1. During transfusion of a second unit of crossmatched packed red blood cells, a 62-year-old man has the sudden onset of fever, chills, and mild shortness of breath. Transfusion of the first unit was completed 1 hour ago. Yesterday, he underwent a left hemicolectomy for colon cancer. His temperature is 38.4°C (101.1°F), pulse is 90/min, and blood pressure is 126/77 mm Hg. The lungs are clear to auscultation. The remainder of the examination shows no abnormalities. A direct antiglobulin (Coombs) test is negative. Urinalysis shows no hemoglobin. Which of the following is the most likely cause of this patient's symptoms?

A) Acute hemolytic transfusion reaction
B) Anaphylactic transfusion reaction
C) Delayed hemolytic transfusion reaction
D) Nonhemolytic transfusion reaction
E) Transfusion-related acute lung injury

2. A 72-year-old man comes to the physician because of a 4-month history of right-sided upper abdominal pain; he has had decreased appetite resulting in a 9-kg (20-lb) weight loss during this period. He has consumed 4 ounces of whiskey daily for 50 years. He is 193 cm (6 ft 4 in) tall and weighs 82 kg (180 lb); BMI is 22 kg/m^2. His temperature is 37°C (98.6°F), and blood pressure is 140/80 mm Hg. Abdominal examination shows no abnormalities. Laboratory studies show:

Hematocrit	38%
Mean corpuscular volume	90 µm^3
Serum	
Bilirubin, total	2 mg/dL
Direct	1.4 mg/dL
Alkaline phosphatase	500 U/L
AST	50 U/L
Lactate dehydrogenase	200 U/L
Lipase	42 U/L (N=14–280)

Abdominal ultrasonography shows dilated intrahepatic ducts in both lobes and a small gallbladder. A CT scan of the abdomen shows no additional abnormalities. Which of the following is the most appropriate next step in diagnosis?

A) Measurement of serum carcinoembryonic antigen (CEA) concentration
B) Endoscopic retrograde cholangiopancreatography
C) Hepatobiliary scintigraphy
D) Liver biopsy
E) Exploratory laparotomy

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3. A 16-year-old girl is brought to the emergency department after being stabbed in the anterior neck 30 minutes ago. Examination shows a large, pulsatile hematoma at the level of the thyroid cartilage. As the physician watches, the hematoma expands. Which of the following is the most appropriate initial step in management?

A) Esophagoscopy to rule out esophageal injury
B) Endotracheal intubation
C) Arteriography
D) Cricothyroidotomy
E) Tracheostomy

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4. A 57-year-old woman has had pain of the left groin and distal anterior thigh with weight bearing for 3 months. She has difficulty bending forward and tying her left shoe. She walks with a mild limp favoring her left lower extremity. Internal rotation of the left hip produces pain. There is no tenderness over the lateral thigh. Muscle strength and deep tendon reflexes are normal. Which of the following is the most likely diagnosis?

A) Lumbar radiculopathy
B) Osteoarthritis of the hip
C) Osteoarthritis of the knee
D) Rheumatoid arthritis of the hip
E) Trochanteric bursitis

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5. A 40-year-old woman comes to the physician for a follow-up examination. She recently tested positive for the *BRCA1* mutation. She wishes to discuss treatment options. She has no history of serious illness and takes no medications. Her mother and a sister were diagnosed with breast cancer at the ages of 39 and 43 years, respectively. Another sister was diagnosed with breast and ovarian cancer at the age of 35 years. Examination and mammography of the patient show no abnormalities. Which of the following is the most appropriate next step in management to decrease this patient's risk for developing a *BRCA*-associated cancer?

A) Bilateral mastectomy and oophorectomy
B) Tamoxifen therapy and bilateral mastectomy
C) Tamoxifen therapy and bilateral mastectomy and oophorectomy
D) Tamoxifen therapy and bilateral oophorectomy
E) Tamoxifen therapy only

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6. A 60-year-old woman comes to the emergency department 1 hour after the acute onset of a severe diffuse headache. She has vomited once. She is stuporous and responds to vigorous stimulation. There is marked nuchal rigidity. Babinski sign is present bilaterally. A CT scan of the head without contrast shows a hyperintense signal within the basal cisterns and sulci. Which of the following is the most likely diagnosis?

- A) Acute cerebral infarction
- B) Arteriovenous malformation
- C) Astrocytoma
- D) Bacterial abscess
- E) Carotid cavernous fistula
- F) Epidural abscess
- G) Epidural hematoma
- H) Fungal abscess
- I) Glioblastoma multiforme
- J) Intracerebral hemorrhage
- K) Medulloblastoma
- L) Meningioma
- M) Metastatic carcinoma
- N) *Mycobacterium avium-intracellulare* granuloma
- O) Sturge-Weber syndrome
- P) Subarachnoid hemorrhage
- Q) Subdural hematoma

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7. A 67-year-old man comes to the physician because of a lesion on the left ear for 2 years. The lesion has gradually enlarged and ulcerated and occasionally bleeds with minor trauma. The patient worked in construction for 40 years. The lesion is shown. Which of the following is the most likely diagnosis?



A) Actinic keratosis
B) Basal cell carcinoma
C) Keratoacanthoma
D) Melanoma
E) Traumatic ulcer

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8. An 82-year-old woman is admitted to the hospital because she has refused to eat because of a 2-day history of severe abdominal pain. She has type 2 diabetes mellitus treated with insulin. Her temperature is 37°C (98.6°F), pulse is 102/min, and blood pressure is 110/85 mm Hg. Abdominal examination shows mild, diffuse tenderness to palpation. Serum studies show:

Na^+	138 mEq/L
K^+	4 mEq/L
Cl^-	103 mEq/L
HCO_3^-	20 mEq/L
Glucose	202 mg/dL

A CT scan of the abdomen shows thickening of the wall of the small bowel. Which of the following is the most appropriate next step in management?

