

# Step 3



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## USMLE STEP 3 MULTIPLE-CHOICE TEST QUESTION FORMATS

The following are strategies for answering one-best-answer questions (eg, Single Items, Multiple Item Sets, and Sequential Item Sets):

- Read each patient vignette and question carefully. It is important to understand what is being asked.
- Try to generate an answer and then look for it in the option list.
- Alternatively, read each option carefully, eliminating those that are clearly incorrect. Of the remaining options, select the one that is most correct.
- If unsure about an answer, it is better to guess since unanswered questions are automatically counted as wrong answers.

### Patient Scenario Formats

Patient scenarios for any Single Item or Sequential Item Set may be provided in either Vignette (paragraph) format, or in Chart/Tabular format. Questions written in Chart/Tabular format will contain relevant patient information in list form, organized in clearly marked sections for ease of review. Familiar medical abbreviations may be used within Chart/Tabular format questions.

### Single-Item Questions

A single patient-centered scenario is associated with one question followed by four or more response options. The response options for all questions are lettered (ie, A, B, C, D, E). You are required to select the best answer to the question. Other options may be partially correct, but there is only ONE BEST answer. This is the traditional, most frequently used multiple-choice question format on the examination.

#### **Example Question 1**

1. A 30-year-old man comes to the emergency department because of an acute episode of renal colic. Medical history is remarkable for episodes of painful urination and passing of what he calls "gravel in my urine." Urinalysis demonstrates microscopic hematuria with some crystalluria and no casts. Supine x-ray of the abdomen shows no abnormalities. A 4-mm renal calculus is detected in the distal right ureter on ultrasonography. There is no evidence of dilation of the collecting system. The patient's pain is responsive to narcotic medication. In addition to administering intravenous fluids, which of the following is the most appropriate next step?

- A. Acidification of urine by drinking cranberry juice
- B. Cystoscopic removal of the calculus
- C. Cystoscopic ureteral lavage
- D. Shock wave lithotripsy
- E. Straining of the urine

(Answer: E)

### Multiple Item Sets

A single patient-centered scenario may be associated with two or three consecutive questions about the information presented. Each question within these sets is associated with the patient scenario and is independent of the other question(s) in the set. The questions within this type of format are designed to be answered in any order. You are required to select the ONE BEST answer to each question.

#### **Example Questions 2 to 3**

A 52-year-old man returns to the office for reevaluation of an ulcer on his right great toe. The patient has a 15-year history of diabetes mellitus and takes glipizide and rosiglitazone. He first noticed the ulcer 2 months ago. One month ago, a 14-day course of oral amoxicillin-clavulanate therapy was prescribed. He has smoked one pack of cigarettes daily for the past 37 years. He is 178 cm (5 ft 10 in) tall and weighs 102 kg (225 lb); BMI is 32 kg/m<sup>2</sup>. Today, vital signs are temperature 38.8°C (101.8°F), pulse 96/min, respirations 12/min, and blood pressure 130/85 mm Hg. Physical examination of the right great toe discloses a 1.5-cm nontender ulcer with a depth of 0.5 cm, a moist base, yellow exudate, and surrounding erythema to the level of the malleoli. Vibration sense and sensation to monofilament examination are absent. Pulses are diminished in both feet. Capillary refill time is 2 seconds in the right great toe. Urinalysis discloses 3+ protein.

2. Which of the following historical factors or physical examination findings is most strongly associated with development of this patient's foot ulcer?

- A. Diminished pedal pulses
- B. Neurologic findings
- C. The patient's weight
- D. Proteinuria
- E. Tobacco use

*(Answer: B)*

3. Which of the following is the most appropriate action at this time?

- A. Begin aggressive debridement in the office
- B. Begin intravenous antibiotic therapy
- C. Refer the patient for transmetatarsal amputation
- D. Schedule the patient for a third-degree skin graft
- E. Switch the amoxicillin-clavulanate to oral ciprofloxacin

*(Answer: B)*

### Sequential Item Sets

A single patient-centered scenario may be associated with two or three consecutive questions about the information presented. Each question is associated with the initial patient scenario but is testing a different point. You are required to select the ONE BEST answer to each question. Questions are designed to be answered in sequential order. You must click "Proceed to Next Item" to view the next question in the set; once you click on this button, the next question will be displayed, and you will not be able to add or change an answer to the previous question.

#### **Example Questions 4 to 5**

A 2-year-old girl is brought to the office by her mother for evaluation of fever. You have been the girl's physician since birth. While in the office, the girl stiffens and then has bilateral, symmetrical shaking of her upper and lower extremities; she becomes mildly cyanotic. The episode lasts for approximately 45 seconds, after which she becomes relaxed and appears to fall asleep. Vital signs at this time are temperature 40.0°C (104.0°F), pulse 120/min, and respirations 40/min. On physical examination she has a generally pink complexion and flushed cheeks. She is limp and somnolent and responds with a cry to noxious stimulus. Tympanic membranes are inflamed bilaterally, nose has a scant, clear discharge, and throat is mildly erythematous. Lungs are clear to auscultation except for transmitted upper airway sounds. Heart has rapid rate with a grade 1/6 systolic murmur at the left sternal border. Complete blood count, blood culture, lumbar puncture, and catheterized urine specimen are obtained and sent for stat analysis. Acetaminophen is administered by rectal suppository. Thirty minutes later the patient awakens and is smiling. She is afebrile. Additional history discloses that she was born at term, she had an uneventful neonatal course, she has normal growth and development, and vaccinations are up-to-date. She has never had an episode similar to this. Initial laboratory results are shown:

Blood	
WBC	10,400/mm <sup>3</sup>
Neutrophils, segmented	25%
Neutrophils, bands	5%
Lymphocytes	65%
Monocytes	5%
Cerebrospinal fluid	0 RBC/mm <sup>3</sup>
Urinalysis	Normal

Other laboratory studies are pending.

4. In addition to ampicillin for otitis media and acetaminophen, this child also should receive which of the following?

- A. Oral ethosuximide
- B. Oral phenobarbital
- C. Oral phenytoin
- D. Rectal diazepam
- E. No additional medications

(Answer E)

5. Two weeks later the patient is brought to the office for a follow-up visit. Her mother says that she is doing well and she has had no recurrence of her symptoms. Examination of the ears shows resolution of the otitis media. Which of the following is the most important diagnostic step at this time?

- A. Audiology testing
- B. Cognitive testing
- C. CT scan of the head
- D. EEG
- E. No additional testing

*(Answer E)*

## INTRODUCTION TO USMLE STEP 3 SAMPLE TEST QUESTIONS

The following pages include 137 sample test questions. Please note that reviewing the sample questions is not a substitute for acquainting yourself with the test software. You should run the Step 3 tutorial and practice test questions that are provided on the USMLE website well before your test date. The sample materials on the USMLE website include additional item formats that do not appear in this booklet (eg, items with associated audio findings). Note that the function of items such as pharmaceutical ads, abstracts, and sequential item sets is unique in an examination interface. You should become familiar with all test question/item formats as they will be used in the actual examination.

In addition, the computer-based case simulation (CCS) format you will see on an actual Step 3 examination is not represented in this booklet. You must become familiar with the CCS format by reading information available in the *USMLE Content Description and General Information* booklet and by practicing with sample CCS cases before you take the Step 3 examination; the information and the practice materials are available on the USMLE Web site ([www.usmle.org](http://www.usmle.org)).

These sample questions are illustrative of the types of questions used in the Step 3 examination. Although the questions exemplify content on the examination, they may not reflect the content coverage on individual examinations. Questions are grouped together by the content appropriate for each examination day in the same manner as in the actual computer-administered test blocks. In the actual examination, the questions will be presented one at a time in a format designed for easy on-screen reading, including use of a panel for the table of normal laboratory values (included here on pages 7–9) and some pictorials. Photographs, charts, and x-rays referred to in this booklet are not of the same quality as the pictorials used in the actual examination. In addition, you will have the capability to adjust the brightness and contrast of pictorials on the computer screen.

To take the following sample test questions as they would be timed in the actual examination, you should allow a maximum of 1 hour for each of the Foundations of Independent Practice (FIP) blocks, and a maximum of 45 minutes for each of the Advanced Clinical Medicine (ACM) blocks, for a total of 3 hours 30 minutes. Please be aware that most examinees perceive the time pressure to be greater during an actual examination. An answer sheet for recording answers for this practice is provided on page 10. An answer key is provided on page 79. In the actual examination, answers will be selected on the screen; **no answer form will be provided.**

## USMLE LABORATORY VALUES

SERUM	<u>Reference Range</u>	<u>SI Reference Intervals</u>
<b>General Chemistry:</b>		
Electrolytes		
Sodium (Na <sup>+</sup> )	136–146 mEq/L	136–146 mmol/L
Potassium (K <sup>+</sup> )	3.5–5.0 mEq/L	3.5–5.0 mmol/L
Chloride (Cl <sup>-</sup> )	95–105 mEq/L	95–105 mmol/L
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	22–28 mEq/L	22–28 mmol/L
Urea nitrogen	7–18 mg/dL	2.5–6.4 mmol/L
Creatinine	0.6–1.2 mg/dL	53–106 μmol/L
Glucose	Fasting: 70–100 mg/dL Random, non-fasting: <140 mg/dL	3.8–5.6 mmol/L <7.77 mmol/L
Calcium	8.4–10.2 mg/dL	2.1–2.6 mmol/L
Magnesium (Mg <sup>2+</sup> )	1.5–2.0 mg/dL	0.75–1.0 mmol/L
Phosphorus (inorganic)	3.0–4.5 mg/dL	1.0–1.5 mmol/L
<b>Hepatic:</b>		
Alanine aminotransferase (ALT)	10–40 U/L	10–40 U/L
Aspartate aminotransferase (AST)	12–38 U/L	12–38 U/L
Alkaline phosphatase	25–100 U/L	25–100 U/L
Amylase	25–125 U/L	25–125 U/L
Bilirubin, Total // Direct	0.1–1.0 mg/dL // 0.0–0.3 mg/dL	2–17 μmol/L // 0–5 μmol/L
Proteins, total	6.0–7.8 g/dL	60–78 g/L
Albumin	3.5–5.5 g/dL	35–55 g/L
Globulin	2.3–3.5 g/dL	23–35 g/L
<b>Lipids:</b>		
Cholesterol		
Total	Normal: <200 mg/dL High: >240 mg/dL	<5.2 mmol/L >6.2 mmol/L
HDL	40–60 mg/dL	1.0–1.6 mmol/L
LDL	<160 mg/dL	<4.2 mmol/L
Triglycerides	Normal: <150 mg/dL Borderline: 151–199 mg/dL	<1.70 mmol/L 1.71–2.25 mmol/L
<b>Iron Studies:</b>		
Ferritin	Male: 20–250 ng/mL Female: 10–120 ng/mL	20–250 μg/L 10–120 μg/L
Iron	Male: 65–175 μg/dL Female: 50–170 μg/dL	11.6–31.3 μmol/L 9.0–30.4 μmol/L
Total iron-binding capacity	250–400 μg/dL	44.8–71.6 μmol/L
Transferrin	200–360 mg/dL	2.0–3.6 g/L

## USMLE LABORATORY VALUES (continued)

	<u>Reference Range</u>	<u>SI Reference Intervals</u>
<b>Endocrine:</b>		
Follicle-stimulating hormone	Male: 4–25 mIU/mL Female: premenopause 4–30 mIU/mL midcycle peak 10–90 mIU/mL postmenopause 40–250 mIU/mL	4–25 IU/L 4–30 IU/L 10–90 IU/L 40–250 IU/L
Luteinizing hormone	Male: 6–23 mIU/mL Female: follicular phase 5–30 mIU/mL midcycle 75–150 mIU/mL postmenopause 30–200 mIU/mL	6–23 IU/L 5–30 IU/L 75–150 IU/L 30–200 IU/L
Growth hormone - arginine stimulation	Fasting: <5 ng/mL Provocative stimuli: >7 ng/mL	<5 µg/L >7 µg/L
Prolactin (hPRL)	Male: <17 ng/mL Female: <25 ng/mL	<17 µg/L <25 µg/L
Cortisol	0800 h: 5–23 µg/dL 1600 h: 3–15 µg/dL 2000 h: <50% of 0800 h	138–635 nmol/L 82–413 nmol/L Fraction of 0800 h: <0.50
TSH	0.4–4.0 µU/mL	0.4–4.0 mIU/L
Triiodothyronine (T <sub>3</sub> ) (RIA)	100–200 ng/dL	1.5–3.1 nmol/L
Triiodothyronine (T <sub>3</sub> ) resin uptake	25%–35%	0.25–0.35
Thyroxine (T <sub>4</sub> )	5–12 µg/dL	64–155 nmol/L
Free T <sub>4</sub>	0.9–1.7 ng/dL	12.0–21.9 pmol/L
Thyroidal iodine ( <sup>123</sup> I) uptake	8%–30% of administered dose/24 h	0.08–0.30/24 h
Intact PTH	10–60 pg/mL	10–60 ng/L
17-Hydroxycorticosteroids	Male: 3.0–10.0 mg/24 h Female: 2.0–8.0 mg/24 h	8.2–27.6 µmol/24 h 5.5–22.0 µmol/24 h
17-Ketosteroids, total	Male: 8–20 mg/24 h Female: 6–15 mg/24 h	28–70 µmol/24 h 21–52 µmol/24 h
<b>Immunoglobulins:</b>		
IgA	76–390 mg/dL	0.76–3.90 g/L
IgE	0–380 IU/mL	0–380 kIU/L
IgG	650–1500 mg/dL	6.5–15.0 g/L
IgM	50–300 mg/dL	0.5–3.0 g/L
<b>Other, serum:</b>		
Creatinine clearance	Male: 97–137 mL/min Female: 88–128 mL/min	97–137 mL/min 88–128 mL/min
Creatine kinase	Male: 25–90 U/L Female: 10–70 U/L	25–90 U/L 10–70 U/L
Lactate dehydrogenase	45–200 U/L	45–200 U/L
Osmolality	275–295 mOsmol/kg H <sub>2</sub> O	275–295 mOsmol/kg H <sub>2</sub> O
Uric acid	3.0–8.2 mg/dL	0.18–0.48 mmol/L
<b>GASES, ARTERIAL BLOOD (ROOM AIR)</b>		
PO <sub>2</sub>	75–105 mm Hg	10.0–14.0 kPa
PCO <sub>2</sub>	33–45 mm Hg	4.4–5.9 kPa
pH	7.35–7.45	[H <sup>+</sup> ] 36–44 nmol/L
<b>CEREBROSPINAL FLUID</b>		
Cell count	0–5/mm <sup>3</sup>	0–5 × 10 <sup>6</sup> /L
Chloride	118–132 mEq/L	118–132 mmol/L
Gamma globulin	3%–12% total proteins	0.03–0.12
Glucose	40–70 mg/dL	2.2–3.9 mmol/L
Pressure	70–180 mm H <sub>2</sub> O	70–180 mm H <sub>2</sub> O
Proteins, total	<40 mg/dL	<0.40 g/L

