum to the mother and postpartum to the infant. Most recent evidence is accumulating that the mode of delivery also affects the transmission rate. The combination of ziduovidine and cesarean section is shown to decrease the transmission approximately to 2% but the decrease in transmission with cesarean delivery occurs regardless of whether the patient is receiving anti-retroviral therapy. Thus cesarean delivery should be offered to HIV positive women to prevent transmission. Delivery at 38-weeks is recommended to reduce the chances that the patient will go into labor or rupture her membranes, once these occur the benefit of cesarean delivery is reduced.
A 14-yr-old boy dies into the shallow end of a swimming pool and hits his head against the bottom. When he is rescued he showed complete lack of neurologic function below the neck. He is still breathing on his own but cannot feel or move his arms and legs. The paramedical staff carefully immobilizes his neck for transportation to the hospital and they alert the ER to this impending arrival. Once there which of the following would be the most beneficial for this patient.

A. Hyperbaric oxygenation.
B. IV antibiotics.
C. IV high dose corticosteroids.
D. Massive diuresis induced by loop diuretics.
E. Surgical decompression of the cord.

EXPLANATION

The correct answer is C. There is some evidence that high dose corticosteroids administration as soon as possible after the injury will result in a better ultimate outcome. Although the true medical value of this action is debatable there is legal imperative to use of treatment which offers some hope and has not been shown to be detrimental.

Hyperbaric oxygenation (choice A) has no role in the acute management of neurological injuries. Antibiotics (choice B) are likewise unlikely to change the course of the events in a case like this. Diuresis (choice D) is part of the therapy to decrease the intracranial pressure but the agent is mannitol and the indications do not include spinal cord injury. Surgical decompression (choice E) might be done but the decision is individualized depending on the findings of MRI. Not all patients are automatically and immediately taken to the operating room.
A 57-yr-old woman presents with progressive shortness of breath over the past two days. The woman is admitted to the medical service 6-days ago after a fall and she has been on bed rest for a non-displaced pubic ramus fracture. She has been on deep venous thrombosis prophylaxis and subcutaneous heparin. Her past medical history is significant for type-II diabetes and dialysis dependent renal failure secondary to diabetic nephropathy. She makes no urine at baseline. Her past dialysis run was four-days ago, though she usually undergo dialysis three times a week. She has no chest pain. On physical examination she appears anxious, her blood pressure is 160/105, pulse is 110 and respirations are 22. Her oxygen saturation is 80% or room air and she appears cyanotic. She has a jugular venous pressure of 10cm and inspiratory crackles halfway up from the base on the auscultation of the lung. An ECG reveals rate related right bundle branch block but no ischemic changes. A chest x-ray obtained yesterday revealed interstitial edema and vascular redistribution to the apices. Which of the following is the most appropriate initial therapy.

A. An anti-hypertensive agent to decrease her blood pressure to normal.
B. A beta-blocker to better control her pulse.
C. IV morphine to decrease her respirations to normal.
D. Oxygen by endotracheal intubation to maximize oxygen saturation.
E. Oxygen by facemask to increase her oxygen saturation.

EXPLANATION

The correct answer is E. Although the patient clearly has abnormal vital signs that are worrisome, the finding most likely to place her in immediate danger is hypoxia. The patient’s oxygen saturation of 80% places her at significant risk of delirium, cardiac arrhythmia and cardiopulmonary arrest. Oxygen should first be administered non-invasively in this case starting with a non-rebreather facemask until the clinical picture can be stabilized.

Anti-hypertensive agent (choice A) would be an important therapy for her congestive heart failure and hypoxia, were the result of diastolic ventricular dysfunction from an hypertensive emergency. Even if this were the case, however the initial therapy would still be to initially treat her hypoxia while administering an anti-hypertensive agent.
Beta-blockers (choice B) is effective at controlling heart rate through the drug's action on nodal conduction in the heart, however there is rarely an indication to treat sinus tachycardia as a underlying cause. In this case anxiety and increased work of breathing against non-complaint lungs should be addressed first.

IV morphine (choice C) here would have effect of diminishing anxiety and decreasing venous return to the heart. Although these results may be attractive, morphine is also respiratory depressant and the patient may require her complete respiratory derive to maintain her blood oxygen levels.

Of all the ways to administer oxygen, intubation either endotracheal (choice D) or nasotracheal is the only means to ensure 100% oxygen delivery to the lungs. This patient ultimately may require intubation but given it’s risks it is appropriate to attempt non-invasive means of oxygen delivery. If the question stem suggested that the patient has been unable to maintain her airway or other non-invasive methods had failed to correct the hypoxia the choice D would have been correct.
A 24-yr-old medical student complains of mid-epigastric pain that she describes as a dull ache that is relieved by eating. She has awakened from sleep on several occasions at 2:00 a.m. because of exacerbation of these symptoms which are relieved by magnesium hydroxide. She takes frequent acetaminophen for menstrual cramping. Which of the following is the most likely cause of her symptoms.

A. Autonomous gastrin secretion.
B. Gram negative organism.
C. Gram positive organism.
D. Prostaglandin inhibition.
E. Vagal inhibition.

EXPLANATION

The correct is B. Peptic ulcer disease is strongly suggested by chronic mid-epigastric pain that is severe enough to awaken a patient at night and is relieved by antacids such as magnesium hydroxide. Although the differential diagnosis listed in text book for peptic ulcer disease is long. Most patients with ulcer symptoms are either taking non-steroidal anti-inflammatory agents or colonized by gram-negative organisms helicobacter pylori. This patient is not taking NSAIDs so H.pylori colonization is the most likely answer. This organism colonizes the mucous layer in the stomach and disrupts the integrity of the mucous, predisposing for both chronic gastritis and peptic ulcer disease.
Q-467

A 29-yr-old woman is brought to the hospital by her husband. She has not slept for several days and cleans the house, drinks wine and listens to loud music in the middle of the night. She spent $2,000 on shopping spree over four days and decides to change her carrier and start a private business. In the interview room she talks insanely, giggles with the nurse and unbuttons her blouse to show her newly bought underwear. She has always been cheerful and has had short periods of time when she was more energetic but never like this. She denies use of street drugs and her urine drug screen is negative. Which of the following is the most likely diagnosis.

A. Bipolar disorder I.
B. Bipolar disorder II.
C. Borderline personality.
D. Cyclothymia.
E. Schizophrenia, paranoid type.

EXPLANATION

The correct answer is A. Bipolar disorder type I is characterized by full-blown episodes of mania and erratic and disinhibited behavior, grandiosity, logorrhrea, over extended activities, poor frustration tolerance and vegetative signs such as increased libido, excessive energy, decreased sleep and excessive weight loss. It also includes episodes of mixed mood and major depression.

Bipolar disorder II (choice B) is defined by episodes of major depression and hypomania but not full-blown mania.