A) Infusion of heparin
B) Intravenous administration of dopamine
C) Colonoscopy
D) Mesenteric angiography
E) Esophagoduodenostomy

9. A 36-year-old woman with type 1 diabetes mellitus has fever and flank pain. Her temperature is 39°C (102.2°F). Gram stain of the urinary sediment shows many segmented neutrophils and gram-negative bacilli. Leukocyte count is 27,000/mm^3 with 80% segmented neutrophils and 5% bands. Urine culture is positive for *Escherichia coli*. Ampicillin and gentamicin are administered intravenously. Ten days later, she continues to be febrile. Which of the following is the most likely cause?

A) Development of antibiotic resistance
B) Drug reaction
C) Natural course of *E. coli* pyelonephritis in a diabetic patient
D) Perinephric abscess
E) Splenic infarct

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10. A 42-year-old woman is brought to the emergency department 45 minutes after being involved in a motor vehicle collision. She was the restrained driver. On arrival, she has severe abdominal pain. Her temperature is 36.5°C (97.7°F), pulse is 92/min, respirations are 13/min, and blood pressure is 100/60 mm Hg. There is an abrasion over the right flank. The abdomen is nondistended with severe right upper quadrant tenderness. The remainder of the examination, including pelvic and rectal examination, shows no abnormalities. Her hemoglobin concentration is 10.5 g/dL. There is gross hematuria. A pelvic x-ray shows no abnormalities. Which of the following is the most appropriate next step in diagnosis?

A) Measurement of serum creatinine concentration
B) CT scan of the abdomen
C) Cystography
D) Retrograde urethrography
E) Cystoscopy
F) Exploratory laparotomy

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11. A 27-year-old woman comes to the emergency department because of a 6-day history of right flank pain that radiates to her right groin. She is otherwise asymptomatic. She has a 6-year history of Crohn disease and has undergone three resections of the small bowel, mostly involving the distal ileum, as well as resection of the right colon. Current medications include mesalamine, folic acid, and a daily multivitamin. Her temperature is 37.7°C (99.9°F), pulse is 100/min, respirations are 16/min, and blood pressure is 110/70 mm Hg. Abdominal examination shows a well-healed surgical scar at the midline and mild tenderness of the right flank. A CT scan of the abdomen and pelvis shows a calculus in the middle of the right ureter. Which of the following is the most likely precipitating mechanism of this patient's current condition?

A) Excessive intake of calcium and vitamin D
B) Hyperparathyroidism
C) Increased absorption of oxalate
D) Increased secretion of cystine
E) Increased secretion of uric acid

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12. A hospitalized 67-year-old man has chest pain 3 days after undergoing a left colectomy for adenocarcinoma of the sigmoid colon. He is diaphoretic. His temperature is 37.5°C (99.5°F), pulse is 110/min and regular, respirations are 16/min, and blood pressure is 95/75 mm Hg. The skin is cool. Crackles are heard halfway up the lung bases. Cardiac examination shows no murmurs or gallops. An ECG shows ST-segment elevation in leads II, III, and aVF. Which of the following is the most likely finding on pulmonary artery catheterization?

	Cardiac Output	Pulmonary Capillary Wedge Pressure	Systemic Vascular Resistance
A)	Decreased	decreased	normal
B)	Decreased	increased	increased
C)	Decreased	normal	normal
D)	Increased	increased	increased
E)	Increased	normal	decreased
F)	Increased	normal	normal
G)	Normal	increased	normal
H)	Normal	normal	normal

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13. A previously healthy 6-year-old girl is admitted to the hospital because of a 2-day history of fever and progressive left hip pain. She has refused to bear weight on her left leg since awakening 4 hours ago. There is no history of trauma. She is now lying on the stretcher with her left leg abducted and externally rotated. Her temperature is 39.1°C (102.4°F), pulse is 130/min, respirations are 24/min, and blood pressure is 100/60 mm Hg. On examination, she resists any motion of the left lower extremity. There is warmth over the left hip but no erythema or swelling. Her erythrocyte sedimentation rate is 70 mm/h. Arthrocentesis of the left hip yields cloudy fluid; joint fluid analysis shows an erythrocyte count of 10,000/mm^3 and leukocyte count of 196,000/mm^3. Results of culture of the synovial fluid are pending. X-rays of the pelvis and left lower extremity show no abnormalities. In addition to intravenous antibiotic therapy, which of the following is the most appropriate next step in management?

A) Aspirin therapy
B) Colchicine therapy
C) Prednisone therapy
D) Daily needle aspiration of the hip until her symptoms resolve
E) Surgical incision and drainage

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14. A 37-year-old man comes to the physician because of bilateral breast enlargement for 6 months. He takes no medications and does not drink alcohol. Examination shows tender gynecomastia bilaterally and a small nodule on the left testicle. Liver function tests and serum β-hCG concentration are within the reference range. Which of the following is the most likely diagnosis?