## USMLE LABORATORY VALUES (continued)

	<u>Reference Range</u>	<u>SI Reference Intervals</u>
<b>HEMATOLOGIC</b>		
<i>Complete Blood Count:</i>		
Hematocrit	Male: 41%–53% Female: 36%–46%	0.41–0.53 0.36–0.46
Hemoglobin, blood	Male: 13.5–17.5 g/dL Female: 12.0–16.0 g/dL	135–175 g/L 120–160 g/L
Mean corpuscular hemoglobin (MCH)	25–35 pg/cell	0.39–0.54 fmol/cell
Mean corpuscular hemoglobin conc. (MCHC)	31%–36% Hb/cell	4.8–5.6 mmol Hb/L
Mean corpuscular volume (MCV)	80–100 $\mu\text{m}^3$	80–100 fL
Volume		
Plasma	Male: 25–43 mL/kg Female: 28–45 mL/kg	0.025–0.043 L/kg 0.028–0.045 L/kg
Red cell	Male: 20–36 mL/kg Female: 19–31 mL/kg	0.020–0.036 L/kg 0.019–0.031 L/kg
Leukocyte count (WBC)	4500–11,000/mm <sup>3</sup>	4.5–11.0 $\times 10^9$ /L
Neutrophils, segmented	54%–62%	0.54–0.62
Neutrophils, bands	3%–5%	0.03–0.05
Lymphocytes	25%–33%	0.25–0.33
Monocytes	3%–7%	0.03–0.07
Eosinophils	1%–3%	0.01–0.03
Basophils	0%–0.75%	0.00–0.0075
Platelet count	150,000–400,000/mm <sup>3</sup>	150–400 $\times 10^9$ /L
<i>Coagulation:</i>		
Partial thromboplastin time (PTT) (activated)	25–40 seconds	25–40 seconds
Prothrombin time (PT)	11–15 seconds	11–15 seconds
D-Dimer	$\leq 250$ ng/mL	$\leq 1.4$ nmol/L
<i>Other, Hematologic:</i>		
Reticulocyte count	0.5%–1.5%	0.005–0.015
Erythrocyte count	Male: 4.3–5.9 million/mm <sup>3</sup> Female: 3.5–5.5 million/mm <sup>3</sup>	4.3–5.9 $\times 10^{12}$ /L 3.5–5.5 $\times 10^{12}$ /L
Erythrocyte sedimentation rate (Westergren)	Male: 0–15 mm/h Female: 0–20 mm/h	0–15 mm/h 0–20 mm/h
CD4+ T-lymphocyte count	$\geq 500$ /mm <sup>3</sup>	$\geq 0.5 \times 10^9$ /L
Troponin I	$\leq 0.04$ ng/mL	$\leq 0.04$ $\mu\text{g/L}$
<i>Endocrine:</i>		
Hemoglobin A <sub>1c</sub>	$\leq 6\%$	$\leq 42$ mmol/mol
<b>URINE</b>		
Calcium	100–300 mg/24 h	2.5–7.5 mmol/24 h
Osmolality	50–1200 mOsmol/kg H <sub>2</sub> O	50–1200 mOsmol/kg H <sub>2</sub> O
Oxalate	8–40 $\mu\text{g/mL}$	90–445 $\mu\text{mol/L}$
Proteins, total	$< 150$ mg/24 h	$< 0.15$ g/24 h
<b>BODY MASS INDEX (BMI)</b>		
	Adult: 19–25 kg/m <sup>2</sup>	

## ANSWER FORM FOR USMLE STEP 3 SAMPLE QUESTIONS

### Block 1 (Questions 1–38): FIP

- |          |           |           |           |           |
|----------|-----------|-----------|-----------|-----------|
| 1. _____ | 9. _____  | 17. _____ | 25. _____ | 33. _____ |
| 2. _____ | 10. _____ | 18. _____ | 26. _____ | 34. _____ |
| 3. _____ | 11. _____ | 19. _____ | 27. _____ | 35. _____ |
| 4. _____ | 12. _____ | 20. _____ | 28. _____ | 36. _____ |
| 5. _____ | 13. _____ | 21. _____ | 29. _____ | 37. _____ |
| 6. _____ | 14. _____ | 22. _____ | 30. _____ | 38. _____ |
| 7. _____ | 15. _____ | 23. _____ | 31. _____ |           |
| 8. _____ | 16. _____ | 24. _____ | 32. _____ |           |
- 

### Block 2 (Questions 39–77): FIP

- |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|
| 39. _____ | 47. _____ | 55. _____ | 63. _____ | 71. _____ |
| 40. _____ | 48. _____ | 56. _____ | 64. _____ | 72. _____ |
| 41. _____ | 49. _____ | 57. _____ | 65. _____ | 73. _____ |
| 42. _____ | 50. _____ | 58. _____ | 66. _____ | 74. _____ |
| 43. _____ | 51. _____ | 59. _____ | 67. _____ | 75. _____ |
| 44. _____ | 52. _____ | 60. _____ | 68. _____ | 76. _____ |
| 45. _____ | 53. _____ | 61. _____ | 69. _____ | 77. _____ |
| 46. _____ | 54. _____ | 62. _____ | 70. _____ |           |
- 

### Block 3 (Questions 78–107): ACM

- |           |           |           |            |            |
|-----------|-----------|-----------|------------|------------|
| 78. _____ | 84. _____ | 90. _____ | 96. _____  | 102. _____ |
| 79. _____ | 85. _____ | 91. _____ | 97. _____  | 103. _____ |
| 80. _____ | 86. _____ | 92. _____ | 98. _____  | 104. _____ |
| 81. _____ | 87. _____ | 93. _____ | 99. _____  | 105. _____ |
| 82. _____ | 88. _____ | 94. _____ | 100. _____ | 106. _____ |
| 83. _____ | 89. _____ | 95. _____ | 101. _____ | 107. _____ |
- 

### Block 4 (Questions 108–137): ACM

- |            |            |            |            |            |
|------------|------------|------------|------------|------------|
| 108. _____ | 114. _____ | 120. _____ | 126. _____ | 132. _____ |
| 109. _____ | 115. _____ | 121. _____ | 127. _____ | 133. _____ |
| 110. _____ | 116. _____ | 122. _____ | 128. _____ | 134. _____ |
| 111. _____ | 117. _____ | 123. _____ | 129. _____ | 135. _____ |
| 112. _____ | 118. _____ | 124. _____ | 130. _____ | 136. _____ |
| 113. _____ | 119. _____ | 125. _____ | 131. _____ | 137. _____ |

## USMLE STEP 3 SAMPLE TEST QUESTIONS

**GENERAL INSTRUCTIONS:** Read each question carefully and in the order in which it is presented. Then select the one best response option of the choices offered. More than one option may be partially correct. You must select the **ONE BEST** answer and fill in the corresponding blank line on the answer sheet.

Some items are grouped together around a clinical vignette as a set or case; be particularly careful to read and answer these cases or sets of items in the order they are presented.

The items in this exam are divided into blocks according to the day they will appear on the actual Step 3 examination. The first day of the Step 3 examination is referred to as Foundations of Independent Practice (FIP), and the second day is referred to as Advanced Clinical Medicine (ACM).

Block 1:	Foundations of Independent Practice (FIP)	Items 1–38
Block 2:	Foundations of Independent Practice (FIP)	Items 39–77
Block 3:	Advanced Clinical Medicine (ACM)	Items 78–107
Block 4:	Advanced Clinical Medicine (ACM)	Items 108–137

### **Block 1: FIP**

Items 1–38; Time - 1 hour

**ALL ITEMS REQUIRE SELECTION OF ONE BEST CHOICE.**

1. A 30-year-old woman comes to the office because of a 3-day history of joint pain in her hands and a rash over her chest and arms that is slowly resolving. The joint pain in her hands has persisted and is exacerbated by writing or typing. She rates the pain as a 3 on a 10-point scale. The patient is a preschool teacher and reports that one of her students had a facial rash and fever 1 week prior to the development of her symptoms. The patient's medical history is unremarkable and her only medication is an oral contraceptive. She is in a monogamous relationship with her husband. She does not smoke cigarettes, drink alcoholic beverages, or use illicit drugs. BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 38.1°C (100.5°F), pulse 94/min, respirations 18/min, and blood pressure 107/58 mm Hg. Physical examination discloses a blanching, erythematous, papular rash on the anterior chest and proximal upper extremities. The first and second metacarpophalangeal joints of both hands are tender and swollen. The wrist joints also are tender to palpation but there is minimal swelling. Which of the following microorganisms is most likely to have caused this patient's symptoms?
- (A) Adenovirus
  - (B) *Borrelia burgdorferi*
  - (C) Coxsackievirus
  - (D) *Ehrlichia chaffeensis*
  - (E) Parvovirus B19

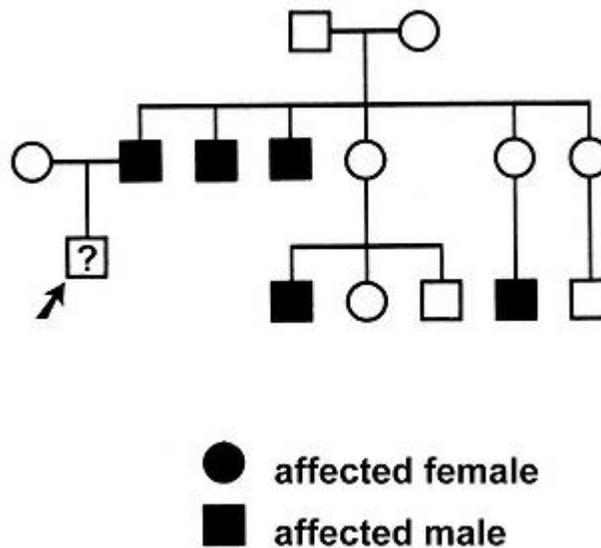
2. A 34-year-old elementary school teacher comes to the office because of a 1-month history of worsening right upper quadrant abdominal pain and discomfort. She describes the pain as a dull ache and says it is not affected by eating or defecating. She has not had nausea or changes in appetite or bowel habits. She feels the pain constantly while she is awake, but it rarely keeps her from sleeping. Acetaminophen provides occasional relief. She has been otherwise healthy. Medical history is unremarkable and her only other medication is an oral contraceptive. Vital signs are normal. Abdominal examination discloses hepatomegaly but no palpable masses or evidence of cirrhosis. Results of liver function tests and serum  $\alpha$ -fetoprotein concentration are within the reference ranges. Serologic studies for hepatitis B and C are negative. Ultrasonography of the abdomen shows a 4×4-cm mass in the right lobe of the liver. Which of the following is the most likely diagnosis?
- (A) Hepatic adenoma  
 (B) Hepatocellular cancer  
 (C) Hydatid cyst  
 (D) Metastatic ovarian cancer
3. A 12-year-old girl is brought to the emergency department by her mother because of a 1-week history of worsening swelling in her legs. The patient also noticed blood in her urine yesterday. The bleeding has not recurred. She had an upper respiratory tract infection and sore throat 1 week ago that caused her to miss several days of school. Medical history is otherwise unremarkable and she takes no routine medications. Menarche has not yet occurred. BMI is 20 kg/m<sup>2</sup>. Vital signs are temperature 37.0°C (98.6°F), pulse 78/min, respirations 12/min, and blood pressure 136/84 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 100%. Physical examination discloses erythema of the posterior pharynx, mild cervical lymphadenopathy, and 3+ pitting edema to both knees. Results of urinalysis are shown:

Protein	150 mg/dL
Blood	Positive
Leukocyte esterase	Positive
Nitrite	Negative
WBCs	5–10/hpf
RBCs	10–25/hpf
Casts	1–2/lpf

Results of which of the following laboratory studies are most likely to be abnormal in this patient?

- (A) Bleeding time  
 (B) Erythrocyte count  
 (C) Serum concentration of C3  
 (D) Serum IgA concentration  
 (E) Serum rheumatoid factor assay

4. A 45-year-old woman comes to the office because she has noticed during the past several months that her fingernails have become white, increasingly brittle, and seem to lift off her nail beds easily. During this time, she also has had episodes of feeling warm and perspiring. Medical history is remarkable for intravenous drug use 25 years ago. The patient takes only a multivitamin. Last menstrual period was 3 weeks ago. She appears thin and mildly anxious. She is 170 cm (5 ft 7 in) tall and weighs 48.5 kg (107 lb); BMI is 17 kg/m<sup>2</sup>. Vital signs are temperature 37.0°C (98.6°F), pulse 106/min, respirations 20/min, and blood pressure 136/92 mm Hg. Physical examination of the hands shows a white discoloration of the nail beds. The remainder of the examination shows no abnormalities. Which of the following is the most likely diagnosis?
- (A) Chronic obstructive pulmonary disease
  - (B) Diabetes mellitus
  - (C) Endocarditis
  - (D) Hyperthyroidism
  - (E) Perimenopause



5. A 30-year-old woman, who has been a patient in the practice for several years, comes to the office to ask for advice. Her husband has a family history of retinitis pigmentosa and she wants to know the probability of her 4-year-old son developing the disease. A family pedigree is shown. Which of the following is the most appropriate statement to the patient?
- (A) A geneticist should be consulted to answer her question
  - (B) Her son must be tested to determine if he is affected
  - (C) Her son will not be affected
  - (D) She does not need to know, since there is nothing she can do if her son does have the condition
  - (E) There is a 100% chance that her son will be affected