Borderline personality (choice C) requires a pattern of unstable personal relationship, self image and affect that are seen as efforts to avoid the abundantment, unstable relationship, chronic feelings of emptiness, intense anger, transient dissociative symptoms, impulsivity, identity disturbance and recurrent suicidal behavior.

Cyclothymia (choice D) is less severe then bipolar disorder with alternating behavior of hypomania and moderate depression. Symptoms must be present for atleast two-years for a diagnosis.

Schizophrenia, paranoid type (choice E) requires presence of active hallucinations and delusions, disorganized behavior or speech and negative symptoms. The mentioned symptoms must be present for atleast 6-months and must include prodromal symptoms and cause impairment in social functioning. Although grandiosity may be the part of the clinical picture, it is not the only symptom.
Q-468
A 30-yr-old male presents to his physician for a refill of his antipsychotic medication. The patient has been taking medications for five-years. After several hospitalizations for episodes of bizarre behavior and psychoses, he has been diagnosed with schizophrenia, disorganized type and has chronic refractory milder psychotic that are evident only upon engaging him in conversation. Which of the following mental status examination findings is most likely present.

A. Decreased fund of knowledge.
B. Decreased orientation to month.
C. Impaired short-term memory.
D. Loosening of association.
E. Phobias.

EXPLANATION
The correct answer is D. Patients with disorganized schizophrenia are likely to exhibit disorganized speech. Disorganized speech, disorganized behavior and flat or inappropriate affect. Examples of disorganized thought and speech includes loosening of association or derailment, flight of ideas, tangentiality, circumstantiality, word salad, neologism and clang associations. Such disorders of thought processes are not always evident during close ended questions but frequently become obvious during open ended questions and unstructured conversation.

Decreased fund of knowledge (choice A) is not a usual characteristic of schizophrenia. Although patient with schizophrenia may have difficulty in learning due to intrusion of psychotic symptoms and may have subtle cognitive impairment later in the illness. Intellectual impairment is not an inherent symptom of the disease.

Disorientation to month (choice B) is not a usual presentation of schizophrenia. Any person with disorientation must further be assessed for delirium. Chronic disorientation in older patients may suggest dementia.

Impaired short-term memory (choice C) is not a usual feature of schizophrenia. Memory difficulty should alert the physician to assess for cognitive disorder including amnesia, delirium and dementias.

Phobias (choice E) are persistent irrational exaggerated and pathological fears of some specific stimulus or situation resulting in compelling desire to avoid the feared stimulus. A phobia is not a feature of schizophrenia. Depending on the feared and avoided stimulus patient with phobias may be diagnosed with a specific or social phobia.
Q-469
A 69-yr-old man presents to the ER with a 3-day history of right temporal headache, fever and profound malaise. He appears acutely ill, his temperature is 39.5 C (103.1 F), blood pressure is 130/80, pulse is 98 and respirations are 24. Tenderness over the right temporal region is appreciated on palpation. The right temporal artery is tender and slightly nodular. Neurological examination is normal including fundoscopic examination, however, visual acuity is reduced. Lab studies show hematocrit 39%, hemoglobin 10.9 gm/dl, leukocytes 8,800/mm$^3$, ESR 80 mm/hr. Which of the following is the most appropriate next step in management.

A. Measurement of intraocular pressure.
B. Visual field measurement.
C. Low-dose 10 mg prednisone treatment.
D. High-dose 60 mg prednisone treatment.
E. Temporal artery biopsy.

EXPLANATION
The correct answer is D. The patient needs urgent treatment with high-dose prednisone for giant cell arteritis. This systemic disease overlaps with polymyalgia rheumatica. In approximately 40% cases it affects elderly persons who present with fever, malaise, temporal headache and scalp tenderness. Giant cell arteritis is a frequent cause of fever of unknown origin in the elderly. The leukocyte count may be entirely normal but ESR is markedly elevated. This condition may involve arteries other than the superficial temporal artery including the aortic branches. The most frequently important reason to start prednisone therapy is to prevent blindness secondary to extension of the process to the ophthalmic artery. Prednisone should be administered in high-dose usually 60 mg/day.

Measurement of intraocular pressure (choice A) is appropriate to confirm a diagnosis of narrow angle glaucoma. This gives rise to acute symptomatology of painful red eyes, blurred vision and haloes around light.

Visual field assessment (choice B) is not indicated.

Low-dose (choice C) may be started after tapering high-dose prednisone over a period of two-months, once the acute phase has resolved. Low-dose prednisone is used for polymyalgia rheumatica.

Temporal artery biopsy (choice E) is performed routinely in any patient with clinical signs and symptoms of giant cell arteritis. It is positive in upto 80% of case. It shows that characteristic giant cells, rich granulomatous reaction in the media with destruction of elastic lamina. The biopsy should be performed after starting corticosteroid treatment.
Q-470
A middle-aged man develops a scleroderma like illness with thickening of the skin. The thickened skin is most over the anterior surface of the extremities and has the characteristic orange-peel configuration. The man has not experienced Raynaud's phenomena, no telangiectasia or no calcinosis is seen. The skin changes should suggest which of the following diagnosis.

A. CREST syndrome.
B. Dermatomyositis.
C. Eosinophilic faciitis.
D. Polymyalgia rheumatica.
E. Polymyositis.

EXPLANATION

The correct answer is C. Orange-peel skin on the anterior aspect of the extremities is a distinctive feature of eosinophilic faciitis which is an scleroderma like disorder involving arms legs and sometimes face and trunk but not usually the hands and the feet. Middle-aged men are most commonly affected. Symptoms usually develop insidiously and lead to eventual restriction of arm and leg motion. The restriction of movement is related to inflammation and fibrosis of facia and sometimes tendons, synovial membranes and muscles. Biopsy of the skin or facia should show cellular infiltrates with histiocytes, plasma cells, lymphocytes and in only in some cases despite the name eosinophils. Treatment is initially with high-dose prednisone following by tapering and maintenance for two to five years on low dose prednisone.
A 9-yr-old boy is being evaluated for a syncopal episode. He was playing basketball when the syncope occurred, the episode lasted for about one to two minutes the patient woke up on his own. His mother also noticed that he has been having hearing problems. His physical examination is unremarkable, his ECG shows a prolong QT-interval with a QTC of 0.49 seconds. Which of the following is the most appropriate management if he has a long QT-syndrome.