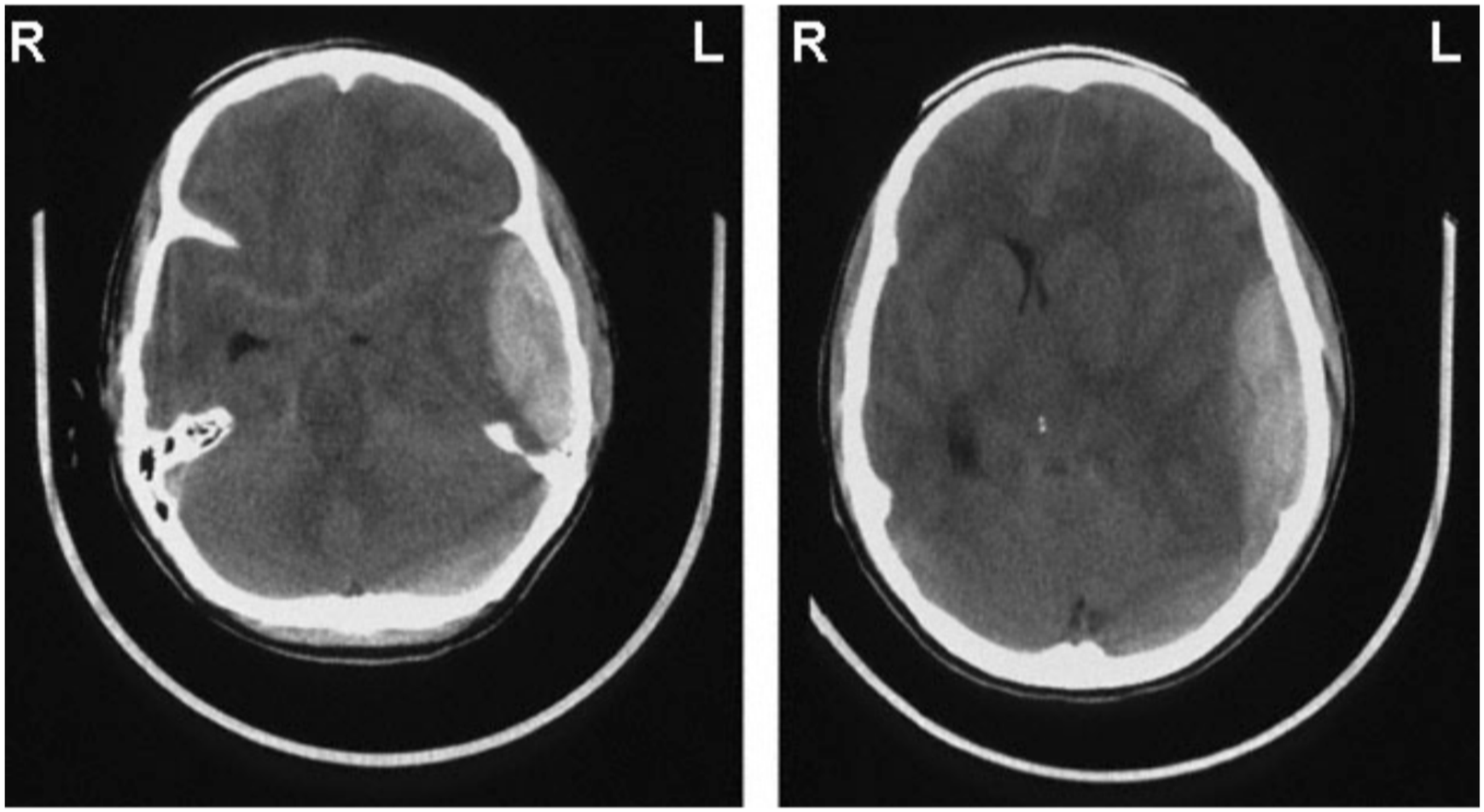
A) Chancroid
B) Congenital adrenal hyperplasia
C) Epididymitis
D) Herpes simplex
E) Hydrocele
F) Leydig cell tumor
G) Penile cancer
H) Pituitary adenoma
I) Primary gonadal failure
J) Syphilis

15. Thirty minutes after undergoing a radical gastrectomy for gastric carcinoma, a 67-year-old woman has an oxygen saturation of 84%. She was extubated in the operating room and is currently receiving 6 L/min of oxygen via nasal cannula and intravenous morphine for pain. She has smoked two packs of cigarettes daily for 50 years and has mild chronic obstructive pulmonary disease. Her temperature is 38°C (100.4°F), pulse is 105/min and regular, respirations are 11/min, and blood pressure is 140/80 mm Hg. There is no jugular venous distention. Breath sounds are decreased at the bases. Cardiac examination shows no murmurs or gallops. A portable x-ray of the chest shows moderate elevation of both diaphragms; no other abnormalities are noted. Arterial blood gas analysis shows:

pH	7.26
P_{CO_2}	73 mm Hg
P_{O_2}	56 mm Hg
HCO_3^-	29 mEq/L

Which of the following is the most likely mechanism of this patient's respiratory insufficiency?

A) Alveolar hypoventilation
B) Decreased pulmonary blood flow
C) Increased alveolar-arterial oxygen gradient
D) Increased metabolic demands
E) Increased physiologic dead space



16. A previously healthy 20-year-old man is brought to the emergency department by his friend 1 hour after being thrown from his bicycle and striking his head on a tree. He was not wearing a helmet. He lost consciousness at the scene for less than 1 minute and then was able to stand and walk with his bicycle back to his friend's car. He fell asleep in the back seat of the car and could not be aroused when they arrived home 30 minutes later. His temperature is 37.8°C (100°F), pulse is 45/min, respirations are 5/min, and blood pressure is 180/90 mm Hg. The left pupil is 6 mm and unreactive, and the right pupil is 4 mm and reactive. Examination shows intact oculocephalic and corneal reflexes. He withdraws the left upper and lower extremities to noxious stimuli but does not open his eyes or speak. The right upper extremity is flexed on the chest, and the right lower extremity is rigidly extended. CT scans of the head without contrast are shown. Which of the following is the most appropriate next step in management?