6. A 48-year-old man comes to the clinic because of a 10-year history of recurrent, intrusive thoughts that his house will be broken into and damaged by criminals or accidentally destroyed by a fire when he is not home. These thoughts have worsened during the past 2 months. He reports now spending 4 hours daily checking that the doors and windows are closed and locked and that the stove and oven are turned off; he previously spent 2 hours daily doing these tasks. He says he cannot keep a job or leave the house very much because of the amount of time he spends checking these things. He has no other history of serious illness and takes no medications. Physical examination shows no abnormalities. On mental status examination, he has an anxious mood and a sad affect. He is fully oriented. He is not having hallucinations or delusions. The most effective pharmacotherapy for this patient is an agent that targets which of the following neurotransmitters?
- (A)  $\gamma$ -Aminobutyric acid
  - (B) Dopamine
  - (C) Glutamate
  - (D) Norepinephrine
  - (E) Serotonin
7. A phase 2, multicenter trial was conducted to determine the efficacy of a new vaccine for prevention of HIV infection. The study enrolled 4000 subjects, aged 20 to 65 years. Of these subjects, 2100 were men and 1900 were women; 2500 were white, 1000 were African American, 300 were Hispanic, and 200 were Asian/Pacific Islanders. Results of the trial showed no overall benefit of the vaccine. However, post hoc analysis disclosed a small but statistically significant vaccine protection among African American subjects. Which of the following is the most accurate rationale for questioning the validity of efficacy analysis of the HIV vaccine among the African American study subjects?
- (A) Allocation bias favored African American subjects
  - (B) HIV infection is more prevalent among African American populations
  - (C) The study was not blinded
  - (D) There was a Type II error
  - (E) Vaccine response among African American subjects was not the primary outcome measure
8. A 12-year-old boy with sickle cell disease and type 1 diabetes mellitus is brought to the office by his mother for an initial visit. The family recently moved to the area. Type 1 diabetes mellitus was diagnosed in the patient 6 years ago. Since that time, he has been treated with insulin and dietary management. His insulin regimen has not changed during the past year; however, his mother says he has been only marginally compliant with his insulin and dietary regimens. His diabetic diary shows home fingerstick blood glucose concentrations ranging from 140–200 mg/dL during the past 3 months. He admits to checking his glucose concentrations infrequently. Measurement of hemoglobin A<sub>1c</sub> obtained last week was 5.4%. The patient's vital signs are temperature 36.8°C (98.2°F), pulse 72/min, respirations 24/min, and blood pressure 110/64 mm Hg. Physical examination shows no abnormalities. Which of the following is the most likely explanation for the discrepancy between the patient's home fingerstick blood glucose concentrations and his hemoglobin A<sub>1c</sub>?
- (A) He has iron deficiency anemia
  - (B) His daily glucose control is better than recorded
  - (C) His glucometer is reading falsely high and should be replaced
  - (D) His hemoglobin A<sub>1c</sub> is likely a result of laboratory error and should be repeated
  - (E) His sickle cell disease is affecting his hemoglobin A<sub>1c</sub>

9. A 35-year-old man, who has been your patient for the past year, comes to the office to request that a copy of his medical records be sent to another physician in town. The patient has an overdue account balance of \$750, which he has not paid for several months. He signs an office form authorizing release of health information and provides the name and address of the other physician to whom he would like the records sent. It is most appropriate to inform this patient of which of the following regarding his request for release of his medical records?
- (A) They will be released to his new physician promptly
  - (B) They will be released when he makes a payment on his account
  - (C) They will be released when he pays his balance in full
  - (D) They will be released when his new physician contacts your office and requests them
10. A 47-year-old man is admitted to the intensive care unit because of lower gastrointestinal bleeding. He has a history of alcohol-induced cirrhosis. Physical examination shows marked ascites and splenomegaly; the spleen tip is palpated 4 cm below the left costal margin. Results of laboratory studies are shown:

Serum		Blood	
Creatinine	1.5 mg/dL	Hematocrit	29%
		Hemoglobin	9.7 g/dL
		Platelet count	105,000/mm <sup>3</sup>
		PT	25 seconds
		INR	2.5

Which of the following mechanisms most increases this patient's risk for bleeding?

- (A) Decreased production of factor VII
  - (B) Defective platelet aggregation
  - (C) Deficiency of thrombopoietin
  - (D) Inhibition of vitamin K epoxide reductase
  - (E) Splenic sequestration
11. A 57-year-old woman comes to the office for a preoperative evaluation 2 weeks before undergoing scheduled laparoscopic cholecystectomy. Medical history is otherwise unremarkable and the patient takes no medications. Family history is significant for stable angina in her father and rheumatoid arthritis in her mother. The patient has a 102-year-old grandmother who resides in a nursing care facility and has Parkinson disease. The patient does not smoke cigarettes or drink alcoholic beverages. During the interview, her face is expressionless. She has a flexed posture and is unable to open her mouth wide. She is 173 cm (5 ft 8 in) tall and weighs 81 kg (179 lb); BMI is 27 kg/m<sup>2</sup>. Vital signs are normal. Physical examination discloses thickening and hardening of the skin over the dorsum of the hands and forearms, as well as mild kyphosis. Strength testing shows no abnormalities; muscle tension is normal. Passive and active range of motion of the upper extremities is full. Gait is slow and deliberate. The remainder of the physical examination discloses no abnormalities. Prior to surgery, further evaluation is indicated for which of the following conditions in this patient?
- (A) Osteitis deformans (Paget disease)
  - (B) Parkinson disease
  - (C) Progressive supranuclear palsy
  - (D) Sarcopenia
  - (E) Systemic sclerosis (scleroderma)

## Question

In patients with cirrhosis and acute bleeding esophageal varices, how do endoscopic sclerotherapy and emergency portacaval shunt compare for control of bleeding and survival?

## Methods

**Design:** Randomized controlled trial (San Diego Bleeding Esophageal Varices Study). ClinicalTrials.gov NCT00690027.

**Allocation:** Concealed.

**Blinding:** Blinded (gastroenterologist who evaluated patients for portal-systemic encephalopathy).

**Follow-up period:** Up to 17 years.

**Setting:** University of California San Diego Medical Center.

**Patients:** 211 patients (mean age 49 years, 77% men) with acute bleeding esophageal varices resulting from cirrhosis, who required a transfusion of  $\geq 2$  units of blood and, for patients transferred from other hospitals, observation of upper gastrointestinal bleeding within 48 hours of transfer. Exclusion criterion was  $> 1$  previous session of endoscopic sclerotherapy.

**Intervention:** Endoscopic sclerotherapy ( $n = 106$ ) or emergency portacaval shunt ( $n = 105$ ). Emergency portacaval shunt comprised a direct side-to-side or direct end-to-side portacaval shunt done within 8 hours of initial contact.

**Outcomes:** Control of bleeding at  $> 30$  days, survival, readmissions for variceal or nonvariceal bleeding requiring transfusion of packed red blood cells, and recurrent portal-systemic encephalopathy.

**Patient follow-up:** 100% (minimum follow-up until death or 9.4 years).

## Main results

15-year survival was lower with endoscopic sclerotherapy than with emergency portacaval shunt (10/106 vs 48/105, relative benefit reduction 79%, 95% CI 62 to 89; number needed to harm 3, CI 2 to 4). Other main results are shown in the Table.

### Endoscopic sclerotherapy (EST) vs emergency portacaval shunt (EPCS) in patients with cirrhosis and acute bleeding esophageal varices

Outcomes	Child-Pugh risk class	EST	EPCS	P value
Control of bleeding at $> 30$ days*		20%	100%	$<.001$
Median survival (years)	A	4.62	10.43	.003
	B	2.61	6.19	$<.001$
	C	0.58	5.30	.005
Mean number of readmissions for variceal bleeding requiring packed red blood cell transfusion		6.8	0.4	$<.001$
Recurrent portal-systemic encephalopathy†		35%	15%	.001

\*Excluding indeterminate deaths at 14 days from nonbleeding causes.  
†In patients who survived 30 days and left hospital.

## Conclusion

In patients with cirrhosis and acute bleeding esophageal varices, emergency portacaval shunt was better than endoscopic sclerotherapy for control of bleeding, recurrent encephalopathy, and survival.

**Sources of funding:** National Institutes of Health and Surgical Education and Research Foundation.

**Structured abstract based on:** Orloff MJ, Isenberg JI, Wheeler HO, et al. **Randomized trial of emergency endoscopic sclerotherapy versus emergency portacaval shunt for acutely bleeding esophageal varices in cirrhosis.** J Am Coll Surg. 2009;209:25-40. 19651060

Items #12–14 refer to the abstract displayed on the previous page.

12. A 52-year-old man with hepatic cirrhosis comes to the emergency department because of a 3-hour history of vomiting blood. Esophagogastroduodenoscopy confirms actively bleeding esophageal varices. Based on the abstract shown, the physician is considering an emergency portacaval shunt (EPCS) procedure rather than endoscopic sclerotherapy (EST). According to the results in the abstract, approximately how many patients must be treated with EPCS rather than EST to prevent one case of recurrent portal-systemic encephalopathy?
- (A) 1
  - (B) 3
  - (C) 5
  - (D) 10
  - (E) 16
13. Which of the following most strongly limits the generalizability of this study's findings?
- (A) The allocation was concealed
  - (B) EPCS is available only at specialty centers
  - (C) The follow-up period was too short
  - (D) The patients were not blinded
  - (E) Unmeasured confounders were not controlled by the study design
14. Which of the following conclusions is most appropriate based on the results presented in the table?
- (A) The 95% confidence interval for the difference in survival between EPCS and EST for Child-Pugh class A patients includes 0 years
  - (B) EPCS is more effective than EST in decreasing hospital readmissions for variceal bleeding requiring transfusion
  - (C) The median survival after EPCS is statistically significantly less for Child-Pugh class C than for Child-Pugh class B
  - (D) The randomization procedure was ineffective in decreasing bias in this study

**END OF SET**

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15. A 32-year-old man comes to the office because of a 10-day history of a red rash that has spread over his entire torso. He says the rash is not itchy or painful. He reports having a flu-like illness nearly 5 weeks ago, with associated headache, neck stiffness, muffled hearing, and a canker sore on his tongue. All of these symptoms have resolved without treatment. Additional medical history is unremarkable and he takes no medications. BMI is 18 kg/m<sup>2</sup>. Vital signs are normal. Specific additional history should be obtained to determine whether which of the following has occurred during the past 6 months?
- (A) Blood transfusions
  - (B) Exposure to toxic chemicals
  - (C) International travel
  - (D) Tobacco use
  - (E) Unprotected sexual intercourse

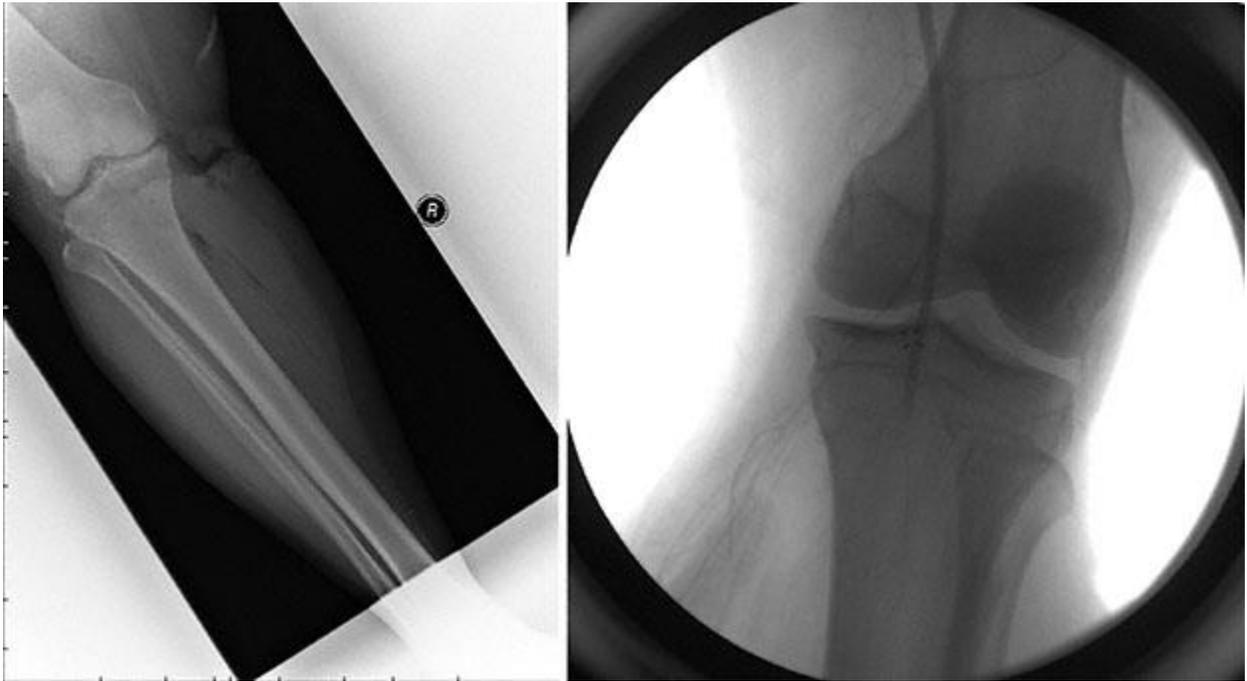
16. The nurse at a local elementary school contacts you about 12 children she has seen in the past 2 weeks. All of the children had similar symptoms of nasal congestion, sneezing, nonproductive coughing, and eye irritation. None of the children had fevers. Several teachers and support staff have reported having the same symptoms. No similar outbreaks have been reported in the community. There was a fire in the school several weeks ago with significant smoke and water damage to classrooms, the cafeteria, and the school ventilation system. Repairs were quickly made and classes resumed. The most likely cause for the students' and teachers' symptoms is exposure to which of the following?
- (A) Asbestos
  - (B) *Legionella pneumophila*
  - (C) Mold spores
  - (D) *Mycoplasma pneumoniae*
  - (E) Respiratory syncytial virus
17. A 20-year-old man comes to the office at the request of his family for an examination 1 day after a motor vehicle accident for which he was at fault. The patient was arrested for the third time after police discovered he had been driving under the influence of alcohol. He has been your patient since early adolescence, and he has a history of truancy, shoplifting, and two attempts to run away from home. He dropped out of high school in his senior year. He was fired from his most recent job because he threatened a coworker with a hammer. He has been unemployed for the past 8 months, and as a result he has many unpaid debts. He seems unconcerned about his current difficulties and has no plans for seeking employment or paying his debts. Despite these facts, you find the patient charming and interactive, and he conveys a sincere intention to change his behavior. Which of the following is the most likely diagnosis?
- (A) Antisocial personality disorder
  - (B) Borderline personality disorder
  - (C) Conduct disorder
  - (D) Narcissistic personality disorder
  - (E) Schizotypal personality disorder
18. A 45-year-old limousine driver comes to the office for an initial appointment because he would like you to fill out and sign a legal document at the request of his attorney. The patient states that he is filing a lawsuit against the limousine company that employs him because he developed post-traumatic stress disorder following a motor vehicle collision. He appears irritable and tense as he provides his history. He relays his symptoms by reading them aloud from a written list. At this time, which of the following is the most appropriate approach toward confirming the underlying diagnosis of this patient?
- (A) Administer amobarbital and then interview the patient
  - (B) Ask the patient to provide a narrative with detailed description of the incident and of his symptoms
  - (C) Interview the patient under hypnosis
  - (D) Interview the patient while paying close attention to his willingness to make eye contact
  - (E) Tell the patient he is exhibiting behaviors that are suggestive of malingering and see how he responds