A. Alpha-adrenergic blocker.
B. ACE inhibitor.
C. Beta-blocker.
D. Calcium channel blocker.
E. Diuretic.

EXPLANATION

The correct answer is C. The boy in the clinical vignette has the long QT-syndrome. About 50% of the cases are familial. Romano ward syndrome has autosomal dominant transmission. Jervill Lange Neilson syndrome has autosomal recessive transmission. LQTS occurs in all ethnic and races groups. The principal symptoms are syncope and sudden death from torsades de pointes, most often torsades de pointes is self terminating and causes a syncopal episode from which the patient quickly recovers. Cardiac arrest occurs in the torsades de pointes is more persistent and sudden death results in the rhythm does not return to normal unless the patient is not resuscitated. Syncope caused by torsades de pointes is primarily symptom in inherited long QT-syndrome. Patient may have one of hundreds of episodes. The symptoms can only occur within only first few years in Jervill Lange Neilson syndrome and the mortality rate is higher with the form than the Romano Ward. In the Romano ward syndrome the median ages at symptom onset and sudden death are in the pre to mid teenage years, 1/3 gene carriers never develop any symptoms and lead completely normal lives and have normal life spans. Approximately 1/3 have one or a few syncopal episodes as children and none thereafter, syncopal and sudden death occurs most often during exercise or intense emotion with an important minority occurring during sleep. Events are uncommon while patients are awake, at rest and without a parent provocation. The predominant feature of an ECG is a QT-interval prolongation. QTC averages 0.49 seconds. The gold standard therapy for long QT-syndrome remains beta-blocker administration which is effective in 80-90% of patients with a significant reduction of sudden death. Asymptomatic children and young persons should be treated prophylactically with beta-blocker or diagnosis. The implantable cardiac defibrillator is being used with increasing frequency especially in high-risk patients such as those who experience torsades de pointes while on beta-blockers and those who have had cardiac arrest.
Q-472
An 8-month-old infant who is up-to-date with his immunizations is brought to the clinic by his mother. The mother said that she overheard other mothers talking about a varicella vaccination that their children have received. She does not want her son to have chicken pox virus and therefore wants him to receive the vaccine today. The physician explains that the son has not yet reached the recommended age for vaccine. If this visit is in November then when is the earliest that this patient could return for varicella vaccination.

A. In December this year.
B. In March next year.
C. In January next year.
D. At five years of age.
E. Varicella vaccine is not necessary.

EXPLANATION
The correct answer is B. the varicella vaccine is recommended at any visit or after the first birth day (12 months) for susceptible children, those who have had not had the virus.

A general summary of routine immunizations is as follows:

Hepatitis B vaccine: at birth, 1 month and six months.
DPT: at 2, 4 and 6 months, 15-18 months and 4-6 years.
Tetanus booster: 11-12 years and then every 10 years.
Hib vaccine: 2, 4 and 6 months and 12-15 months.
IPV: 2, 4, 6-18 months and 4-6 years.
MMR: 12-15 months and 4-6 years.
Varicella: 12 months.
A 6-month-old boy presents to the ER with a 3-day history of cough, congestion and low-grade fever. The mother states that the baby has not been feeding well and has used only two diapers over the past 24-hours. Physical examination reveals a pale infant with a temperature of 37.8°C (100.1°F), pulse is 170, respiration 60 and oxygen saturation of 88% on room air. Patient exhibits nasal flaring, subcostal and intercostals retractions. Lung examination reveals diffuse wheezing. Cardiac examination reveals a regular but tachycardic rhythm with no murmur. Central capillary refill is 4 seconds. The remainder of the examination is normal. Which of the following is the most appropriate initial step in management.

- A. Chest x-ray film.
- B. Albuterol nebulizer treatment.
- C. Bolus of intravenous fluids.
- D. Oxygen therapy.
- E. IV steroids.

EXPLANATION

The correct answer is D. Always remember your ABC, a saturation of 90% corresponds to an oxygen partial pressure of 60 mmHg, therefore this patient is hypoxic and needs oxygen to help decrease his work of breathing.

A chest x-ray film (choice A) is certainly indicated but not a priority.

Albuterol nebulizer treatment (choice B) are indicated as an initial trial if benefits are seen, they can be continued. Some studies have shown racemic epinephrine to be more effective than albuterol in viral respiratory infections this too should follow initial oxygen therapy.

Delayed capillary refill is an indication to bolus IV fluids (choice C) this is however is the C in the ABCs. Central refill or the time taken to return the color to the skin after pressure is applied is usually less than 3 seconds.

Steroids (choice E) is not indicated in viral upper respiratory infections in patients with suspected asthma, steroids are important but are not primary intervention.
A 48-yr-old man comes to the physician for the recent onset of obesity and easy bruisability. His blood pressure is 165/95, dermal striae are found on physical examination. A dipstick examination of urine reveals glycosuria. Which of the following is the most appropriate next step in diagnosis.

A. Baseline plasma ACTH measurement.
B. CT-scan of the chest and abdomen.
C. Dexamethasone suppression test.
D. Measurement of midnight serum cortisol level.
E. Measurement of 24-hour urinary cortisol and creatinine.
F. MRI scans of the head.

EXPLANATION

The correct answer is C. in the presence of hypertension of recent onset along with dermal striae, easy bruisability and evidence of glucose intolerance glycosuria, hypercortisolism should be suspected. The first test to perform is the dexamethasone suppression test which consists of administering 1 mg of dexamethasone at 11 p.m. and then measuring serum cortisol level in a blood sample drawn at 8:00 a.m. next day. Abnormally high levels of cortisol after this test confirms hypercortisolism. The next step is to find the source of excess cortisol or ACTH. Other manifestations of hypercortisolism consists of osteoporosis, muscle wasting, psychologic alteration and granulocyte leukocytosis with lymphopenia.
Q-475
A 65-yr-old man comes to the physician because of increasing weakness and fatigue for 6-months, he denies weight loss. His temperature is 37 C (98.6 F), blood pressure is 120/80, respirations are 14 and pulse is 70. Patient speaks with a soft and monotonous voice, he walks with a rigid posture and limited arm swing. Physical examination reveals a fine tremor of the fingers which manifests at rest and disappears with movement. Increased muscle tone is appreciated with his arms passively flexed, sensations and muscle strength are otherwise intact. Which of the following drug is most likely to prove a marked improvement of this patient's symptoms.

A. Clozapine.
B. Corticosteroids.
C. Haloperidol.
D. Levodopa.
E. Tacrine.

EXPLANATION
The correct answer is D. The clinical picture is consistent with parkinsonism. A neurodegenerative condition caused by degeneration of dopaminergic neurons in the substantia nigra that normally project to the striatum. Resting tremor, rigidity, akinesia are the principal manifestations. Levodopa is the precursor of the dopamine and the most effective drug for the symptomatic treatment of Parkinson. Anticholinergic drugs e.g. benztrpine, procyclidine, MAO inhibitors, slegeline, dopamine releasers, amantadine, dopaminergic agonists e.g. bromocriptine, pergolide and muscle relaxants like diazepam are additional options frequently used instead or in association with levodopa.

Clozapine (choice A) is an antipsychotic drug that blocks D4 dopaminergic receptors. It is sometimes used to antagonize the adverse effects of confusion, hallucinations and delusions resulting from levodopa treatment.