A) MRI of the brain with contrast
B) Intravenous corticosteroid therapy
C) Intravenous labetalol therapy
D) Tracheal intubation and ventilation
E) Ventriculostomy

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17. A 2-day-old male newborn has a 6-hour history of shortness of breath and blue lips and extremities. He was born at term following an uncomplicated pregnancy and delivery. He appears cyanotic. His pulse is 164/min, respirations are 68/min, and blood pressure is 60/30 mm Hg. Oxygen saturation on room air is 75% and increases to 78% with administration of 100% oxygen by face mask. Diffuse crackles are heard in both lung fields. S_2 is loud; no murmur is heard. The liver edge is palpated 4 cm below the right costal margin. A chest x-ray shows cardiomegaly and moderate pulmonary congestion. Which of the following is the most appropriate next step in management?

A) Echocardiography
B) CT scan of the chest
C) Administration of indomethacin
D) Administration of surfactant
E) Cardiac catheterization

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18. A previously healthy 27-year-old primigravid woman at 28 weeks' gestation is admitted to the hospital 2 days after the onset of constant right upper abdominal pain. Her symptoms have worsened over the past 12 hours. During this period, she also has had decreased appetite, nausea and vomiting, and decreased fetal movement. She has had no contractions, vaginal bleeding, abnormal vaginal discharge, or change in bowel movements. Her temperature is 38°C (100.4°F), pulse is 95/min, and blood pressure is 138/70 mm Hg. The lungs are clear to auscultation. Heart sounds are normal. Examination shows a soft abdomen and tenderness in the right upper quadrant with voluntary guarding and no rebound. Bowel sounds are normal. Fundal height is 28 cm. Laboratory studies show:

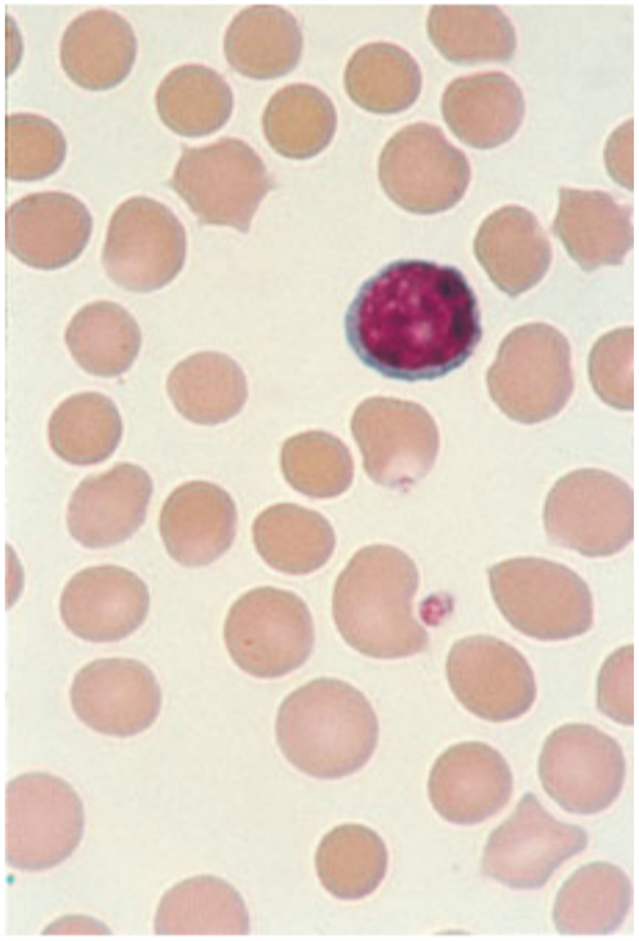
Hemoglobin	12 g/dL
Leukocyte count	14,000/mm^3
Platelet count	140,000/mm^3
Prothrombin time	12 sec (INR=1.06)
Serum	
Na^+	142 mEq/L
K^+	4.5 mEq/L
Cl^-	104 mEq/L
Total bilirubin	1.8 mg/dL
Alkaline phosphatase	268 U/L
AST	40 U/L
ALT	44 U/L
Urine	
Glucose	negative
Protein	trace
Ketones	2+

Which of the following is the most likely diagnosis?

A) Abruptio placentae
B) Acute appendicitis
C) Acute cholecystitis
D) Acute fatty liver of pregnancy
E) Fitz-Hugh–Curtis syndrome
F) Severe preeclampsia

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19. A previously healthy 23-year-old man comes to the physician because of a 3-month history of fatigue. He reports a decrease in exercise tolerance and in overall energy during this period. He has not had chest pain or shortness of breath. He takes no medications and has no known allergies. His father and paternal uncle underwent splenectomy in their 20s; the patient is unsure of the reason for these procedures. The patient does not smoke cigarettes or use illicit drugs. He consumes two mixed drinks of gin and tonic most weekends. He appears comfortable and is not in distress. He is 180 cm (5 ft 11 in) tall and weighs 82 kg (180 lb); BMI is 25 kg/m^2. His pulse is 90/min, and blood pressure is 116/70 mm Hg. The conjunctivae are pale. Cardiopulmonary examination shows no abnormalities. The spleen tip is palpated 3 cm below the left costal margin. A blood smear is shown. Which of the following is the most appropriate next step in management?