19. A 39-year-old woman comes to the office because of gradually increasing shortness of breath while doing her usual household activities. She also reports fatigue, a feeling of heaviness in her chest with exertion, trouble sleeping, and the very recent onset of a rapid heart beat and fluttering in her chest. She says, "I was always sick as a child." She does not smoke cigarettes, and she is not currently taking any medications other than occasional aspirin. Her father died of a myocardial infarction at age 55 years. She is married and has two teenaged children. She did have some shortness of breath at the end of her second pregnancy. Physical examination today shows a thin woman with an irregular pulse of 130/min. Thyroid gland is normal to palpation. There is a prominent diastolic rumble heard best over the apical area of her heart. Lungs are clear; there is no hepatomegaly or pretibial edema. Which of the following is the most helpful diagnostic study at this time?
- (A) Chest x-ray  
 (B) ECG  
 (C) Serum anti-streptolysin O titer  
 (D) Serum C-reactive protein concentration  
 (E) Serum thyroid-stimulating hormone (TSH) concentration
20. A 10-year-old boy with a traumatic brain injury sustained during infancy is examined in the nursing care facility where he resides because he has had no urine output during the past 24 hours. During the past 4 days, he has had decreasing urine output, intermittent fever, rhinorrhea, and cough. As a result of his brain injury, the patient has severe developmental delay and a seizure disorder. He is fed orally, but he is nonverbal and nonambulatory. Medications are levetiracetam, docusate, and multivitamins. The patient is 131 cm (4 ft 2 in; 10th percentile) tall and weighs 26 kg (57 lb; 10th percentile). BMI is 14 kg/m<sup>2</sup> (10th percentile). Vital signs are temperature 38.8°C (101.8°F), pulse 80/min, respirations 25/min, and blood pressure 110/80 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 95%. The patient appears thin. He is awake and is not in apparent distress. He is responsive to touch. Auscultation of the lungs discloses scattered coarse crackles and rhonchi but good air entry and normal work of breathing. Results of laboratory studies are shown:

Serum		Blood	
Urea nitrogen	78 mg/dL	Hematocrit	37%
Creatinine	3.2 mg/dL	Hemoglobin	12.5 g/dL
Na <sup>+</sup>	131 mEq/L	WBC	12,000/mm <sup>3</sup>
K <sup>+</sup>	5.6 mEq/L	Neutrophils, segmented	60%
Cl <sup>-</sup>	88 mEq/L	Lymphocytes	40%
HCO <sub>3</sub> <sup>-</sup>	16 mEq/L	Platelet count	250,000/mm <sup>3</sup>
		Urine	
		Specific gravity	1.030 (N=1.003–1.029)
		Creatinine	90 mg/dL
		Na <sup>+</sup>	8 mEq/L

Which of the following is the most likely cause of this patient's altered kidney function?

- (A) Acute tubular necrosis  
 (B) Decreased intravascular volume  
 (C) Medication-related interstitial nephritis  
 (D) Neurogenic bladder  
 (E) Pyelonephritis



21. A 47-year-old woman is brought to the emergency department by ambulance 30 minutes after a motor vehicle collision in which the car she was driving overturned. At the scene, the patient was immobilized and an intravenous line was started. On arrival, the patient indicates pain in the right lower extremity caused by an open wound in the right popliteal fossa. She appears distressed. Vital signs are temperature 36.5°C (97.7°F), pulse 120/min, respirations 18/min, and blood pressure 90/75 mm Hg. Pulse oximetry on 50% oxygen via nonrebreather mask shows an oxygen saturation of 95%. Lungs are clear to auscultation and cardiac examination discloses no abnormalities. The abdomen is soft without tenderness. The right lower extremity is bruised and ecchymotic above the knee. The femoral pulse is 2+ bilaterally and the popliteal and tibial pulses are absent on the right and 2+ on the left. Neurologic examination discloses decreased motor function below the right knee and decreased sensation over the distal right lower extremity. X-ray and intraoperative arteriogram of the right lower extremity are shown. Which of the following is the most likely cause of the findings on the arteriogram?
- (A) Anterior dislocation of the right knee
  - (B) Arterial spasm
  - (C) Fracture of the right femur
  - (D) Fracture of the right tibia and fibula
  - (E) Posterior dislocation of the right knee

22. A 27-year-old man comes to the office with his wife because of a recent episode of loss of muscle control. He says, "I was at a reception, someone told a joke, and when I laughed, my legs collapsed!" His wife says that he recovered in a few seconds and he did not lose consciousness. He has a long history of sleepiness and he is able to go to sleep quickly. He usually awakens feeling refreshed after a short nap. He has no history of similar episodes or hallucinations. There is no family history of similar problems. Vital signs are normal. Physical examination shows no abnormalities. Which of the following is the most likely diagnosis?
- (A) Narcolepsy
  - (B) Primary hypersomnia
  - (C) A seizure disorder
  - (D) Sleep paralysis
  - (E) Vasovagal syndrome
23. A study is being conducted to assess mesothelioma in shipyard workers. A large shipyard firm has provided the asbestos exposure records of all employees during the past 50 years. The health insurer for the workers has provided claims data that documents all chest x-rays and diagnoses of mesothelioma among current workers and retirees. The study enrolled shipyard workers who were diagnosed with mesothelioma and shipyard workers who were not diagnosed with mesothelioma. All subjects in the study had to have chest x-rays. Which of the following is the best rationale for selecting a comparison group that had chest x-rays?
- (A) Address confounding
  - (B) Demonstrate causality
  - (C) Minimize ascertainment bias
  - (D) Reduce recall bias
24. An 88-year-old man with osteoarthritis is brought to the office by his daughter because of a 2-day history of severe low back pain and inability to walk. He says he has not fallen and does not recall any trauma to his back. Five years ago, he underwent bilateral hip replacement. His pain and mobility improved following the operation but have worsened during the past year. He now is most comfortable using a wheelchair for ambulation but is able to ambulate for short distances with a walker and assistance. One year ago, carcinoma of the prostate was diagnosed, but he declined therapy and said, "I'm an old man. When my time comes, I want to die. Just keep me as comfortable as you can." Vital signs today are temperature 36.6°C (97.9°F), pulse 88/min, respirations 16/min, and blood pressure 188/66 mm Hg. The patient is grimacing with pain and holding his lower back. Palpation discloses point tenderness over L3 through L4, and S1. X-rays of the lumbosacral spine show lytic lesions and compression fracture. The patient refuses additional diagnostic studies. The daughter fears that her father will be "abandoned" if he is not evaluated for additional treatment. Which of the following is the most appropriate next step in response to the daughter's concern?
- (A) Explain the daughter's concerns to the patient and persuasively present the advantages of further evaluation
  - (B) Explain to the daughter that no significant treatment will result from further testing and recommend having a home health nurse
  - (C) Obtain consultation with an oncologist to assess the patient's need for further testing
  - (D) Reassure the daughter and recommend hospice care consultation
  - (E) Reassure the daughter and recommend transfer of the patient to an assisted living facility

**Items #25–26** are part of a sequential item set. In the actual examination environment, you will **not** be able to view the second item until you click "Proceed to Next Item." After navigating to the second item, you will not be able to add or change an answer to the first item.

A 23-year-old man comes to the office because of a 7-day history of fever, crampy abdominal pain, and diarrhea. He says the abdominal pain worsens with oral intake. He has been having 8 to 10 episodes of diarrhea daily. He has not traveled recently and has had no sick contacts. Medical history is unremarkable and he takes no medications. He does not smoke cigarettes, drink alcoholic beverages, or use illicit drugs. He is not sexually active. Vital signs are temperature 38.3°C (101.0°F), pulse 118/min, respirations 18/min, and blood pressure 108/58 mm Hg. Bowel sounds are hyperactive. The abdomen is diffusely tender to palpation; no masses are palpated. Neither the liver edge nor the spleen can be palpated. Digital rectal examination shows grossly bloody stool. A stool culture is obtained, and empiric pharmacotherapy is initiated.

25. Which of the following microorganisms is the most likely cause of this patient's condition?

- (A) *Campylobacter jejuni*
- (B) *Candida albicans*
- (C) Enterovirus
- (D) *Giardia lamblia*

26. Results of the stool culture show growth of *Campylobacter jejuni*. The patient returns to the office 3 weeks later. He reports total resolution of his fever and gastrointestinal symptoms after completion of prescribed ciprofloxacin therapy, but he has had pain and swelling of his left knee during the past 3 days. The pain worsens with weight bearing. He rates the pain as a 6 on a 10-point scale. Vital signs are temperature 37.1°C (98.8°F), pulse 78/min, respirations 16/min, and blood pressure 112/58 mm Hg. Physical examination discloses erythema and warmth of the left knee with marked synovitis. Direct palpation and flexion of the knee elicit pain. Which of the following is the most appropriate diagnostic study to determine the cause of this patient's symptoms?

- (A) Blood cultures
- (B) CD4+ T-lymphocyte count
- (C) Human leukocyte antigen-B27 assay
- (D) Serum rheumatoid factor assay
- (E) Stool culture

**END OF SET**

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27. A 46-year-old woman, gravida 1, para 1, comes to the office because of a 2-week history of black discharge from her right nipple. The patient had mammography and ultrasonography of the breasts 2 months ago for evaluation of increased glandularity, palpated in the upper outer quadrant of the right breast, noted at her most recent annual examination. The studies showed likely benign findings with recommended follow-up in 6 months. Medical history is otherwise unremarkable and she takes no medications. BMI is 30 kg/m<sup>2</sup>. Vital signs are normal. Palpation of the right breast discloses glandularity in the upper outer quadrant but no other masses. There is scant, black discharge from the right nipple. Which of the following is the most appropriate next step in diagnosis?

- (A) Ductography
- (B) Excisional biopsy of glandular tissue
- (C) Repeat mammography
- (D) Repeat ultrasonography of the right breast
- (E) No further workup is indicated

28. A physician is conducting a retrospective review of a trial involving the use of Drug X in patients with a specific disease. It is known that Drug X is associated with an increased probability of cancer in patients who use the drug. A total of 600 individuals with a specific disease were included in the trial. Of the participants, 200 individuals received Drug X and 400 individuals did not receive it. One hundred individuals who received Drug X died of a particular type of cancer and 100 individuals who did not receive the drug died of the same type of cancer. Based on these data, which of the following is the relative risk of death from this type of cancer in individuals who take Drug X as compared with individuals who do not take Drug X?

- (A) Individuals who take Drug X have an equal risk of dying from this type of cancer
- (B) Individuals who take Drug X have four times the risk of dying from this type of cancer
- (C) Individuals who take Drug X have three times the risk of dying from this type of cancer
- (D) Individuals who take Drug X have two times the risk of dying from this type of cancer
- (E) The risk for dying cannot be determined from the data

29. A 23-year-old woman is brought to the emergency department by her friend because of headache, vomiting, and diarrhea that developed rapidly 6 hours ago. She also has had associated fever, chills, generalized muscle pain, and diffuse rash. The patient previously was healthy and has had no known exposure to anyone who has been ill. Medical history is unremarkable and her only medication is an oral contraceptive. She is currently menstruating. She does not smoke cigarettes or use illicit drugs. She drinks one to two alcoholic beverages weekly. She is disoriented to person, place, and time. Vital signs are temperature 39.2°C (102.6°F), pulse 114/min, respirations 26/min, and blood pressure 82/44 mm Hg. Pulse oximetry on oxygen at 2 L/min via nasal cannula shows an oxygen saturation of 90%. Examination of the skin shows diffuse macular erythema. Lungs are clear to auscultation. Cardiac examination discloses normal heart sounds and no murmur. Bowel sounds are hypoactive. Results of laboratory studies are shown:

Serum		Blood	
ALT	164 U/L	Hemoglobin	16.4 g/dL
AST	130 U/L	WBC	14,300/mm <sup>3</sup> with left shift
Urea nitrogen	57 mg/dL	Platelet count	52,000/mm <sup>3</sup>
Creatinine	2.2 mg/dL		

A response to which of the following is the most likely cause of this patient's condition?

- (A) Bacterial endotoxin
- (B) Bacterial exotoxin
- (C) Immunoglobulin E antibody
- (D) Immunoglobulin G antibody
- (E) Viral capsid
- (F) Viral coat

30. A 68-year-old man comes to the office because of a 4-week history of increasing stiffness in his shoulders and upper arms. He is an avid golfer and has been unable to play in the morning because of the stiffness. He says that the stiffness is somewhat improved in the afternoon. He also has felt fatigued and sometimes "headachy and feverish." Medical history is significant for arthritis in his knees treated with acetaminophen, which has not relieved his shoulder and arm pain, and hyperlipidemia treated with pravastatin. He is a retired radiologist. Vital signs are temperature 37.7°C (99.8°F), pulse 76/min, respirations 18/min, and blood pressure 145/80 mm Hg. There is no tenderness in the shoulder girdle, and range of motion is normal bilaterally. The remainder of the physical examination discloses no abnormalities. Results of additional laboratory studies are shown:

Serum		Blood	
Creatine kinase	88 U/L	Hematocrit	36%
		Hemoglobin	12.0 g/dL
		WBC	8600/mm <sup>3</sup>
		ESR	88 mm/h

Which of the following is the most significant risk factor for the development of this patient's condition?