Corticosteroids (choice B) have no known therapeutic effect in PD.

Haloperidol (choice C) is an antipsychotic that blocks dopaminergic receptors. Parkinsonism is one of the main adverse effect.

Tacrine (choice E) is cholinesterase inhibitor that enhances the central cholinergic neurotransmission. Patients with mild forms of alzheimer's disease may benefit form treatment with tacrine and similar drugs.
Q-476
A 9-month-old infant is brought to the pediatrician's office because his weight is persistently below the 10th percentile. His mother states that the infant seems to be hungry all the time and usually consumes 8-12 ounce of formula every two-three hours in addition to some table food. He also has frequent, bulky and malodorous stools. A malabsorption syndrome is suspected. The result of which of the following test is most likely to be abnormal.

A. Abdominal radiography.
B. Fecal fat quantification.
C. Serum albumin.
D. Stool culture for clostridium difficile toxin.
E. Stool smear for leukocyte and eosinophil.

EXPLANATION

The correct answer is B. The most useful test for the 9-month-old infant in the question is fecal fat quantification. Fat malabsorption is likely with poor weight gain and frequent, bulky and malodorous stools.
Q-477
A 37-yr-old man lives alone and has no close friends, he works in the night shifts in the post office and has little interaction with others. He has not engaged in sexual activity since he was 18-ys-old but he does not feel much desire. He maintains a close relationship with his sister but does not seek out relationships with others. People have told him that he seems detached and he has difficulty experiencing and expressing emotions. Which of the following is the most likely diagnosis.

A. Antisocial personality disorder.
B. Avoidant personality disorder.
C. Paranoid personality disorder.
D. Schizoid personality disorder.
E. Schizotypal personality disorder.
F. Social phobia.

EXPLANATION

The correct answer is D. The patient has schizoid personality disorder which is characterized by inability to form relationships and difficulty in experiencing and expressing emotions. Affected individuals do not seek intimacy and approval from others. They prefer to be alone and may perform well in socially isolated jobs. The incidence is thought to be very high however, it is not known since these individuals do not seek help.

According to the DSM, personality disorders are characterized by stable pattern of behavior that deviates from cultural expectations, is inflexible, causes stress and social or work impairment. Personality disorders are not caused by another medical illness or substance abuse.
Q-478

A 39-yr-old woman gravida 4, para 3 comes to the physician for a prenatal visit. Her last menstrual period was 8-weeks ago. She has had no abdominal pain or vaginal bleeding. She has no medical problems. Examination is unremarkable except for an 8-week sized non-tender uterus. Prenatal labs are sent. A rapid plasma reagent test comes back as positive and a confirmatory micro hemagglutinin assay for antibodies to treponema pallidum test also comes back as positive. Which of the following is the most appropriate pharmacotherapy.

A. IV cephalosporins.
B. Oral erythromycin.
C. IV doxycycline.
D. IM benzathine penicillin G.
E. Ceftriaxone + gentamycin.

EXPLANATION

The correct answer is D.
A 43-yr-old man develops excruciating abdominal pain at 8:23 p.m., he looked at his watch when the pain hit him. When seen in the ER 30-minutes later he has rigid abdomen, lies motion less on examination table, has no bowel sound and is obviously in great pain which he describes as constant and encompassing the entire abdomen. There is very severe pain when deep palpation of the abdomen is attempted in any of the four quadrants, however, the examining hand cannot make much of an identification because of the impressive muscle guarding. When the attempt is aborted he manifests severe rebound tenderness. X-ray film shows free air under both diaphragm. Which of the following does this man most likely has.

A. Acute abdomen, the nature of which cannot yet be defined.
B. Acute inflammatory process affecting an intra-abdominal viscera.
C. Acute obstruction of an intra-abdominal viscera.
D. Ischemic process affecting intra-abdominal organs.
E. Perforation of the gastrointestinal tract.

EXPLANATION

The correct answer is E. There is no doubt that this patient has an acute abdomen but we can tell more then that. The sudden onset, generalized extent and silent abdomen in a man who does not want to move suggest a perforation. In addition presence of free air in the peritoneal cavity pinpoints the gastrointestinal tract as the source. We cannot tell whether he perforated a peptic ulcer, blew out a sigmoid diverticulum or had his bowel perforated by a chicken bone but there is a hole in his gastrointestinal tract.
Q-480
A 42-yr-old man describes intermittent episodes of severe crushing chest pain that extends to the back and jaw and last anywhere from a few seconds to several minutes. Many times the pain is accompanied by dysphagia and triggered by the ingestion of the very cold and very hot liquids, however, sometimes the pain occurs for no apparent reason. There is no history of regurgitation and although this problem has been present for many years there has been no progression of the symptoms. Repeated ECGs and cardiac enzymes have always been negative. Barium swallows show an area of corkscrew appearance. Manometry shows that about one half of the wet swallows produce repetitive simultaneous esophageal contractions of the esophageal body and that the lower esophageal sphincter has normal pressure and exhibits normal relaxation. Which of the following is the most likely diagnosis.

A. Achalasia of the esophagus.
B. Cancer of the lower esophagus.
C. Diffuse esophageal spasm.
D. Nutcracker esophagus.
E. Zanker's diverticulum.

EXPLANATION
The correct is C. The clinical radiological and monometric criteria of diffuse esophageal spasm are all described in the question.

Nutcracker esophagus (choice D) is very similar to diffuse esophageal spasm however, on manometry there is a mean distal esophageal peristaltic amplitude of more than 180 mmHg including an elevated baseline pressure in the lower sphincter.

Zanker's diverticulum (choice E) produces regurgitation of the undigested food and symptoms referable to the upper esophagus. The barium swallow would be diagnostic.
A 32-yr-old man has had asthma for the last 9-years. Symptoms are frequently exacerbated by changes in the weather and household allergens. He has had two ER visits in the past year but has not required hospitalization. He used a metaproterenol inhaler sporadically for symptom relief. Which of the following would be the most appropriate therapy to maintain remissions between his asthmatic attacks.

A. Aminophylline.
B. Beclomethasone inhaler.
C. Cromolyn nasal spray.
D. Metaproterenol inhaler.
E. Oral prednisone.

EXPLANATION

The correct answer is B.
Q-482
A 16-yr-old boy is brought to the clinic by his father who says that he has been increasingly aggressive and has been stumbling and tripping around the house for several weeks. He is especially worried about his uncharacteristic violent behavior. The patient's temperature is 38 C (100.4 F), blood pressure is 140/90, pulse is 90 and respirations are 22. He has slightly dilated pupil and nystagmus. He begins to have convulsions on the table making the remainder of the examination impossible. Which of the following is the most likely cause of these findings.