A) Avoidance of fava beans
B) Genetic testing
C) Hydroxyurea therapy
D) Iron supplementation
E) Prednisone therapy
F) Vitamin B_{12} (cyanocobalamin) supplementation
G) Bone marrow biopsy
H) Splenectomy

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20. A 77-year-old man is brought to the emergency department after being rescued from a house fire. Firefighters found him unconscious in his bed; the bedroom was full of smoke. The firefighters and paramedics state that the patient probably fell asleep while smoking in bed. On arrival, he does not respond to verbal stimuli and has cough productive of carbonaceous sputum. His temperature is 37.8°C (100°F), pulse is 120/min, respirations are 30/min and labored, and blood pressure is 98/78 mm Hg. Pulse oximetry on 50% oxygen by face mask shows an oxygen saturation of 93%. Examination shows second degree burns over the face and upper extremities. There is marked facial edema, and the eyebrows are singed. On pulmonary examination, air movement is poor. Stridor and wheezes are heard over the lung bases bilaterally. The patient's carboxyhemoglobin concentration is 35%. Arterial blood gas analysis on 50% oxygen by face mask shows:

pH	7.25
P_{CO_2}	65 mm Hg
P_{O_2}	45 mm Hg

After endotracheal intubation and administration of 100% oxygen, this patient should receive fluid resuscitation with which of the following during the next 12 hours?

A) Colloid and isotonic crystalloid solution
B) Fresh frozen plasma
C) Hypertonic crystalloid solution only
D) Isotonic crystalloid solution only
E) Packed red blood cells

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21. A 67-year-old woman is brought to the emergency department because of a 2-day history of increasingly severe abdominal cramps. She also has had a bloating feeling for 6 months. She has not had any operative procedures. Examination shows a nontender, distended, tympanitic abdomen with tinkles and peristaltic rushes on auscultation. There are no masses. Rectal examination shows no abnormalities. An x-ray of the abdomen is shown. After hydration and nasogastric suction, an exploratory laparotomy is performed. Two liters of serous fluid are drained from the abdomen. Peritoneal and bowel surfaces are studded with nodules. The omentum is thickened and "caked" with nodules of tumor, and there is thickening of the underside of the diaphragm. Both ovaries are markedly enlarged and appear abnormal. A frozen section of one of the nodules confirms a malignancy and the presence of psammoma bodies. Which of the following is the most likely diagnosis?



A) Colon cancer
B) Endometrial cancer
C) Gastric cancer
D) Metastatic breast cancer
E) Metastatic cervical cancer
F) Ovarian cancer
G) Pancreatic cancer

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22. An 8-year-old girl has had migrating polyarthralgia and fever for 4 days. She appears ill. Examination shows an evanescent rash. Her left knee is red, swollen, and tender. The chest is clear to auscultation. A grade 4/6, holosystolic apical murmur is heard with radiation to the axilla. There is no organomegaly. Which of the following is the most likely cardiac abnormality?

A) Aortic stenosis
B) Mitral regurgitation
C) Tetralogy of Fallot
D) Tricuspid regurgitation
E) Ventricular septal defect

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23. A 24-year-old man comes to the emergency department 60 minutes after the sudden onset of tearing chest pain radiating to his back. He has no history of serious illness and takes no medications. He does not smoke. He is 190 cm (6 ft 3 in) tall and weighs 80 kg (176 lb); BMI is 22 kg/m^2. His temperature is 37.2°C (99°F), pulse is 120/min, respirations are 14/min, and blood pressure is 110/70 mm Hg in his right arm and 70/40 mm Hg in his left arm. Pulse oximetry on 2 L/min of oxygen via nasal cannula shows an oxygen saturation of 100%. Cardiopulmonary examination shows no abnormalities. The lungs are clear to auscultation. Heart sounds are normal. Pulses are difficult to palpate in the left upper extremity. Peripheral pulses are otherwise normal. A chest x-ray shows a widened upper mediastinum. An ECG shows sinus tachycardia with no acute changes. Which of the following is the most appropriate next step in management?

A) Administration of heparin
B) Administration of labetalol
C) Administration of nitroglycerin
D) Fiberoptic intubation
E) Pericardiocentesis

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24. A 62-year-old woman comes to the physician because of ulcers on her right ankle for 6 months. There is no history of recent trauma. She has a 5-year history of type 2 diabetes mellitus treated with insulin for the past 4 years and a 2-year history of chronic bilateral ankle swelling. Her temperature is 37.7°C (99.9°F), pulse is 82/min, and blood pressure is 140/88 mm Hg. Examination shows ulceration of the medial aspect of the right ankle. There is bilateral lower leg and pedal edema with patches of brown pigmentation. Peripheral pulses are present and normal. Which of the following is the most likely pathogenesis of this condition?

A) Arterial insufficiency
B) Congestive heart failure
C) Neurotrophic ulcer
D) Thromboangiitis obliterans
E) Venous insufficiency

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25. A 42-year-old man comes to the physician because of a 1-month history of generalized itching and fatigue. He has chronic renal failure secondary to glomerulonephritis and receives hemodialysis three times weekly. Examination shows no abnormalities except for a patent arteriovenous fistula in the left forearm. His serum calcium concentration is 8.3 mg/dL, serum phosphorus concentration is 4.1 mg/dL, and serum intact parathyroid hormone concentration is 485 pg/mL (N=10–65). Which of the following is the most likely diagnosis?

A) Familial hypercalcemic hypocalciuria
B) Paraneoplastic syndrome
C) Primary hyperparathyroidism
D) Secondary hyperparathyroidism
E) Tertiary hyperparathyroidism

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26. A previously healthy 47-year-old woman comes to the physician because of a 3-month history of mild hearing loss and ringing in her right ear and a decreased sense of taste on the right. She also has had episodes of unsteadiness during this period and has had trouble understanding speech. She has not had nausea, vomiting, or vertigo. Examination shows no abnormalities. Audiometry shows predominantly high-frequency neural hearing loss on the right. Which of the following is the most likely diagnosis?