- (A) Age
  - (B) Gender
  - (C) History of osteoarthritis
  - (D) Previous occupation
  - (E) Use of pravastatin
31. A 16-month-old girl is brought to the emergency department by emergency medical technicians because of a generalized tonic-clonic seizure that began 25 minutes ago and has continued despite administration of 0.5 mg/kg rectal diazepam 10 minutes ago. The patient was at home at the time of the seizure. In the emergency department, she is given an additional 0.5 mg/kg dose of diazepam intravenously and the convulsion terminates. Within 2 minutes, her oxygen saturation drops to 75% and she appears cyanotic. Respirations are 10/min and shallow. She receives bag-valve-mask ventilation, followed by intubation and mechanical ventilation. Medical history is unremarkable. She takes no medications. Temperature is 39.1°C (102.5°F). Which of the following is the most likely underlying cause of the patient's respiratory insufficiency?
- (A) Airway occlusion
  - (B) Encephalitis
  - (C) Medication-induced suppression of central respiratory drive
  - (D) Meningitis
  - (E) Ongoing nonconvulsive seizure activity

32. A 32-year-old woman comes to the emergency department because of a 3-day history of fatigue and postural light-headedness. She also reports nausea with one episode of vomiting this morning and adds that her stools and urine have been darker than usual lately. Medical history is significant for stage III-B Hodgkin lymphoma. She started the first cycle of chemotherapy 8 days ago. Additional medications include ferrous gluconate, hydrocodone, and prochlorperazine. She is currently receiving 0.9% saline at 75 mL/hr. Vital signs today are temperature 37.5°C (99.5°F), pulse 76/min supine and 80/min standing, respirations 16/min, and blood pressure 125/65 mm Hg supine and 120/60 mm Hg standing. Pulse oximetry on room air shows an oxygen saturation of 94%. Lungs are clear to auscultation. Cardiac examination discloses a soft systolic murmur at the left upper sternal border. There is no hepatosplenomegaly or tenderness on abdominal examination. Rectal examination discloses no masses. Stool is black and test for occult blood is negative. Results of laboratory studies are shown:

Blood		Urine	
Hematocrit	24%	Specific gravity	1.032 (N=1.010–1.025)
WBC	2400/mm <sup>3</sup>	Bilirubin	Negative
Platelet count	78,000/mm <sup>3</sup>	RBC	Negative

Which of the following is the most likely explanation for the patient's current condition?

- (A) Adverse effect of medications
  - (B) Bone marrow metastases
  - (C) Gastrointestinal blood loss
  - (D) Hemodilution
  - (E) Hemolytic anemia
33. A male neonate, who was born at 36 weeks' gestation 2 hours ago in the labor and delivery unit of the hospital, now shows signs of respiratory difficulty. The mother, an 18-year-old primigravid woman, smoked one pack of cigarettes daily throughout her pregnancy. She received prenatal care during most of the pregnancy. One episode of chlamydial cervicitis was detected during the last trimester and treated with azithromycin. The neonate was born via cesarean delivery due to fetal heart rate decelerations. The amniotic fluid was stained with light particulate meconium. Apgar scores were 9 and 9 at 1 and 5 minutes, respectively. The patient is 50 cm (20 in; 50th percentile) long and weighs 3005 g (6 lb 10 oz; 50th percentile); head circumference is 35 cm (14 in; 50th percentile). The infant's vital signs now are temperature 36.6°C (97.8°F), pulse 150/min, and respirations 70/min. Pulse oximetry on room air shows an oxygen saturation of 95%. Physical examination discloses mild subcostal and intercostal retractions. Chest x-ray shows prominent pulmonary vascular markings and fluid in the intralobar fissures. Which of the following is the most likely diagnosis?
- (A) Chlamydial pneumonia
  - (B) Group B streptococcal sepsis
  - (C) Meconium aspiration syndrome
  - (D) Respiratory distress syndrome
  - (E) Transient tachypnea of newborn



34. A 35-year-old man is brought to the emergency department 30 minutes after a bicycle accident because of pain in his left arm. The patient is 183 cm (6 ft) tall and weighs 79 kg (175 lb); BMI is 24 kg/m<sup>2</sup>. Vital signs are temperature 37.0°C (98.6°F), pulse 75/min, respirations 16/min, and blood pressure 116/68 mm Hg. On arrival, the patient is awake and alert. Examination of the cervical spine shows no abnormalities. The left forearm is diffusely tender to palpation, and the patient is unable to extend his elbow. X-ray of the left forearm is shown. Which of the following is the most likely diagnosis?

- (A) Fractured radius, dislocated ulna
- (B) Fractured radius only
- (C) Fractured ulna, dislocated humerus
- (D) Fractured ulna, dislocated radius
- (E) Fractured ulna only

35. A 26-year-old doctoral candidate comes to the office 1 day after she passed bloody mucus with her stool. She noticed mild abdominal cramping and some constipation preceding the episode; she has not had diarrhea or melanic stools. She has not had any exposure to unusual or poorly kept food or to any known infectious agents. She says she has been under considerable stress because of the anticipated defense of her thesis. Her only medication is acetaminophen for occasional headaches. Her father had colon cancer and died at age 48 years from metastatic disease. She recalls being told that an aunt died of an unknown abdominal tumor. The patient's vital signs are temperature 37.6°C (99.6°F), pulse 90/min, respirations 18/min, and blood pressure 110/74 mm Hg. Abdomen is mildly distended, nontympanic, and tender to palpation only in the right lower quadrant. There is no rebound tenderness or guarding. Pelvic examination shows no masses or mucosal lesions. Rectal examination elicits pain and bloody mucus. Which of the following is the most appropriate diagnostic study?

- (A) Colonoscopy
- (B) Esophagogastroduodenoscopy
- (C) Lower gastrointestinal barium study
- (D) Ultrasonography of the appendix
- (E) Upper gastrointestinal barium study with small-bowel follow-through

36. A 15-year-old girl is brought to the office by her parents because of a 2-month history of progressively worsening gait disturbance. She has fallen several times, once striking her head and causing a brief loss of consciousness. Her parents say, "She's been acting like a delinquent lately. We think she might be using drugs." Medical history is remarkable for asthma treated with a corticosteroid inhaler as needed. Family history is remarkable for multiple sclerosis in a maternal aunt, parkinsonism in her paternal grandfather, and cancer in several paternal relatives, including a grandmother who died from a hemangioblastoma. Vital signs are normal. The patient is awake and alert, but she avoids eye contact and will not answer questions. Auscultation of the lungs discloses expiratory wheezing. Cardiac and abdominal examinations disclose no abnormalities. She has mild bilateral papilledema. Her stance and gait are wide-based, and she is unable to perform a tandem walk. Toxicology screening of the urine is positive for marijuana and cocaine metabolites. Which of the following is the most likely initial working diagnosis?

- (A) Cerebellar tumor
- (B) Drug-related ataxia
- (C) Epidural hematoma
- (D) Juvenile-onset parkinsonism
- (E) Multiple sclerosis

37. A 70-year-old man is brought to the emergency department by his son because of a 2-day history of right upper quadrant abdominal pain, chills, and confusion. He has vomited twice during this time despite decreased food intake. The patient has hypertension controlled with hydrochlorothiazide. Medical and surgical history is otherwise unremarkable. Vital signs are temperature 40.2°C (104.4°F), pulse 110/min, respirations 18/min, and blood pressure 100/60 mm Hg. The patient appears seriously ill without evidence of jaundice. Abdominal examination discloses tenderness to palpation over the liver without guarding. Results of laboratory studies are shown:

Serum		Blood	
Amylase	350 U/L	WBC	16,500/mm <sup>3</sup> with prominent immature forms
Bilirubin, total	2.1 mg/dL	Neutrophils, segmented	42%
		Neutrophils, bands	25%

Serum urea nitrogen and creatinine concentrations are within the reference ranges, as are results of liver function tests. Ultrasonography of the abdomen shows multiple stones in the gallbladder and a common bile duct measuring 9 mm in diameter. Intravenous fluids and a broad-spectrum antibiotic are administered. Which of the following is the most likely diagnosis?

- (A) Acute cholecystitis
- (B) Acute pancreatitis
- (C) Cholangitis
- (D) Hepatitis
- (E) Liver abscess

38. A 70-year-old woman comes to the office because of worsening tremor of her hands. The tremor has been present for most of her life and initially was mild and would occur only when she was tired or stressed. During the past month the shaking has become more noticeable and frequent. She is now embarrassed to eat with other people because of how obvious the tremor has become. The patient has been taking fluoxetine for the past 3 weeks to help her to cope with the death of her husband 2 months ago. Medical history is also remarkable for essential hypertension controlled with lisinopril and hyperlipidemia controlled with atorvastatin. Her only other medication is occasional ibuprofen for joint pain. She used to drink one to two alcoholic beverages monthly but now drinks one glass of wine daily because, she says, it reduces her tremor. She is 168 cm (5 ft 6 in) tall and weighs 70 kg (155 lb); BMI is 25 kg/m<sup>2</sup>. Vital signs are temperature 36.4°C (97.6°F), pulse 80/min, respirations 18/min, and blood pressure 130/85 mm Hg. Physical examination shows a moderate tremor of both hands that is not present at rest. Complete blood count, serum chemistry profile, and serum thyroid function tests are ordered and results are pending. Which of the following is the most likely cause of the patient's worsening tremor?
- (A) Adverse effect of fluoxetine therapy
  - (B) Bereavement reaction
  - (C) Early Parkinson disease
  - (D) Increase in alcohol consumption
  - (E) Mini-strokes

**NOTE: THIS IS THE END OF BLOCK 1.  
ANY REMAINING TIME MAY BE USED TO CHECK ITEMS IN THIS BLOCK.**

**Block 2: FIP**  
**Items 39–77; Time - 1 hour**

**ALL ITEMS REQUIRE SELECTION OF ONE BEST CHOICE.**

39. A 70-year-old woman comes to the office because of a 1-month history of gradually worsening shortness of breath. Medical history is significant for hypertension and hyperlipidemia. Routine medications are atorvastatin and lisinopril. The patient appears to be in respiratory distress. Vital signs are temperature 36.7°C (98.0°F), pulse 122/min and irregularly irregular, respirations 28/min, and blood pressure 144/88 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 90%. Pulmonary examination discloses dullness to percussion three-quarters of the way up on the left. Results of laboratory studies are shown:

Serum		Blood	
Urea nitrogen	29 mg/dL	Hematocrit	38%
Creatinine	1.0 mg/dL	Hemoglobin	12.9 g/dL
Na <sup>+</sup>	142 mEq/L	WBC	7800/mm <sup>3</sup>
K <sup>+</sup>	4.1 mEq/L		
Cl <sup>-</sup>	99 mEq/L		
HCO <sub>3</sub> <sup>-</sup>	24 mEq/L		
Glucose	102 mg/dL		

ECG shows atrial fibrillation with a rapid ventricular response. Chest x-ray shows a large left pleural effusion. Which of the following is the most appropriate next step in evaluation?

- (A) Bone marrow biopsy
  - (B) Pericardiocentesis
  - (C) Pleurodesis
  - (D) Thoracentesis
  - (E) Video-assisted thoracoscopy
40. A 67-year-old man, who has been recovering in the hospital following surgical repair of a contained ruptured abdominal aortic aneurysm 10 days ago, suddenly develops severe abdominal pain. He does not have chest pain or shortness of breath. The patient's postoperative course had been uncomplicated until 4 days ago, when he developed a low-grade fever. He has been unable to tolerate a full liquid diet during the past 4 days. Medical history is remarkable for hypertension, hypercholesterolemia, and a myocardial infarction 6 years ago. Regular medications include metoprolol, lovastatin, and an 81-mg aspirin daily. He has smoked one pack of cigarettes daily for the past 40 years, and he typically drinks three to five beers daily. Vital signs now are temperature 38.1°C (100.6°F), pulse 68/min and regular, respirations 16/min, and blood pressure 150/90 mm Hg. Physical examination shows bilateral cataracts. Auscultation of the chest discloses diffuse mild wheezes and a grade 1/6 soft systolic ejection murmur at the cardiac apex. Palpation of the abdomen discloses mild to moderate mid and right upper quadrant abdominal tenderness. There is no guarding, rebound, or palpable mass. Rectal examination shows no abnormalities. Peripheral pulses are normal. Neurologic examination discloses no abnormalities. Serum electrolyte concentrations are within the reference ranges. Leukocyte count is 15,800/mm<sup>3</sup> with mild left shift. Urinalysis shows no abnormalities. ECG shows an old inferior myocardial infarction. Chest x-ray shows scarring at the left and right cardiac bases; no masses or infiltrates are present. Which of the following is the most appropriate additional diagnostic study?
- (A) Arteriography of the abdomen
  - (B) Blood cultures
  - (C) MRI of the abdomen
  - (D) Ultrasonography of the abdomen
  - (E) No additional studies are needed



41. A 5-year-old boy is brought to the emergency department by his parents because of a 2-day history of favoring his right leg when walking. Today, he has refused to bear weight on the right leg and had a temperature to 38.2°C (100.8°F). Treatment with ibuprofen has relieved the fever but has not improved the leg pain. The child has no known history of trauma. His parents report that he has been healthy except for a recent upper respiratory tract infection that has resolved. The child is lying supine on a gurney with his right lower extremity flexed and externally rotated at the hip. Vital signs are temperature 37.8°C (100.1°F), pulse 110/min, respirations 20/min, and blood pressure 88/50 mm Hg. Internal rotation of the right hip causes the child to cry. Examination of the right lower extremity discloses no deformity, ecchymosis, erythema, or swelling. The right foot is neurovascularly intact. Plain x-ray of the hips is shown. Which of the following is the most appropriate additional imaging study to obtain at this time?
- (A) Arthrography of the right hip
  - (B) CT scan of the abdomen
  - (C) MRI of the lumbar spine
  - (D) Radionuclide bone scan
  - (E) Ultrasonography of the hips

42. A 31-year-old woman, gravida 3, para 2, who is at 32 weeks' gestation, is admitted to the hospital because of a 1-week history of progressive dyspnea and wheezing. She says her heart is "racing" and she is coughing up a small amount of blood-streaked sputum. Medical history is significant for hypothyroidism, for which she takes levothyroxine. An intravenous catheter is placed. Vital signs are temperature 36.9°C (98.4°F), pulse 132/min, respirations 32/min, and blood pressure 135/78 mm Hg. Pulse oximetry on 100% oxygen via nasal cannula shows an oxygen saturation of 92%. Auscultation of the lungs discloses decreased breath sounds at the bases with expiratory crackles bilaterally. Cardiac examination discloses an irregularly irregular rhythm, an indistinct point of maximal impulse, and a loud S<sub>1</sub>. A grade 3/6, low-pitched, diastolic, rumbling murmur is audible at the apex; a distinct snapping sound precedes the murmur. Fetal heart rate is 144/min. Which of the following is the most likely cause of the findings in this patient?