A. Cocaine withdrawal.
B. Heroin.
C. Marijuana.
D. Morphine.
E. Phencyclidine.

EXPLANATION

The correct answer is E. The patient is displaying signs and symptoms of PCP intoxication. PCP cause aggression, distortion of body image, disorganized thoughts, ataxia, nystagmus, mid-dilated pupils, myoclonus, fever, hypersalivation and hyperacusis. It can lead to seizure, coma and death. It can also lead to an acute psychoses with a high-risk of violent behavior and suicide. Haloperidol is the treatment for the violent behavior.
A 28-yr-old woman is diagnosed with lupus nephritis (WHO type-IV). She has a malar rash, diffuse arthritis and edema. Her blood pressure is 190/110. Her creatinine is 2.1 mg/dl with a blood urea nitrogen of 28 mg/dl. Her urine reveals 25 red cell/hpf and 3+ proteins. No red blood cell cast is seen. A 24-hour of urine collection reveals a protein of 11 gm and a creatinine of 1 gm. Which of the following would be the most appropriate management.

A. Oral azathioprine.
B. Oral cyclophosphamide.
C. Oral gold.
D. Oral prednisone.
E. Pulse IV cyclophosphamide.

EXPLANATION

The correct answer is E. The most effective treatment for aggressive systemic lupus erythematosus with nephritis is pulse cyclophosphamide. This has shown to be the best agent for type-IV lupus nephritis.
Q-484

A 40-yr-old man is brought to the ER by his friends apparently he has ingested some unknown medication in a suicide attempt. The patient is disoriented to time. His temperature is 103 F, blood pressure is 120/85, pulse is 100 and irregular, respirations are 22 and the skin is flushed and dry, pupils are dilated and muscle twitching is also noted. Physical examination ECG reveals prolonged QRS complexes, hepatic transaminases are normal and blood gas analysis show a normal pH. These findings are most likely due to intoxication by which of the following substances.

A. Acetaminophen.
B. Alcohol.
C. Benzodiazepines.
D. Clonidine.
E. MAO inhibitors.
F. Tricyclic antidepressants.

EXPLANATION

The correct answer is F. The patient’s clinical picture is consistent with intoxication by tricyclic antidepressants, such as amitryptiline and imipramine. Toxic effects are mediated by peripheral anticholinergic activity and quinidine like action. The anticholinergic effects include, mydriasis, tachycardia, impaired sweating and flushed skin, dry mouth, constipation and muscle twitching. Quinidine like effect due to block of the sodium channels in the heart result in cardiac arrhythmias, specially ventricular tachyarrythmias. In this setting prolong duration of the QRS complex is particularly important in the diagnosis. QRS rate is infact and even more faithful parameter of the drug toxicity then serum drug levels. In severe intoxication patient will develop seizure, severe hypertension and coma.
A 37-yr-old man consults a physician for multiple papules and plaques on his body. The lesions are widely disseminated across the body with increased number on the trunk and arm. The mucosal surfaces are also involved. The lesions are barely elevated and vary in color from purple to pink to brown. Some of the lesions are irritated and have bled profusely. The lesions have been developing over the previous year. The patient thinks that he may also had blood in his urine and stool. The patient's condition is most likely to be related to which of the following condition.

A. AIDS.
B. Contact allergy.
C. Hemophilia A.
D. Melanoma.
E. Streptococcal infection.

EXPLANATION

The correct answer is A. This is a Kaposi's sarcoma which may be the presenting manifestation of AIDS. The lesion which behave like a malignant vascular sarcoma are caused by infection with a member of herpes virus family (herpes type-8). As you may have noticed that AIDS patients are generally very vulnerable to herpes virus infection that includes herpes simplex, herpes simplex 2, herpes zoster, varicella, CMV and EBV infections. In Kaposi's sarcoma the virus infects endothelial cells and blood vessels and cause formation of the tumor that have spindle cells alternating with the slit like vascular spaces. The slit like vascular spaces lack the normal mechanism of vasoconstriction in response to injury and consequently may bled profusely after minor trauma. While the most obvious lesions are on the skin, similar lesions may be found in the internal organs and may give rise to the internal bleeding. Kaposi's sarcoma has been treated with a variety of chemotherapies, isolated superficial lesions may alternately may respond to electrocoagulation, cryotherapy and electron beam radiotherapy. Most patients die of other infections secondary to the immunosuppression rather then kaposi's sarcoma. An indolent form of Kaposi's sarcoma is rarely seen in older men of Jewish or Italian ancestry who do not have AIDS.
Q-486

A 54-yr-old man presents to his physician complaining of intermittent palpitation. The patient reports that a few times over the past few months he had episodes of pounding in his chest that are associated with shortness of breath and occasional chest pain. He is forced to sit down if he is standing because of weakness and vertigo. The patient has a history of hypertension and mitral valve prolapse. He takes nifedipine and thiazide daily. While sitting in the office the patient begins to complaining of shortness of breath and palpitation. His blood pressure is 100/50 and his pulse is 110-130/min and regularly irregular. Which of the following is the most appropriate management at this time.

A. Call 911 for assistance.
B. Give the patient an oral dose of beta-blocker.
C. Give the patient an oral dose of digoxin.
D. Give the patient an oral dose of calcium channel blocker.
E. Make the arrangement to bring the patient to the local ER for electrical cardioversion.

EXPLANATION

The correct answer is A. The patient now has atrial fibrillation with rapid ventricular response and is consequently hypotensive. This is a medical emergency, even the physician caring for the patient is ill equipped to deal with a potentially life threatening episode of atrial fibrillation with RVR. Activating the system is always appropriate to ensure that the trained persons with additional equipment and medication appropriate to an emergency situation will be on hand as soon as possible.
Q-487

An 8-yr-old boy is brought to see a child and adolescent psychiatrist because of his mother complaint that he repeatedly states that he wants to be a girl. She also noted that he always seem to prefer girl's clothes and frequently gets upset in the morning when his mother dresses him in typical boy's clothes for school. His play activities are characterized by games more frequently enjoyed by girls and he prefers to play with girls. When his mother reminds him that he is a boy and should act like a boy he gets upset and at sometimes have a temper tantrum. The boy has no significant past medical history and physical examination is within normal limits. Into which of the following areas is this boy's difficulty best classified.

A. Gender identity.
B. Intellectual development.
C. Sexual eversion.
D. Sexual identity.
E. Sexual orientation.

EXPLANATION

The correct answer is A. Gender identity is person's sense of maleness or femaleness. The formation of gender identity is based on many cultural influences, physical characteristics and parental attitudes. The standard and healthy outcome in the development of gender identity is a relatively secure sense of identification with one biological sex. Individuals may be diagnosed with gender identity disorder when the disturbance causes clinically significant distress or impairment in social, occupational or other important areas of functioning.

Intellectual development (choice B) is the process of maturation of normal cognitive functions. There is no evidence of intellectual impairment in this case.