A) Acoustic neuroma
B) Meniere disease
C) Meningitis
D) Otosclerosis
E) Pituitary adenoma

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27. A previously healthy 15-year-old girl is brought to the emergency department 1 hour after the sudden onset of difficulty breathing and sharp chest pain that began during track practice. She is 183 cm (6 ft) tall and weighs 55 kg (121 lb); BMI is 16 kg/m^2. On arrival, her temperature is 37°C (98.6°F), pulse is 70/min, and respirations are 28/min. Breath sounds are decreased over the lateral chest on the right; there is hyperresonance to percussion. Cardiac examination shows no abnormalities. Which of the following is the most likely mechanism of these findings?

A) Air collection in the pleural space
B) Alveolar atelectasis
C) Narrowing of moderate-sized airways
D) Pleural inflammation
E) Pulmonary parenchymal inflammation

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28. A previously healthy 42-year-old woman, gravida 2, para 2, comes to the physician because of a 1-month history of discharge from the left nipple. She is sexually active and uses an oral contraceptive. Her temperature is 37°C (98.6°F), pulse is 90/min, respirations are 18/min, and blood pressure is 120/75 mm Hg. Examination shows no breast masses. A serosanguineous discharge is easily expressed from the left nipple. Mammography shows no areas of microcalcification. Which of the following is the most likely diagnosis?

A) Breast abscess
B) Breast cancer
C) Ductal ectasia
D) Fat necrosis
E) Fibroadenoma
F) Fibrocystic changes of the breast
G) Galactocele
H) Intraductal papilloma
I) Mastitis

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29. A 77-year-old woman is admitted to the hospital because of severe cramping pain in the lower abdomen. The pain has been constant for the past 16 hours. The abdomen is markedly distended. A McBurney incisional scar is noted in the right lower quadrant. The x-ray shown was taken shortly after admission. Which of the following is the most likely diagnosis?

A) Cecal cancer
B) Ileoileal intussusception
C) Mechanical obstruction of the small intestine
D) Paralytic ileus
E) Sigmoid volvulus



30. A 32-year-old woman comes to the emergency department 24 hours after the onset of severe abdominal cramps and nausea. During this period, she has vomited yellow-green material once and has had only two bowel movements, which were small and liquid. During the past 6 months, she has had less severe abdominal cramps associated with diarrhea and a 6.8-kg (15-lb) weight loss. She says the cramps have become more severe during the past month. She has no history of serious illness and takes no medications. On arrival, she is in moderate distress. She appears pale. She is 165 cm (5 ft 5 in) tall and weighs 52 kg (114 lb); BMI is 19 kg/m^2. Her temperature is 37.2°C (99°F), pulse is 90/min, and blood pressure is 116/78 mm Hg. Abdominal examination shows moderate distention with mild right lower quadrant tenderness. Her leukocyte count is 14,000/mm^3. A CT scan of the abdomen shows thickening of the terminal ileum and air in the rectum. The colon is not dilated. Which of the following is the most appropriate next step in diagnosis?

A) Barium enema
B) Upper gastrointestinal series with a water-soluble contrast and small bowel follow-through
C) MRI of the abdomen
D) Capsule endoscopy
E) Colonoscopy

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31. A 66-year-old man with unresectable squamous cell lung cancer has the acute onset of severe shortness of breath. An x-ray of the chest shows a unilateral pleural effusion. The patient has been receiving hospice care at home. Which of the following management strategies is most consistent with the patient's preference for hospice care?

A) Initiation of systemic chemotherapy
B) Radiation therapy
C) Open pleurodesis
D) Thoracentesis
E) Tracheostomy

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32. A previously healthy 32-year-old woman is brought to the emergency department 30 minutes after a motor vehicle collision. She was an unrestrained front seat passenger. On arrival, she has pain and tingling in her right leg and is unable to move it. Her pulse is 105/min, respirations are 18/min, and blood pressure is 155/90 mm Hg. The right lower extremity is pale. The dorsalis pedis and posterior tibial pulses are absent on the right. There is a posterior dislocation of the right knee. Motor and sensory function is absent below the right knee. Following reduction of the dislocation and splinting of the right lower extremity, the patient is able to move the leg. Which of the following is the most appropriate next step in diagnosis?

A) Venous duplex ultrasonography of the right lower extremity
B) CT scan of the right lower extremity
C) Arthroscopy
D) Arteriography
E) Nerve conduction studies
F) No further diagnostic studies necessary

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33. A 70-year-old man has a 2-year history of progressive dysphagia and intermittent regurgitation of undigested food. A barium swallow is shown. Which of the following is the most likely cause?

A) Absence of peristalsis after swallowing
B) Cricopharyngeal muscle spasm
C) Diffuse esophageal spasm
D) Severe gastroesophageal reflux



34. A 37-year-old woman is scheduled for operative treatment of an umbilical hernia with incarcerated omentum under general anesthesia. During the operation, a solid nodule is excised, and a frozen section shows metastatic carcinoma consistent with primary ovarian cancer. Which of the following is the most appropriate course of action?

A) Close the operative site and discuss further treatment with the patient when she awakens
B) Place a central venous catheter with a subcutaneous injection port for chemotherapy and discuss further treatment with the patient when she awakens
C) Place a peritoneal dialysis catheter through the operative site for future chemotherapy and discuss further treatment with the patient when she awakens
D) Obtain consent from the next of kin and place a central venous catheter with a subcutaneous injection port for chemotherapy
E) Obtain consent from the next of kin and proceed with laparotomy and tumor debulking

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35. An 82-year-old woman is brought to the physician for a follow-up examination 2 months after she sustained a right hip fracture when she fell in her kitchen. Two years ago, she sustained a Colles fracture in a fall. Examination today shows a well-healed scar over the right hip. Range of motion of the hip joint is full. Her serum calcium concentration is within the reference ranges; her serum 25-hydroxyvitamin D concentration is decreased. A DEXA scan shows osteoporosis. Which of the following is the most likely additional serum abnormality in this patient?