- (A) Atrial septal defect with development of pulmonary hypertension
- (B) Chronic mitral regurgitation secondary to rheumatic heart disease
- (C) Coarctation of the aorta
- (D) Congenital aortic stenosis
- (E) Mitral stenosis complicated by atrial fibrillation

43. A 70-year-old man is admitted to the hospital through the emergency department because of a 12-hour history of severe nausea and four episodes of vomiting of undigested food. During the past week, he has had worsening nausea, heartburn following meals, and early satiety. Medical history is significant for type 2 diabetes mellitus diagnosed 20 years ago, hyperlipidemia, and hypertension. Medications are intermediate-acting insulin twice daily and insulin lispro before meals. He also takes enalapril and atorvastatin. On admission, the patient appears uncomfortable. Vital signs are temperature 36.2°C (97.1°F), pulse 102/min, respirations 16/min, and blood pressure 105/78 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 98%. Physical examination discloses mild epigastric tenderness to palpation. The remainder of the examination discloses no abnormalities. Results of laboratory studies ordered in the emergency department are shown:

Serum		Blood	
ALT	23 U/L	Hemoglobin A <sub>1c</sub>	8.2%
AST	26 U/L		
Alkaline phosphatase	85 U/L		
Amylase	104 U/L		
Urea nitrogen	42 mg/dL		
Creatinine	1.32 mg/dL		

X-rays of the chest and abdomen disclose no abnormalities. Which of the following mechanisms is most likely responsible for this patient's current condition?

- (A) Accumulation of calcium carbonate and hemoglobin breakdown products in the bile ducts
- (B) Decreased gastric myoelectrical activity
- (C) Decreased gastric pH
- (D) Increased cholecystokinin activity

44. A 70-year-old woman comes to the office for an annual health maintenance examination. She describes a 1-year history of slowly progressive fatigue, diffuse muscle aches, and generalized pain. Medical history is significant for osteoporosis diagnosed 5 years ago. Medications include alendronate and calcium supplementation. Vital signs are normal. Physical examination is unremarkable for her age, with no point tenderness on palpation. Results of complete blood count, serum electrolyte and thyroid-stimulating hormone concentrations, liver function tests, and erythrocyte sedimentation rate are all within the reference ranges. Screening mammography and colonoscopy done 1 year ago disclosed no abnormalities. Which of the following is the most appropriate next step in evaluation?

- (A) DEXA scan
- (B) Electromyography and nerve conduction studies
- (C) MRI of the cervical spine
- (D) Serum antinuclear antibody assay
- (E) Serum 25-hydroxyvitamin D assay
- (F) No additional evaluation is indicated

45. A 22-year-old man comes to the emergency department because of a 4-day history of cough productive of green sputum as well as fever, chills, and rigors. He also has had a 3-day history of progressive shortness of breath; he now has shortness of breath at rest. He was evaluated in an urgent care center 1 day ago and was prescribed azithromycin, but his symptoms have worsened. He is using accessory muscles of respiration. He is diaphoretic and is able to give only one- to two-word answers to questions. Vital signs are temperature 39.1°C (102.3°F), pulse 138/min, respirations 40/min, and blood pressure 103/56 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 80%, and 100% oxygen is administered via nonrebreather face mask. Skin is mottled and there is cyanosis of the fingers and toes. Pupils measure 4 mm in diameter and are reactive to light. Mucous membranes are dry. Auscultation of the lungs discloses bilateral crackles. The remainder of the physical examination discloses no abnormalities. Laboratory studies are ordered; results of arterial blood gas analysis on 100% oxygen via nonrebreather face mask are shown:

PO <sub>2</sub>	50 mm Hg
PCO <sub>2</sub>	44 mm Hg
pH	7.34
Oxygen saturation	85%

Chest x-ray shows bilateral infiltrates with a normal cardiac silhouette and no effusions. Which of the following is the most likely underlying cause of this patient's condition?

- (A) Abnormalities of diffusion of oxygen
- (B) Hypoventilation
- (C) Obstructive lung disease
- (D) Ventilation-perfusion mismatch and shunt

46. A 33-year-old male physician reports for a shift in the emergency department. A nurse alerts you that he noticed a faint odor of alcohol near the physician. When approached, the physician appears tired and more disheveled than usual. There is an odor of alcohol on his breath. He is a skilled and talented physician with no known history of substance or alcohol use disorder. He is married with three children, and his wife is pregnant with twins. The physician was recently hired and has had no actions on his license by any state medical board. Which of the following is the most appropriate next step?
- (A) Ask the physician if he is sober, and if he says yes, allow him to complete his shift
  - (B) Explain to the physician that you suspect he is intoxicated and ask him to submit to a blood sample to check his blood alcohol concentration
  - (C) Relieve the physician of duty and alert the hospital's patient safety officer
  - (D) Tell the physician that you can cover the remainder of the shift alone, so that he can sleep in his office
  - (E) Tell the physician you detect alcohol on his breath, and he needs to go home and should not return until he is sober
47. A 60-year-old man comes to the office because of a 1-year history of progressive left groin pain. The pain is worse with exercise and is relieved with rest. He says the pain is beginning to affect his ability to carry out his daily activities. He says, "It even hurts when I'm turning over in bed." He does not recall any trauma to the area. He also has had generalized mild stiffness of his joints during the past 3 years. He takes atorvastatin for hyperlipidemia and lisinopril for hypertension. Medical history is otherwise unremarkable. He does not smoke cigarettes. He drinks one alcoholic cocktail daily. He is 178 cm (5 ft 10 in) tall and weighs 68 kg (150 lb); BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 37.4°C (99.3°F), pulse 82/min, respirations 18/min, and blood pressure 120/78 mm Hg. The patient walks with a slight limp and has difficulty changing position. Abduction of the left hip elicits pain. Physical examination of the patient's other joints discloses no abnormalities. Which of the following is the most appropriate imaging study at this time?
- (A) CT scan of the hips
  - (B) MRI of the hips
  - (C) Radionuclide bone scan
  - (D) Plain x-ray of the left hip
  - (E) Skeletal survey
48. A 2-stage screening program for ovarian cancer is being designed. Which of the following sets of sensitivity and specificity is most likely preferred for Stage 1 and Stage 2 of the program?

	<b>Stage 1</b>		<b>Stage 2</b>	
	<b>Sensitivity</b>	<b>Specificity</b>	<b>Sensitivity</b>	<b>Specificity</b>
(A)	High	Low	High	Low
(B)	High	Low	Low	High
(C)	Low	High	High	Low
(D)	Low	High	Low	High

**Items #49–50** are part of a sequential item set. In the actual examination environment, you will **not** be able to view the second item until you click "Proceed to Next Item." After navigating to the second item, you will not be able to add or change an answer to the first item.

A 35-year-old woman comes to the office for follow-up of chronic pelvic pain. The patient has had deep pelvic pain since undergoing total abdominal hysterectomy and radiation therapy for treatment of cervical cancer 5 years ago. She reports constant, severe aching pain; she rates the pain at its maximum as a 10 on a 10-point scale. The pain worsens during intercourse. All subsequent cancer follow-up has been negative. Medical history otherwise is unremarkable. The patient has taken oxycodone for her pain for 3 years, but she now reports that the oxycodone only partially relieves her pain. She requests either an increased dose of oxycodone or a change in her prescription to controlled-release morphine, which was recently given to her by a friend. She has smoked one pack of cigarettes daily for the past 15 years. She does not drink alcoholic beverages. BMI is 18 kg/m<sup>2</sup>. She appears lethargic. She is oriented to person, place, and time but speaks slowly with slurred speech. Vital signs are normal. Examination of the skin shows no abnormalities. Pupils are pinpoint and react sluggishly.

49. Which of the following is the most appropriate next step in management?
- (A) Inform the patient that she must find a new physician
  - (B) Maintain the dose of oxycodone and add naproxen
  - (C) Order a urine toxicology screening
  - (D) Report the patient's unauthorized drug use to the police
  - (E) Switch oxycodone to sustained-release morphine
50. Urine toxicology screening is positive for diazepam, methadone, and oxycodone. The patient returns to the office 1 week later to discuss these results. Which of the following is the most appropriate opening remark?
- (A) "I am concerned that you are abusing pain medicine. I would like for you to consider a substance abuse treatment program."
  - (B) "I cannot be your physician any longer because of your drug abuse. I'm going to give you 30 days to find a new physician."
  - (C) "I would like to know where you have been getting the methadone and diazepam that you are taking."
  - (D) "The test showed that you take other drugs that I have not prescribed to you. I must report this to the police."

**END OF SET**

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51. A 24-year-old woman, gravida 1, para 1, comes to the office because she and her husband have been trying to conceive for the past year without success. She gave birth to her first child at age 18 years by cesarean delivery following fetal distress. She then developed postpartum endometritis that resolved with intravenous antibiotic therapy. She used an intrauterine device (IUD) for 1 year following her first pregnancy but had the device removed because of intermenstrual bleeding. Medical history is also remarkable for chlamydial cervicitis treated with antibiotic therapy as an outpatient at age 21 years, and recurrent bacterial vaginosis that had been treated with metronidazole therapy during her pregnancy and on two other occasions. Vital signs today are within normal limits. Breast and pelvic examinations disclose no abnormalities. Hysterosalpingography shows bilateral hydrosalpinx. Which of the following factors in this patient's history most increased her risk for development of her condition?
- (A) Bacterial vaginosis
  - (B) Cesarean delivery
  - (C) Chlamydial cervicitis
  - (D) Postpartum endometritis
  - (E) Use of an IUD

52. **Patient Information**

**Age:** 62 years

**Gender:** M, self-identified

**Ethnicity:** unspecified

**Site of Care:** office

**History**

**Reason for Visit/Chief Concern:** "My legs hurt when I walk, and it's getting worse."

**History of Present Illness:**

- 3-month history of worsening leg pain
- pain exacerbated by walking; peak intensity after 1 block
- pain resolves completely with rest
- pain rated 4/10 at worst

**Past Medical History:**

- hypertension
- mild angina
- type 2 diabetes mellitus

**Medications:**

- lisinopril
- metoprolol
- furosemide
- glyburide
- lovastatin

**Allergies:**

- no known drug allergies

**Psychosocial History:**

- has smoked one-half pack of cigarettes daily for 44 years

**Physical Examination**

<b>Temp</b>	<b>Pulse</b>	<b>Resp</b>	<b>BP</b>	<b>O<sub>2</sub> Sat</b>	<b>Ht</b>	<b>Wt</b>	<b>BMI</b>
36.0°C (96.8°F)	72/min	14/min	140/90 mm Hg	–	164 cm (5 ft 5 in)	90 kg (198 lb)	33 kg/m <sup>2</sup>

- Appearance: no acute distress
- HEENT: fundoscopic shows grade 2/4 arteriovenous nicking
- Neck: no jugular venous distention
- Pulmonary: clear to auscultation; mildly diminished lung sounds
- Cardiac: no bruits; distant heart sounds
- Abdominal: obese; no tenderness, guarding, masses, bruits, or hepatosplenomegaly
- Extremities: no joint erythema, edema, or warmth; no hair on toes; no femoral bruits; dorsalis pedis, radial, and femoral pulses intact
- Neurologic: sensation to vibration intact

**Question:** Which of the following is the most appropriate diagnostic study?

- (A) Ankle brachial index
- (B) Arteriography
- (C) ECG
- (D) Echocardiography
- (E) MUGA scan

53. In determining the usefulness of a D-dimer assay in ruling out pulmonary embolism as a diagnosis in a 27-year-old woman with pleuritic chest pain and nonproductive cough, a recent study in the medical literature is reviewed. The study evaluates the use of D-dimer assay in 1500 patients (705 female and 795 male) ranging in age from 19 years to 57 years (mean age is 36 years), whose examining physicians had a low clinical suspicion that the patients had pulmonary embolism. All patients in the study underwent a D-dimer assay, followed by CT angiography of the chest to confirm or exclude the diagnosis of pulmonary embolism. Study results are shown:

<b>D-Dimer</b>	<b>CT Angiography Positive</b>	<b>CT Angiography Negative</b>	<b>Total</b>
Positive	88	312	400
Negative	0	1100	1100
Total	88	1412	1500

Which of the following is the most appropriate conclusion about this data in regard to patients with low clinical suspicion for pulmonary embolism?

- (A) D-Dimer assay results should be used to determine the need for ordering CT angiography for patients suspected of having a pulmonary embolism
  - (B) False-negative D-dimer assay results are common in patients with confirmed pulmonary embolism
  - (C) False-positive D-dimer assay results are rarely encountered
  - (D) A negative D-dimer assay has a high negative predictive value for excluding the diagnosis of pulmonary embolism
  - (E) A positive D-Dimer assay has a high positive predictive value for diagnosing pulmonary embolism
54. A 37-year-old man is admitted to the hospital for treatment for cocaine dependency. He says he has tried repeatedly to abstain from cocaine use but lives in a part of town where there are heavy drug sales. He did not like his hospital outpatient group but liked his single session at a 12-step program for cocaine dependency. Vital signs are temperature 37.0°C (98.6°F), pulse 70/min, respirations 16/min, and blood pressure 125/85 mm Hg. He appears thin. Physical examination discloses good muscle strength and no focal neurologic deficits. The patient is using insurance coverage through his wife but does not wish for his diagnosis to be disclosed to anyone. He is on probation after a conviction for aggravated robbery 3 years ago. There is also a warrant for his arrest for assault and battery. After listening to his requests and weighing your obligations, you should disclose this patient's diagnosis only to which of the following?
- (A) His 12-step program sponsor
  - (B) His probation officer
  - (C) His wife
  - (D) Insurance company
  - (E) Police

55. A 5-week-old infant is brought to the office by his mother for an initial well-child visit. He was born at 37 weeks' gestation via cesarean delivery because of chorioamnionitis. The infant had fetal distress that was documented by fetal monitoring during labor. The mother became jaundiced in the immediate postpartum period and was found to have hepatitis C (HCV) and HIV infection. She is unaware of her hepatitis B (HBV) status but knows that her son received the hepatitis B vaccination on the second day of life. The infant's weight today is 3912 g (8 lb 10 oz); physical examination shows no abnormalities. The mother wants to know what chance her child has of having contracted HIV or HCV infection from her. The risk for vertical transmission of HIV is approximately 20%. The mother is advised and appropriate management is planned for the infant regarding HIV. To determine the risk of HCV transmission, a recently published study of risk factors for perinatal transmission of HCV in 155 mothers coinfecting with HIV and HCV is reviewed. Results of the study are shown:

**Association of Gestational and Infant Factors With Mother-to-Infant HCV Transmission  
155 Mothers with HIV and HCV Infection**

Factor	HCV Transmission, %	RR	95% CI	p Value
Gestational Age				
<37 weeks	8.4	1.0	—	
≥37 weeks	8.3	0.99	0.32 to 3.06	0.99
Cesarean Delivery				
No	6.0	1.0	—	
Yes	13.3	2.21	0.69 to 7.06	0.24
Chorioamnionitis				
No	7.0	1.0	—	
Yes	33.3	4.77	0.86 to 26.3	0.21
Use of Fetal Electrode				
No	7.0	1.0	—	
Yes	3.3	0.66	0.09 to 4.89	0.99
Infant HIV-infected				
No	5.4	1.0	—	
Yes	17.1	3.19	1.14 to 8.93	0.04

RR=relative risk; CI=confidence interval

Based on these data, which of the following is the most appropriate conclusion regarding the five potential risk factors for transmission of HCV?