Sexual eversion (choice C) refers to persistent or recurrent extreme eversion to avoid all or almost all genital sexual contact with the sexual partner. Sexual eversion disorder is an adult sexual desire disorder along with hypoactive sexual desire disorder.

Sexual identity (choice D) refers to the person's biological sexual characteristic, chromosome, external genitalia, internal genitalia, hormonal composition, gonads and secondary sex characters. In this case there is no evidence of disturbance in sexual identity. It is clear that the patient has a male phenotype and presumably a male genotype (xy).
Q-488

A patient is seen by a specialist because of chronic intractable sinusitis. The decision is made to treat the patient surgically with evacuation of sinus contents and dilation of the sinus ostia. The material is sent for routine pathological examination and an unsuspected finding is presence of fungi with broad non-septate irregularly shaped hyphae. Subsequent review of patient's chart reveals a poorly controlled diabetes mellitus. Which of the following is the most likely causative organism.

A. Aspergillus.
B. Blastomysis.
C. Candida.
D. Rhizopus.
E. Sporothrix.

EXPLANATION

The correct answer is D. The patient has rhino-cerebral mucormycosis which can be caused by fungal species including rhizopus, rhizomucor apsidia, basidiobolus. Predisposing conditions include immunosuppression, uncontrolled diabetes mellitus and patient using iron chealating drugs, desferoxamine, while these indications usually appear more or less incidently as in this case they are very important to diagnose because they have a tendency to become fulminant. The lesions tend to be very locally destructive and can erode into the eye, palate and CNS often from an initial site in the sinuses. Fulminant infections are frequently fatal, pulmonary infections can also occur. The organism can be difficult to culture. The appropriate antibiotic is IV amphotericin B but surgical debridment should also be strongly considered since penetration of antibiotic in necrotic tissue may be poor.
A 23-yr-old type-I diabetic is brought to the ER after being found in a coma. The scent of acetone is present in the patient's breath. Urinary catheterization with subsequent dipstick analysis demonstrates marked positivity for glucose and ketones. Stat blood chemistries would most likely show which of the following values for the anion gap.

A. 6 Meq/l.
B. 11 Meq/l.
C. 13 Meq/l.
D. 15 Meq/l.
E. 20 Meq/l.

EXPLANATION

The correct answer is E. the patient is in diabetic ketoacidosis as indicated by acetone scent to the breath and the glucose and ketones in the urine. Diabetic ketoacidosis produces an increased anionic gap since the anion for the acid that is produced is acetoacetate is not one of the usually measured anion. The anion gap is usually measured by subtracting the sum of chloride and bicarbonate concentration from plasma sodium concentration. The normal value for anion gap is 8-16 Meq/l. Causes of increased anionic gap include produce ketoacidosis, diabetes mellitus, alcoholism, starvation, renal failure with retained sulphur and phosphate drugs or metabolites, salisylates, ethylene glycol poisoning, alkalosis with increased negative charge of protein anions and dehydration, hemconcentration.
Q-490
An AIDS patient under treatment with a nucleoside analogue and a protease inhibitor comes to the medical attention with complaints of leg weakness and incontinence. His vital signs are within normal limits. Physical examination reveals reduced strength in the lower extremities with accompanying mild spasticity. There is also diminished sensation in feet and legs bilaterally. Lumbar puncture shows opening pressure 100 mmH₂O, cell count 5 lymphocytes/mm³, glucose 48 mg/dl, proteins total 33 mg/dl, gamma-globulins 8% of total proteins. Additional lab studies show normal hematologic parameters, vitamin B₁₂ within normal values, a negative serology for syphilis. MRI of the head fails to reveal any focal abnormality. Which of the following is the most likely diagnosis.

A. AIDS dementia complex.
B. CMV polyradiculopathy.
C. Cryptococcal meningoencephalitis.
D. Vacuolar HIV myopathy.
E. Zidovudine related toxicity.

EXPLANATION
The correct answer is D. This is one of the most common neurologic complication of the AIDS. In pathological substrate there is degeneration of the spinal tract in the posterior and the lateral columns which have a vacuolar microscopic appearance. Although the morphological changes and clinical manifestations are similar to those of vitamin B₁₂ deficiency. The pathogenic mechanism is probably not related to dietary deficiency since there is no specific clinical or laboratory test available for the diagnosis of this syndrome. Vacuolar myopathy in AIDS patients remain a diagnosis of exclusion. This implies that the HIV related neurological complications must be ruled out.
Q-491
A vomiting infant is brought to the ER. The initial blood workup reveals a normal blood count but a hyponatremic, hypochloremic metabolic alkalosis. Which of the following would be consistent with these findings.

A. Diabetes mellitus.
B. Cystic fibrosis.
C. Ethanol poisoning.
D. Iron ingestion.
E. Isoniazid ingestion.

EXPLANATION
The correct answer is B. Although metabolic alkalosis is an uncommon presentation for cystic fibrosis, it is the correct answer. Particularly in the summer time excessive sweating infants may present with dehydration and this electrolyte pattern.
Q 492

A 45-yr-old woman returns to her psychiatrist for a routine bi-weekly appointment 2-months after being hospitalized for an episode of major depressive disorder, recurrent severe with psychotic features. During her hospitalization she was started on two medications an antidepressant and an antipsychotic and she has continued these medications as an out-patient. At her appointment she complains to her physician that she has missed her menstrual period for two months. She also complains of tenderness in her breast and an occasional small amount of milky discharge from her breast on to her blouse. When questioned further she also admits to low libido over the past month. Which of the following medication is most likely responsible for these symptoms.

A. Olanzapine.
B. Paroxetine.
C. Quetiapine.
D. Risperidone.
E. Sertraline.

EXPLANATION

The correct answer is D. Although risperidone is an atypical antipsychotic, it is like conventional antipsychotics in its ability to cause significant elevation in plasma prolactin levels. In the tubulo-infundibular dopamine pathway, dopamine inhibits the release of prolactin from the anterior pituitary, conventional antipsychotics and risperidone can cause hyperprolactenemia due to their dopamine antagonism in this pathway releasing the tonic dopamine inhibition. Clinical manifestation of hyperprolactenemia may include galactorrhea, sexual dysfunction, menstrual irregularity including amenorrhea, infertility and weight gain.
A 10-yr-old boy presents to the emergency department with headache, nausea and vomiting for past 3 days. Neurological examination reveals nuchal rigidity and papilledema. CT-scan shows a cerebellar tumor, which is located in the midline vermis with plaque like extension onto the cerebellar surface. There is no cystic component, fourth ventricle is compressed and third and lateral ventricles are dilated. What is the most likely diagnosis.