A) Decreased 1α-hydroxylase activity
B) Decreased thyroxine (T_4) concentration
C) Increased calcitonin concentration
D) Increased osteocalcin concentration
E) Increased parathyroid hormone concentration

36. A 25-year-old man comes for a routine health maintenance examination. A harsh systolic murmur is heard. Examination shows no other abnormalities. Echocardiography shows a bicuspid aortic valve. This patient is at increased risk for aortic stenosis as a result of which of the following?

A) Calcification of the valve
B) Formation of atherosclerotic plaque
C) Rupture of the chordae tendineae
D) Streptococcal infection
E) Thrombus deposition on the valve

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37. An 18-year-old woman is brought to the emergency department 20 minutes after she sustained severe head injuries in a high-speed motor vehicle collision in which she was the unrestrained driver. Paramedics report finding a bottle of amphetamines inside the patient's vehicle. On arrival, her Glasgow Coma Scale score is 6, and she is immediately intubated. Her pulse is 50/min, and blood pressure is 180/90 mm Hg. Examination shows numerous ecchymoses; lacerations over the face, trunk, and upper extremities; and right-sided hemotympanum. There are obvious facial fractures. Except for an abrasion over the right upper quadrant, abdominal examination shows no abnormalities. Which of the following is the most likely explanation for this patient's increased blood pressure?

A) Acute renal artery dissection
B) Amphetamine intoxication
C) Decreased minute ventilation
D) Increased intracranial pressure
E) Increased serum catecholamine concentration
F) Pain response related to the fractures

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38. A 55-year-old man comes to the physician's office because of claudication. He smokes two packs of cigarettes per day and has no history of diabetes mellitus. The femoral pulses are palpable bilaterally, and distal pulses are absent. Capillary refill in both feet is less than 5 seconds. Ankle-arm indices are 0.75 on the right and 0.60 on the left. In addition to recommending that he quit smoking, which of the following is the most appropriate initial step in patient care?

A) Balloon angioplasty
B) Femoropopliteal bypass
C) Sympathectomy
D) Vasodilator therapy
E) Prescription for an exercise program

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39. A 51-year-old man comes to the physician 10 days after discovering a nontender mass in his neck. His father and two older brothers were diagnosed with thyroid cancer at the ages of 46, 46, and 49 years, respectively. Examination shows a 2-cm nodule in the right lobe of the thyroid gland. A 1-cm, firm, nontender lymph node is palpable in the anterior cervical chain. Which of the following is the most likely diagnosis?

A) Anaplastic carcinoma
B) Follicular carcinoma
C) Hürthle cell adenoma
D) Medullary carcinoma
E) Papillary carcinoma

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40. A 52-year-old man is brought to the emergency department by his wife because he has been excessively sleepy for the past 2 days. He was hospitalized 3 weeks ago for an episode of acute pancreatitis. He has a long-standing history of alcoholism but has abstained for 8 weeks. He appears lethargic and does not respond to questions. His temperature is 38.4°C (101.1°F). Examination shows severe jaundice and peripheral muscle wasting. There are spider angiomata across the neck. Abdominal examination shows distention and a fluid wave; tenderness cannot be assessed because of his somnolence. Laboratory studies show:

Leukocyte count	11,500/mm^3
Prothrombin time	17 sec (INR 1.4)
Serum	
Urea nitrogen	60 mg/dL
Creatinine	2.6 mg/dL
Albumin	2.0 g/dL
Alkaline phosphatase	182 U/L
AST	56 U/L
ALT	94 U/L

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

A) Abdominal ultrasonography
B) Administration of vitamin B_{12} (cyanocobalamin) and folic acid
C) Endoscopic retrograde cholangiopancreatography
D) Hemodialysis
E) Paracentesis

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41. One week after undergoing laparotomy for a gunshot wound to the right upper quadrant of the abdomen, a 35-year-old man has increasing jaundice and hematemesis. His total serum bilirubin concentration is 8.0 mg/dL. During laparotomy, a through-and-through injury to the right lobe of the liver was found. The entrance and exit wounds of the liver were oversewn with liver sutures. No drain was placed. Upper gastrointestinal endoscopy now shows clots and blood in the duodenum, but no active site of bleeding is identified. Two units of packed red blood cells are administered. Which of the following is the most likely diagnosis?

A) Duodenal ulcer
B) Esophageal varices
C) Gastric ulcer
D) Gastritis
E) Hematobilia

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42. A 57-year-old man comes to the physician because of a 4-week history of mild abdominal cramps, foul-smelling stools, and intermittent diarrhea after meals. He underwent distal pancreatectomy for pancreatitis and chronic pain 3 months ago. He has a history of major depressive disorder and alcoholism; he has not had a drink for the past year. His medications are esomeprazole, sertraline, and vitamin B complex supplement. He has not had any recent changes to his diet. Vital signs are within normal limits. The abdomen is flat and nontender; bowel sounds are hyperactive and high pitched. Laboratory studies show:

Hematocrit	43%
Leukocyte count	12,500/mm^3
Serum	
Amylase activity	90 U/L
Lipase activity	100 U/L

Which of the following is the most appropriate pharmacotherapy?