- (A) All factors appeared to have an effect on HCV transmission
  - (B) Fetal electrode monitoring was protective against HCV
  - (C) Infant HIV infection was the only significantly associated factor
  - (D) Maternal chorioamnionitis was the most significantly associated factor
  - (E) No factor was significantly associated
56. A 45-year-old man with AIDS comes to the community health center because of a 1-week history of fever, chills, sweating, mild shortness of breath, and nonproductive cough. Medical history is also remarkable for pneumonia 3 years ago that required hospitalization. Today, he says that he lost his job 6 months ago, is now homeless, and cannot afford to buy his antiretroviral medications. Vital signs are temperature 38.6°C (101.5°F), pulse 82/min, respirations 20/min, and blood pressure 116/72 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. The health center is very busy with several patients waiting to be evaluated. Which of the following is the most appropriate next step?
- (A) Arrange a direct admission to the hospital for this patient
  - (B) Continue with obtaining a thorough history and examining this patient
  - (C) Place masks on the patient and yourself and then continue to evaluate him
  - (D) Send this patient for chest x-rays, and while they are being obtained examine the next patient

57. A 45-year-old man comes to the office for a follow-up examination 2 days after he was seen in the emergency department for a generalized tonic-clonic seizure. He was prescribed chlordiazepoxide upon being discharged but did not fill the prescription. The patient says that this was his third seizure in the past 2 years; prior to that he had no history of seizures. Medical history is also remarkable for a 10-year history of daily ingestion of two six-packs of beer. He has not had any alcoholic beverages for the past 5 days. He takes no medications. The patient says that his seizures usually occur after he abstains from alcohol for a period of time. Vital signs are normal. Physical examination shows scattered spider angiomas on his chest and abdomen. Liver is enlarged, smooth, and nontender. CT scan of the head with contrast done in the emergency department 2 days ago showed no abnormalities. Which of the following is the most appropriate next step?

- (A) Lumbar puncture for examination of cerebrospinal fluid
- (B) MRI of the brain
- (C) Repeat CT scan of the head in 1 week
- (D) Sleep-deprived electroencephalography
- (E) No further evaluation is necessary

58. A case-control study is conducted to assess risk factors predicting inpatient mortality among geriatric patients with community-acquired pneumonia. Results of the study include the odds ratios shown below, which were calculated from a multivariable logistic regression equation:

<b>Predictor Variables</b>	<b>Odds Ratio</b>	<b>95% CI</b>
Hypotension (systolic blood pressure $\leq$ 100 mm Hg)	3.32	(1.65 to 5.11)
Hypoxemia ( $PO_2 \leq$ 50 mm Hg)	2.43	(1.55 to 3.32)
Lung infiltrate present on chest x-ray at time of admission	1.35	(0.76 to 2.24)

When the other covariates are controlled, which of the following is the most appropriate conclusion regarding these data?

- (A) The risk for inpatient mortality is greater for patients with hypotension than for those without hypotension
- (B) The risk for inpatient mortality is increased more by hypoxemia than by hypotension
- (C) The risk for inpatient mortality is increased when there is a pulmonary infiltrate present on chest x-ray at the time of admission
- (D) The risk for inpatient mortality is significantly affected by all of these predictor variables

59. A 38-year-old man comes to the office because of a 2-month history of intermittent episodes of hot flushes, chest discomfort, and excessive sweating, with associated panic. The episodes have been increasing in frequency and now are occurring daily. The patient says there is no specific precipitating cause of the episodes, but he has noticed that the episodes occur most frequently in the afternoon. He does not have any new stressors in his life. Medical history is significant for hypertension and type 2 diabetes mellitus. Medications are lisinopril and metformin. Family history is significant for hyperparathyroidism in an aunt and the death of an uncle from medullary thyroid cancer. The patient's BMI is 33 kg/m<sup>2</sup>. Vital signs are temperature 36.9°C (98.4°F), pulse 74/min, respirations 18/min, and blood pressure 138/92 mm Hg. Physical examination discloses no abnormalities. Results of serum laboratory studies are shown:

Calcium	9.8 mg/dL
Urea nitrogen	15 mg/dL
Creatinine	1.0 mg/dL
Na <sup>+</sup>	140 mEq/L
K <sup>+</sup>	3.8 mEq/L
Cl <sup>-</sup>	102 mEq/L
HCO <sub>3</sub> <sup>-</sup>	28 mEq/L

ECG shows no abnormalities. Which of the following is the most appropriate diagnostic study at this time?

- (A) Plasma renin activity
  - (B) Serum aldosterone concentration
  - (C) Serum free metanephrine concentration
  - (D) Serum parathyroid hormone concentration
  - (E) No study is indicated
60. A 19-year-old woman is referred to the office by her counselor for evaluation of possible depression. The counselor describes the patient as polite, conscientious, cooperative, open to therapy, and always present and on time for her weekly sessions. The patient's relationship with her high school boyfriend ended 6 months ago. She had dated him through high school, and he had "looked out for her as a friend" since the 6th grade. She says, "I feel helpless and don't know what to do without him." She admits that she often cannot make decisions, such as whether to go to college. She says, "I always mess things up." She is still sad and often tearful about her ex-boyfriend, but she has not had alterations in her sleep habits, appetite, weight, or energy level. She has not had any thoughts about death. Medical history is unremarkable and she takes no medications. BMI is 24 kg/m<sup>2</sup>. Vital signs are normal and physical examination discloses no abnormalities. Which of the following is the most appropriate initial response to this patient's self-deprecating description?
- (A) "College is full of many great once-in-a-lifetime opportunities. You should go."
  - (B) "Everyone makes mistakes. In your case, though, that doesn't mean you always mess things up."
  - (C) "If you find yourself needing some guidance, call me."
  - (D) "You're overreacting. You just need to give it a little more time."

61. A 35-year-old man comes to the office because of 1-week history of mid low back pain that radiates down his right leg. The pain began after the patient lifted a heavy box onto his truck. He rates his current pain as an 8 on a 10-point scale. He has been unable to find a comfortable position and has been sleeping in a recliner. Medical history is unremarkable and he takes no medications. He has smoked one pack of cigarettes daily for the past 25 years, and he drinks a six-pack of beer on Friday and Saturday nights. BMI is 27 kg/m<sup>2</sup>. He appears uncomfortable and stands during the physical examination. Vital signs are normal. Straight-leg raise test is positive on the right, with loss of right ankle reflex. The remainder of the physical examination discloses no abnormalities. Which of the following is the most likely explanation for this patient's symptoms?
- (A) Displacement of the nucleus pulposus
  - (B) Hypertrophy of the facet joints
  - (C) Osteophyte formation
  - (D) Spondylolisthesis
  - (E) Thickening of ligamentum flavum
62. A 71-year-old woman is brought to the emergency department by her daughter for evaluation of her mental status. The daughter says, "I visited mom today for the first time in 6 months; her memory has worsened, her bills are unpaid, and her house is unusually messy." The patient says, "I'm perfectly healthy." Medical history is significant for hypertension diagnosed more than 25 years ago, and two small strokes occurring 3 years and 7 months ago. The daughter gives you three empty medicine bottles from her mother's home: metoprolol, hydrochlorothiazide, and aspirin. The patient is 165 cm (5 ft 5 in) tall and weighs 59 kg (130 lb); BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 36.4°C (97.6°F), pulse 76/min, respirations 16/min, and blood pressure 196/112 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 93%. Muscle strength in her left hand is 1/5. Strength in the right extremities is 4/5. The patient is oriented only to self; she does not know the day of the week or today's date. She recalls 0 of 3 words at 5 minutes, and she is unable to name 2 objects, correctly draw interlocking pentagons, or count backwards by serial sevens. Complete blood count, renal function studies, liver function studies, and urinalysis are all within the reference ranges. ECG shows no abnormalities. Which of the following is the most likely underlying cause of the patient's symptoms?
- (A) Alzheimer disease
  - (B) Amyotrophic lateral sclerosis
  - (C) Cortical basal ganglionic degeneration
  - (D) Neurosyphilis
  - (E) Vascular dementia



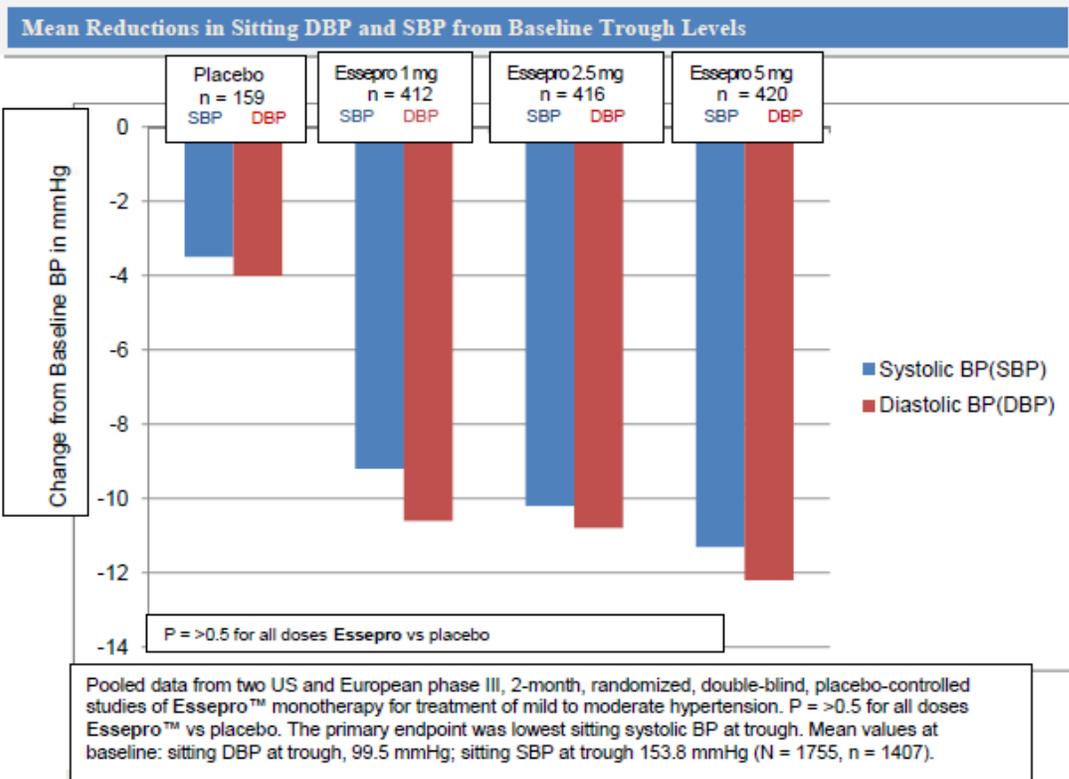
63. A 7-year-old boy is brought to the emergency department by his mother because of a 2-day history of chest pressure and mild shortness of breath. He also has had intermittent fever for the past 2 weeks and a 2.3-kg (5-lb) weight loss during the past month. He has not had rhinorrhea, cough, or chest pain. Medical history is otherwise unremarkable and he takes no medications other than acetaminophen for fever. Vaccinations are up-to-date. He appears mildly ill but is not in respiratory distress. Vital signs are temperature 37.5°C (99.5°F), pulse 100/min, respirations 20/min, and blood pressure 100/60 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 98%. Lungs are clear to auscultation. Cardiac examination discloses no abnormalities. Liver span is normal, and spleen tip is palpated at the left costal margin. Several 2 × 3-cm, nontender, nonmobile lymph nodes are noted in the inguinal canal and axillae. Chest x-ray is obtained and shown. When the patient returns from the radiology department, he is in moderate respiratory distress and reports chest pain. Which of the following is the most likely explanation for this patient's worsening condition?
- (A) Airway compression
  - (B) Cardiac arrhythmia
  - (C) Cardiac tamponade
  - (D) Hyperkalemia
  - (E) Hypocalcemia

64. A 45-year-old woman with a history of seizure disorder comes to the office because she has had seizures daily for the past 3 weeks, despite adhering to her medication regimen. Medical history is also significant for borderline hypertension for the past year and alcohol abuse. She admits that she has been drinking two beers daily since she lost her job 3 weeks ago. Medications include phenobarbital. Family history is significant for type 2 diabetes mellitus and hypertension in both parents and in all of her grandparents, heart disease in her sister, and death of her paternal grandfather of complications from alcohol abuse. The patient smoked one pack of cigarettes daily for 20 years but quit smoking 1 year ago. Since losing her job, the patient has been earning money by driving her neighbors' children to school and driving another neighbor to hospital appointments. BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 37.1°C (98.8°F), pulse 80/min, respirations 16/min, and blood pressure 138/86 mm Hg. Physical examination discloses no abnormalities. Serum phenobarbital concentration is obtained and results are pending. Which of the following is the priority in management at today's visit?
- (A) Discussing a new treatment regimen for the patient's seizure disorders
  - (B) Evaluating the patient for depressive disorder
  - (C) Evaluating the patient's ability/desire to stop drinking alcoholic beverages
  - (D) Instructing the patient to stop driving
65. A randomized controlled trial is conducted to assess the effectiveness of a new combination-drug antihypertensive therapy (Drug X) compared with a standard antihypertensive single-drug therapy. Study participants include 140 women (70%) and 60 men (30%) ages 30 to 60 years, with baseline blood pressure measurements of 150/95 mm Hg or higher. The investigators defined antihypertensive therapy as effective if the treatment resulted in a blood pressure measurement below 140/90 mm Hg. When designing the study, the investigators set the probability of wrongly finding that Drug X is more effective than the standard therapy as 1%; they set the probability of wrongly finding that the effectiveness of the two drugs is the same as 10%. Which of the following is the most accurate estimate of the statistical power in this study?
- (A) 1%
  - (B) 10%
  - (C) 40%
  - (D) 90%
  - (E) 99%

The pharmaceutical advertisement on pages 43-44 is for use with items #66 and 67 on page 45.