A. Ependymoma.
B. Hemangioblastoma.
C. Medulloblastoma.
D. Meningioma.
E. Oligodendroglioma.
F. Pilocytic astrocytoma.

EXPLANATION

The correct answer is C. Primary brain tumors represent the second most common malignancy of childhood. Medulloblastoma is one of the most frequent. It grows from the cerebellar vermis and presents with signs and symptoms of hydrocephalus owing to obliteration of the fourth ventricle. Primitive neuroectodermal elements are thought to represent the cellular precursors of this anaplastic tumor. Medulloblastomas consist of sheets of undifferentiated cells with scanty cytoplasm and immunohistochemical features of neuronal or astrocytic differentiation. Extension to the cerebellar surface, producing so-called sugar coating or drop metastasis to the spinal cord through the CSF, represents a characteristic mode of spread of this tumor. Medulloblastomas are rapidly growing tumors. Probably because of this feature, they are also highly responsive to radiation and chemotherapy.

Ependymoma (choice A) is another characteristic tumor of children and young adults. Its ependymal origin explains its usual proximity to the ventricles (either lateral or, more often in childhood, the fourth ventricle). In contrast to medulloblastoma, ependymoma grows as a mass filling the fourth ventricle. The prognosis depends on the possibility of complete excision and the degree of differentiation of the tumor. Usually, ependymomas tend to recur after surgical resection.

Hemangioblastoma (choice B) is a benign tumor with a prominent capillary network. Between the capillaries are the truly neoplastic cells, which are probably of mesenchymal origin. The cerebellar hemispheres are the most common locations, where the tumor develops as a cyst with a mural contrast-enhancing nodule. It is associated with von Hippel-Lindau syndrome.
Meningioma (choice D) is the most common benign intracranial tumor. It derives from meningotheelial cells and appears as a dural-attached mass (extraaxial).

Oligodendrogliaoma (choice E) represents about 5% of all brain tumors. It usually arises in the cerebral hemispheric white matter, and rarely occurs in children. As the name implies, the tumor is composed of neoplastic oligodendroglial cells, which closely resemble normal oligodendrocytes. Although it is a slowly growing tumor, its long-term prognosis is poor because of repeated recurrence after surgery and inevitable progression to high-grade tumor.

Pilocytic astrocytoma (choice F) is a benign (WHO grade I), well-circumscribed astrocytoma of children and young adults. The two most common locations include the cerebellum (most commonly in the cerebellar hemisphere) and the diencephalic region. Complete surgical resection is feasible and usually curative in cerebellar tumors, but difficult in diencephalic tumors.
Q-494
A 50-yr-old man is admitted secondary to respiratory failure with tachycardia, his temperature is 39.8°C (102°F), his blood pressure is 110/60, respirations are 30/min, his ECG shows P waves before QRS complex and no two P waves have same morphology. Which of the following is most appropriate next step in management.

A. Administration of digitalis.
B. Administration of warfarin.
C. Electrical cardioversion.
D. Mechanical Ventilation.
E. Placement of a defibrillator.

EXPLANATION
The correct answer is D. The rhythm described on the ECG is multifocal atrial tachycardia. This is characterized by variable P wave morphology and PR and RR intervals. The control of this tachycardia comes with improved ventilation and oxygenation. This condition is associated with severe pulmonary disease.

Digitalis (choice A) enhances myocardial contractility primarily by inhibiting membrane sodium-potassium ATPase. It is useful in the management of heart failure and rate control in atrial fibrillation.

Warfarin (choice B) is used in the management of chronic atrial fibrillation to reduce the risk of an embolic stroke. In the acute setting, however, it has little utility in rate control or anticoagulation.

Electrical cardioversion (choice C) is of little benefit in rhythm or rate control in multifocal atrial tachycardia. It is indicated in the conversion of atrial fibrillation to a normal sinus rhythm. In those situations, the patient must first be adequately anticoagulated.

Defibrillation (choice E) is indicated in patients with arrhythmia who are hemodynamically unstable. Typically, it is indicated in ventricular fibrillation and tachycardia. If a patient has syncope as a result of such tachyarrhythmias, then an internal defibrillator must be installed.
A 55-yr-old man with a recent syncopal episode is admitted to the hospital with congestive heart failure. His blood pressure is 160/100, and pulse is 90/min. He has a II/VI harsh systolic ejection murmur. An echocardiogram reveals a thickened ventricular septum and systolic anterior motion of the mitral valve. Which of the following will most likely be found in this patient.

A. Decreased murmur with hand-grip.
B. Decreased murmur with valsalva.
C. Decreased carotid up-stoke.
D. Increased murmur with squatting.
E. Murmur radiating to carotid arteries.

EXPLANATION
The correct answer is A. The thickened ventricular septum and the systolic anterior motion of the mitral valve suggest idiopathic hypertrophic subaortic stenosis (IHSS). The murmur is harsh and systolic and decreases when ventricular volume increases as a result of isometric exercise, as seen with hand-grip exercise.

A decrease in length and intensity is seen with Valsalva (choice B) with most systolic murmurs (but not the murmur of mitral valve prolapse). Prolonged expiratory pressure against a closed glottis reduces the intensity of most murmurs by decreasing both right and left ventricular filling. With the reduced chamber size, however, the IHSS murmur increases.

A delayed carotid upstroke is seen in aortic stenosis (choice C). In IHSS, the carotid upstroke is brisk and often exhibits the bisferiens pulse, in which two fairly rapid carotid peaks are felt as a result of a brief decline in pressure following the sudden decrease in the rate of left ventricular ejection during mid-systole from the development of obstruction.

Squatting increases both venous return and chamber size. It also increases systemic arterial resistance and increases most murmurs, except those caused by IHSS (choice D). The increase in the chamber size causes a reduction in the murmur.

Aortic stenosis leads to a systolic murmur that may radiate to the neck (choice E). The typical harsh systolic murmur of IHSS does not usually radiate to the carotid arteries.
A 3-wk-old African American boy is brought to the ER because of a generalized seizure two hours ago. The infant is highly irritable, weight is 2.5 kg (250 gm below birth weight). Blood pressure is 70/40, pulse is 140/min and respirations are 50/min. Lab studies show blood glucose 120 mg/dl, BUN 50 mg/dl, Serum sodium 170 Meq/L, serum calcium 8.5 Meq/L, Serum magnesium 1.5 mg/dl. Which of the following is most likely cause of infant seizure.

A. Hypocalcemia.
B. Hypoglycemia.
C. Hypomagnesemia.
D. Intracranial hemorrhage.
E. Meningitis.

EXPLANATION

The correct answer is B. The level of serum sodium in this patient is 170 mEq/L. Infants who have hypernatremic dehydration are irritable and lethargic, and have a high-pitched cry. This type of dehydration results from a greater loss of hypotonic fluid than sodium and accounts for about 15% cases of dehydration. Because the patient has no history of diarrhea or vomiting, the hypernatremia may be due to inadequate supply of mother’s milk that does not match the insensible water loss. Another cause can be the high concentration of sodium in mother’s milk. Generally, after the child’s birth, sodium in the colostrum decreases from its highest level to its lowest level by the fourth week. However, some mothers continue to excrete high sodium in their milk and can potentially cause recurrent hypernatremia and in some case intracranial hemorrhage in the infant.