A) Cholestyramine
B) Dicyclomine
C) Diphenoxylate
D) Metronidazole
E) Pancrelipase

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43. A 57-year-old woman is undergoing elective endoscopic retrograde cholangiopancreatography with 20% benzocaine spray for analgesia and intravenous meperidine and midazolam for sedation. She is receiving 100% oxygen (5 L/min) by nasal cannula. Ten minutes after initiation of the procedure, she becomes mildly confused and cyanotic. She does not have chest or abdominal pain. She has a 5-year history of type 2 diabetes mellitus controlled with metformin. She had a myocardial infarction and coronary artery bypass grafting 3 years ago and has not had cardiac symptoms since then. Laparoscopic cholecystectomy was performed 1 year ago; abdominal ultrasonography 2 weeks ago showed a dilated common bile duct with retained calculi. She has smoked one pack of cigarettes daily for 40 years. Her pulse is 106/min, respirations are 30/min, and blood pressure is 116/78 mm Hg. Pulse oximetry shows a decrease in oxygen saturation from 99% to 84% during the past 10 minutes; oxygen saturation improves significantly with 40% oxygen by face mask. A few crackles are heard at the lung bases. Laboratory studies show:

Hemoglobin	
Methemoglobin	41% (N≤1.5)
Carboxyhemoglobin	2% (N≤5)

Arterial blood gas analysis shows:

P_{CO_2}	43 mm Hg
P_{O_2}	282 mm Hg
O_2 saturation	99%

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

A) Administration of 100% oxygen by nonrebreather face mask
B) Hyperbaric oxygen therapy
C) Exchange transfusion
D) Intravenous administration of methylene blue
E) Mechanical ventilation

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44. A 32-year-old man is brought to the emergency department 45 minutes after being involved in a motorcycle collision. On arrival, he is unconscious. His pulse is 132/min, respirations are 22/min, and blood pressure is 88/62 mm Hg. There are no visible external injuries. The pupils are 6 mm and sluggish. He moves his extremities in response to pain. Which of the following is the most likely cause of the hypotension?

A) Aspiration
B) Cardiac contusion
C) Hypovolemia
D) Neurogenic shock
E) Spinal cord injury

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45. A 10-month-old boy is brought to the physician for a follow-up examination. He has had a mass on the back of his neck that has been enlarging over the past 8 months. His growth and development are appropriate for age. A photograph of the mass is shown. Examination shows no other abnormalities. Which of the following is the most likely explanation for these findings?



A) Cephalocele
B) Fat necrosis
C) Lymphatic hypertrophy
D) Malignant transformation
E) Retention cyst
F) Vascular proliferation

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46. A 62-year-old man with alcoholism comes to the emergency department because he has vomited bright red blood three times during the past 6 hours. His pulse is 130/min, and blood pressure is 90/40 mm Hg. He becomes dizzy when he sits up. Abdominal examination shows marked distention, shifting dullness, and a fluid wave. Upper endoscopy shows esophageal varices and an ulcer with a blood clot on a visible vessel located on the posterior wall of the first part of the duodenum. Which of the following is the most appropriate next step?

A) Intravenous administration of ADH (vasopressin)
B) Intravenous administration of esmolol
C) Intravenous fluid therapy and blood transfusion
D) Endoscopic-guided sclerosis of the esophageal varices
E) Placement of a transjugular intrahepatic portal shunt

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47. A 42-year-old woman comes to the physician because of a 3-month history of episodes of headache, sweating, and rapid heartbeat. She has not had weight loss or chest pain. She has a 10-year history of hypertension that has been difficult to control despite trials of different drug classes. There is no family history of cancer. Her temperature is 37.8°C (100°F), pulse is 100/min, respirations are 16/min, and blood pressure is 172/105 mm Hg. Examination shows no other abnormalities. A 24-hour urine collection shows increased catecholamine and metanephrine concentrations. An MRI of the abdomen shows a 4-cm enhancing mass in the right adrenal gland. Surgical excision of the mass is scheduled. Which of the following is the most appropriate initial pharmacotherapy to prepare this patient for surgical removal of the adrenal mass?

A) Atropine
B) Methylprednisolone
C) Phenoxybenzamine
D) Propranolol
E) Sodium nitroprusside

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48. A 57-year-old man is admitted to the hospital because of a 1-month history of profuse, watery diarrhea with facial flushing. During this period, he has had fatigue and a 4.5-kg (10-lb) weight loss. The diarrhea has not resolved with use of over-the-counter antidiarrheal medications. He has no history of serious illness and takes no other medications. His pulse is 110/min, and blood pressure is 100/70 mm Hg. Examination shows no abnormalities. Intravenous fluid resuscitation is begun. His stool output is 5 L over the next 24 hours; his stool potassium concentration is increased. Serum studies show a pH of 7.56 and a potassium concentration of 2.8 mEq/L. A CT scan of the abdomen shows a pancreatic mass. Which of the following is the most likely diagnosis?

A) Gastrinoma
B) Glucagonoma
C) Insulinoma
D) Somatostatinoma
E) VIPoma

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49. A previously healthy 37-year-old man comes to the physician because of blurred vision for 2 weeks. His blood pressure is 130/85 mm Hg. Visual acuity is 20/20 in both eyes. Funduscopic examination shows slightly pale optic discs. Visual field testing shows bitemporal hemianopia. The remainder of the examination shows no abnormalities. Which of the following is the most likely diagnosis?

A) Basilar artery aneurysm
B) Cavernous sinus thrombosis
C) Craniopharyngioma
D) Optic nerve glioma
E) Pituitary adenoma

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50. While undergoing a splenectomy for immune thrombocytopenic purpura, a 49-year-old man aspirates during a difficult intubation. The diagnosis is confirmed when bile is aspirated from the trachea. Which of the following factors is most predictive of the severity of the resulting aspiration pneumonia?

A) Amount of bile present in the aspirate
B) Duration of endotracheal intubation
C) Presence of solid material in the aspirate
D) Use of prophylactic antibiotics preoperatively
E) Volume of aspirated fluid

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