Hypocalcemia (choice A), hypoglycemia (choice B) and hypomagnesemia (choice C) are all potentially metabolic causes of seizures, however in this vignette serum calcium, glucose and magnesium are within normal limits. In patients with hypernatremic dehydration, hyperglycemia can result due to excess glucagon stimulation.

Meningitis (choice E) should be considered in any infant with a seizure with or without fever. However, the marked rise of the serum sodium makes this diagnosis unlikely.
A 25-yr-old woman gravida 2, para 2 is 4-days status post-cesarean section and develops a temperature of 100.7 F (38.2 C). She has had her cesarean section when she went into unstoppable preterm labor with fetus in breech presentation. She had an uncomplicated post-operative course until this temperature elevation. Her pulse is 100/min, blood pressure is 110/70 and respirations are 16. There is discoloration and cyanosis around incision. The area around the incision is completely numb. There is no uterine tenderness on bimannual examination. Which of the following is most likely in this patient.

A. Endometritis.
B. Mastitis.
C. Necrotising faciitis.
D. Preeclampsia.
E. Wound infection.

EXPLANATION

The correct answer is C. Necrotising faciitis is rare but potentially life threatening complication of abdominal wound infection. It typically occurs in patients who are immunocompromised or who have diabetes or cancer. Its clinical diagnosis is characterized by cyanosis, discoloration around the area with numbness of the area. It can be polymicrobial in nature but anaerobes are frequently involved. It is considered potentially fatal condition and aggressive treatment with broad-spectrum antibiotics with surgical debridment is essential.
Q-498
A 44-yr-old woman complains bitterly of severe headache that has been present for several weeks and has not respond to the usual over-the-counter remedies. She locates the headache to the center of the head. It is pretty much constant but it is worse in the morning. She has no other neurologic signs and symptoms. She has had tension headaches in the past but has says that those were located in the back of her head and felt different from the present pain. She is currently under considerable stress because she has been unemployed since undergoing modified radical mastectomy for T3, N1, M0 breast cancer two-years ago. She has several courses of post-operative which she eventually discontinued because of side effects. Which of the following is the most appropriate next step in diagnosis.

A. CT-scan of head.
B. Psychiatric evaluation.
C. Skull x-ray.
D. Aortic arteriogram.
E. Lumbar puncture.

EXPLANATION
The correct answer is A. Persistent headache in a patient with recent history of breast cancer particularly node positive is brain metastasis until proven otherwise. The only acceptable course of action is to take a look radiologically of course and the cheapest and most reliable way would be a CT-scan for primary brain tumors thou MRI if favored however, to show the presence of metastasis an MRI is not needed.
A pharmaceutical company sponsors a physician lecture concerning thrombotic complications of the oral contraceptive pill (OCP). At the start of the presentation, the company’s representative makes a short presentation regarding their particular brand of OCP. He then proceeds to announce that his company would like to award a gift to the physician in the group who gives the largest number of prescriptions for this pill. Which of the following is the most appropriate action?

A. Acceptance of the gift  
B. Attempt to get colleagues to prescribe the medication  
C. Promise to prescribe more of the medication  
D. Refusal of the gift  
E. Request for money rather than a gift

EXPLANATION

The correct answer is D. Pharmaceutical companies often provide funding for educational opportunities for physicians. This involvement is considered acceptable by some and unacceptable by others. Pharmaceutical company involvement, however, should never place the physician in a situation whereby the interests of the patient are not placed in a primary position. In the above scenario, the physician will be rewarded for giving the most prescriptions for this particular oral contraceptive pill (OCP). This reward system may place the physician’s interest against that of the patient. For example, a given patient may benefit more from another OCP, but the physician will feel pressure to prescribe the pill that will bring him the gift. Thus, most specialty societies declare that physicians should not accept gifts if they are given secondary to the physician prescribing certain medications.

Acceptance of the gift (choice A) would legitimize the approach of the company of providing gift incentives to physicians that prescribe their medication. This is considered unethical.

An attempt to get colleagues to prescribe the medication (choice B) or a promise to prescribe more of the medication (choice C) to please the pharmaceutical company representative would also place the patient’s interests in a secondary position. This is considered unethical.

A request for money rather than a gift (choice E) is an example of direct conflict of interest behavior. The interest of the patient in this case is not primary. Therefore, schemes of reward such as that presented above are considered unethical.
Q-500
An elderly patient complains to a physician of sores in the mouth and on the skin. These lesions have developed over about a month. Physical examination demonstrates multiple painful erosions on the oral mucosa and tongue. Raw areas with crusting on the skin is seen on the face and trunk. The patient states that the skin lesions had started as blisters that had quickly broken. While the involved areas were painful, no itchiness had been experienced. Careful examination of the edge of the skin lesions demonstrates a few flaccid bullae. Rubbing of the skin near an affected area easily detaches the superficial part of the epidermis from the underlying skin (Nikolsky’s sign). No target-like lesions are seen. Which of the following is the most likely diagnosis.

A. Bullous pemphigoid.
B. Dermatitis herpetiformis.
C. Pemphigus vulgaris.
D. Stevens-Johnson syndrome.
E. Toxic epidermal necrolysis.

EXPLANATION
The correct answer is C. The patient probably has pemphigus vulgaris, which is an uncommon autoimmune skin disorder characterized by blistering and erosions involving the mucous membranes and skin. The autoimmune attack is on the junctions between epithelial cells in the epidermis. The blisters occur high in the epithelium and can rupture easily, producing painful erosions. Nikolsky’s sign, in which rubbing of apparently unaffected skin causes a separation of the outer layers, is a helpful diagnostic clue. Pemphigus tends to begin in the mouth, where rapid rupture of the blisters may lead to the impression that the initial lesion is an ulcer rather than a blister. Biopsy with immunofluorescence studies can demonstrate blister formation high in the epithelium that is accompanied by IgG deposition on epithelial cell surfaces. Pemphigus vulgaris is a serious, chronic condition that can be life threatening as a result of fluid/electrolyte imbalance, secondary infection, or complications of the high-dose corticosteroid therapy that may be necessary to bring the condition under control.

Bullous pemphigoid (choice A) causes tense bullae that do not rupture easily.

Dermatitis herpetiformis (choice B) causes clusters of intensely pruritic vesicles, papules, and urticarial lesions.

Stevens-Johnson syndrome (choice D) is a severe, blistering, form of erythema multiforme that characteristically shows at least a few target lesions.

Toxic epidermal necrolysis (choice E) can cause widespread flaccid blisters and Nikolsky’s sign may be positive, but this disorder tends to develop much more rapidly than pemphigus vulgaris.