## Essepro™ (lesystolol) Reduces Blood Pressure Significantly

In 2-month studies  
Essepro™ therapy alone showed meaningful reductions in blood pressure<sup>1</sup>



In Clinical Studies Essepro™ demonstrated:

- Significant reductions in heart rate<sup>2</sup>
  - Heart rate decreased 6-9 BPM across all dosing groups<sup>1</sup>
- Further BP reductions when used in combination with other BP medication<sup>1,2</sup>
  - In a separate combination treatment study of Essepro with ACRIs and/or diuretics
- Significant BP reductions in women
  - Similar BP reductions for women and men across dose groups
- Meaningful BP reductions in Black patients<sup>3</sup>
  - In a separate 2-month study, therapy with Essepro alone showed statistically significant reductions but less than those reductions seen in non-Black patients
  - Added BP reductions were seen when Essepro was combined with ACRIs and/or diuretics

Essepro is a beta-adrenergic blocking agent indicated for the treatment of hypertension.

References: 1. Essepro [package insert], Radnor, PA; NB Pharma, Inc., 2009. 2. Data on file, NB Pharma, Inc. 3. Jones RF, Smith PL, Green, MM. Efficacy and safety of lesystolol alone and in combination therapy in African-American patients. J Hypertens 2008;7:655-661.

**Essepro** §™  
**(lesystolol) capsules**  
www.essepro.com

### Well-tolerated at all doses with low rate of side effects

Percentage of Adverse Events by Dose, Occurring More Frequently in Essepro™ than Placebo Patients, and in ≥1% of Patients

	Placebo n = 208	Essepro 1 mg n = 461	Essepro 2.5 mg n = 464	Essepro 5 mg n = 622
Adverse Event	%	%	%	%
Dizziness	2	6	5	8
Headache	1	5	7	6
Fatigue	1	2	3	3
Nausea	1	0	2	2
Dyspnea	0	1	1	1
Chest Pain	1	0	2	1
Peripheral Edema	1	1	0	2
Bradycardia	0	2	0	1
Rash	0	0	1	1

Pooled results from three US and European, phase III, 2-month, randomized, double-blind, placebo-controlled studies of Essepro in the treatment of mild to moderate hypertension (N = 2043, n = 1882).

#### Most side effects were mild and did not require discontinuation of Essepro™<sup>1</sup>

- Most adverse events were assessed as mild by investigators and treatment was continued<sup>1</sup>
- Few patients discontinued treatment due to adverse events, 2.6% for Essepro vs 2.1% for placebo<sup>1</sup>

#### No significant interactions with commonly used medications were observed<sup>1</sup>

- No significant interactions with hydrochlorothiazide, furosemide, losartan or lisinopril<sup>1</sup>
- No significant interactions with digoxin, warfarin or simvastatin<sup>1</sup>
- Drugs that inhibit CYP2C9 can increase plasma levels of Essepro. Patients on Essepro who are also treated with drugs that inhibit or induce this enzyme should be monitored closely, and dosage of Essepro may need to be adjusted based on blood pressure response<sup>1</sup>

#### Important Safety Information

Patients treated with Essepro should be advised against sudden discontinuation of therapy. When discontinuing therapy, dosage should be gradually tapered over 2 weeks.

Essepro is contraindicated in patients with bradycardia, heart block greater than first degree, cardiogenic shock, decompensated cardiac failure, severe hepatic impairment, and in patients who are hypersensitive to any component of this product.

Essepro should be used with caution in patients with peripheral vascular disease, renal impairment or thyrotoxicosis. Caution should be used in diabetics, as beta blockers may mask some manifestations of hypoglycemia.

In general, patients with bronchospastic disease should not receive beta blockers.

**Essepro §™**  
**(lesystolol) capsules**  
www.essepro.com

**NB Pharma, Inc**  
©2009 232901 us3145

**Items #66–67 refer to the pharmaceutical advertisement displayed on the previous two pages.**

A 65-year-old woman comes to the office for blood pressure medication management. Medical history is significant for poorly controlled hypertension, psoriasis, and psoriatic arthritis previously treated with methotrexate. Additional medical history is significant for alcohol use disorder and elevated liver function tests. Medications include enalapril, spironolactone, and topical corticosteroids. Vital signs are normal except for a blood pressure of 160/104 mm Hg. Physical examination discloses thick, scaly plaques on the scalp, buttocks, and upper and lower extremities. There are several spider angiomas on the chest and abdomen. The abdomen is distended and a fluid wave is noted. She has 2+ lower extremity edema. The patient says she would like to try a new drug called Essepro to treat her hypertension because she can get a 3-month supply of the medication for free.

66. Which of the following is the most appropriate response to the patient's request for the medication?
- (A) Essepro should be prescribed because she can get it for free
  - (B) Essepro should not be prescribed because it can worsen her psoriasis
  - (C) Essepro should not be prescribed because it is similar to her other medications
  - (D) Essepro should not be prescribed because the patient has severe liver disease
  - (E) Essepro should only be used for hypertensive emergencies
67. Which of the following interpretations can be made correctly from the graph on blood pressure reduction in the advertisement?
- (A) Blood pressure reduction from the three doses of Essepro cannot be compared to reduction with placebo because the number of patients on active drugs are higher than the number of patients on placebo
  - (B) Doubling the highest dose of Essepro will decrease diastolic pressure from baseline by at least 15 mm Hg
  - (C) The highest dose of Essepro should be used because it offers the greatest benefit
  - (D) There is no clinically important difference in blood pressure reduction between the three dose groups
  - (E) The significance of drug effect vs placebo cannot be determined because of the low P value

**END OF SET**

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68. A 19-year-old woman comes to her university's health center because of a 1-week history of nasal stuffiness, occasional clear rhinorrhea, and a mild sore throat. Two days ago, she began to feel hot, but she has not taken her temperature. Medical history is unremarkable and her only medication is an oral contraceptive. She has no history of allergies. She does not smoke cigarettes. BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 38.1°C (100.6°F), pulse 88/min, respirations 16/min, and blood pressure 116/74 mm Hg. Physical examination discloses tenderness over the left maxillary sinus without purulent drainage. There is clear fluid behind the left tympanic membrane, enlarged tonsils bilaterally, and pain with tapping of the left upper incisors. The left frontal sinus does not transilluminate. Cardiopulmonary examination discloses no abnormalities. Which of the following is the most likely underlying mechanism of this patient's sinusitis?
- (A) Eustachian tube dysfunction
  - (B) Mucosal edema
  - (C) Nasal polyps
  - (D) Oral contraceptive use
  - (E) Tonsillar hyperplasia

69. A 40-year-old woman comes to the office because of a 2-month history of fatigue, and generalized aching and weakness of the proximal muscles of all four extremities. The patient initially noticed the weakness only while she was getting in and out of her car, but during the past 2 weeks, the weakness has progressed, so that she now has difficulty combing her hair. Since the symptoms began, she also has had aching of the joints in her hands that has responded partially to ibuprofen. She was adopted and family history is unknown. She has two teenaged children who are well. She appears uncomfortable. She is 170 cm (5 ft 7 in) tall and weighs 68 kg(150 lb); BMI is 24 kg/m<sup>2</sup>. Vital signs are temperature 37.7°C (99.8°F), pulse 90/min, respirations 20/min, and blood pressure 110/70 mm Hg. The patient is alert and fully oriented. Physical examination discloses cracking of the skin of both hands that involves the tips and lateral sides of several fingers. The muscles of the upper arms and legs are somewhat tender to pressure. Results of serum laboratory studies show a creatine kinase concentration of 600 U/L and a lactate dehydrogenase concentration of 800 U/L. Results of complete blood count are within the reference ranges. Which of the following is the most likely diagnosis?
- (A) Fibromyalgia
  - (B) Myasthenia gravis
  - (C) Polymyositis
  - (D) Scleroderma

70. A new diagnostic test for HIV infection is developed. The new serum biomarker concentration is measured in 711 men and women, ages 25 to 65 years. Of these individuals, 336 were previously determined to have HIV and 375 do not have HIV. Stratified results of the new serum biomarker test are shown:

<b>New Serum Biomarker Concentration</b>	<b>Number of Individuals Positive for HIV (Total=336)</b>	<b>Number of Individuals Negative for HIV (Total=375)</b>
>100 U/mL	120	10
76–100 U/mL	100	30
51–75 U/mL	75	75
26–50 U/mL	30	60
0–25 U/mL	11	200

Which of the following is the likelihood ratio that is associated with a serum biomarker concentration greater than 100 U/mL?

- (A) 2
- (B) 8
- (C) 13
- (D) 25
- (E) 33

71. A 40-year-old man comes to the office for a preemployment physical examination. The patient has been generally healthy. Medical history is unremarkable and he takes no routine medications. Vital signs are normal. Physical examination shows a palpable nodule in the right lobe of the thyroid gland. Serum thyroid-stimulating hormone concentration is within the reference range. Ultrasonography of the thyroid gland confirms a solid, 1-cm nodule. Which of the following is the most appropriate next step in evaluation?
- (A) CT scan of the neck
  - (B) Fine-needle aspiration of the nodule
  - (C) Radionuclide thyroid scan
  - (D) Thyroidectomy
  - (E) Observation only
72. A 35-year-old man was admitted to the hospital 3 days ago because of pneumonia, but he has shown no clinical improvement despite ceftriaxone and azithromycin therapy. Upon admission, the patient exhibited blood-streaked sputum and chest x-ray showed hilar adenopathy. Medical history is otherwise unremarkable. The patient is a construction worker and he returned home 1 week ago from the southwest United States, where he had been temporarily employed. He does not smoke cigarettes. BMI is 20 kg/m<sup>2</sup>. Vital signs today are temperature 38.5°C (101.3°F), pulse 106/min, respirations 22/min, and blood pressure 110/70 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 95%. PPD skin test is nonreactive. Acid-fast smears of three sputum samples were all negative. Complete blood count at the time of admission showed a normal leukocyte count with 15% eosinophils. Results of blood culture have been negative since admission. Which of the following is most likely to provide a diagnosis?
- (A) Bacterial culture of sputum
  - (B) CT scan of the chest
  - (C) Fungal culture of the blood
  - (D) Serologic study for *Coccidioides immitis*
  - (E) Sputum cytologic study
  - (F) Urine assay for *Legionella* antigen
73. A 25-year-old man with Down syndrome and mild intellectual developmental disorder is brought to the office by his parents. He is their only child, and they are concerned that his current lifestyle is increasing his risk for coronary artery disease and stroke. The patient has a systolic murmur and also underwent surgical repair of an atrial septal defect at 1 year of age. He has smoked one pack of cigarettes daily for 5 years. He lives in a group home and works about 25 hours each week in a fast-food restaurant. He has a few friends and is romantically involved with a woman from his church group. The patient is 157 cm (5 ft 2 in) tall and weighs 91 kg (200 lb); BMI is 36 kg/m<sup>2</sup>. Vital signs are normal. A grade 2/6 systolic murmur is heard best at the apex. The parents would like him to stop smoking and follow a healthier diet, and they feel the only way to monitor and control his behavior is for him to move back into their home. They request your assistance in obtaining legal guardianship of their son. Which of the following is the most appropriate initial recommendation?
- (A) Advise the parents not to influence their son's decision in this matter
  - (B) Arrange for evaluation of their son's competency
  - (C) Enroll their son in a smoking cessation program
  - (D) Initiate a family meeting to discuss the parents' concerns with their son
  - (E) Obtain legal advice regarding guardianship

74. A 45-year-old woman comes to the office because of a 3-day history of nasal congestion, headache, sore throat, and general malaise. She has developed a cough during the past 24 hours that is mildly productive of clear sputum. Except for occasional seasonal allergies, she has no previous history of medical problems. She takes no medications on a regular basis but during the past 3 days she has been taking an over-the-counter oral cold medication. She follows a strict low-fat vegetarian diet and she drinks three to four glasses of wine per week. She jogs 3 miles a day when she is not sick. Vital signs today are temperature 37.5°C (99.5°F), pulse 90/min, and blood pressure 140/94 mm Hg. Height is 170 cm (5 ft 7 in); weight is 54 kg (120 lb); BMI is 19 kg/m<sup>2</sup>. On physical examination she appears slightly anxious. Nasal mucosa is erythematous and swollen, and sinuses are nontender. Posterior pharynx is also erythematous but there are no exudates. Lungs are clear on auscultation and cardiac examination is normal. Repeat blood pressure measurement at the end of the examination is 142/96 mm Hg in the left arm and 138/94 mm Hg in the right arm. Which of the following is the most likely cause of her elevated blood pressure?
- (A) Acute viral illness
  - (B) Chronic sinusitis
  - (C) Essential hypertension
  - (D) Her alcohol intake
  - (E) Over-the-counter cold medication

75. A 41-year-old woman comes to the emergency department because of a 3-day history of fever and a 2-day history of worsening flank pain with frequent and painful urination. She describes the pain as constant and says it worsens when she coughs or lies on her right side. She rates the pain as a 5 on a 10-point scale; ibuprofen has provided moderate relief of her pain. She also reports intermittent nausea but has not had vomiting or change in bowel habits. Medical history is significant for several uncomplicated urinary tract infections, most recently 8 months ago. Each infection resolved with antibiotic therapy. She currently takes no medications aside from her recent use of ibuprofen. She is sexually active with one male partner and uses condoms regularly. Vital signs are temperature 39.4°C (103.0°F), pulse 76/min, respirations 20/min, and blood pressure 128/74 mm Hg. Auscultation of the chest discloses normal S<sub>1</sub> and S<sub>2</sub>. Abdomen is soft with normal bowel sounds. There is guarding on the right lateral side and tenderness to compression over the right costophrenic angle. Results of laboratory studies are shown:

Serum		Blood	
Urea nitrogen	18 mg/dL	Hemoglobin	12.8 g/dL
Creatinine	0.9 mg/dL	WBC	20,000/mm <sup>3</sup>
Urine		Neutrophils, segmented	80%
Specific gravity	1.015 (N=1.003–1.029)	Lymphocytes	15%
Protein	Negative	Eosinophils	2%
Occult blood	Negative	Monocytes	3%
Leukocyte esterase	Positive		
WBC	Too numerous to count		
Casts	Occasional		

Urine and blood cultures are obtained and sent for analysis. Antibiotic therapy is initiated. Which of the following is the most appropriate next step?

- (A) Cystoscopy
- (B) Echocardiography
- (C) MRI of the abdomen
- (D) Renal ultrasonography
- (E) No additional study is indicated

76. A 41-year-old woman is brought to the emergency department by her husband because of nausea and dizziness that began suddenly 4 hours ago. She says she feels like the room is spinning. She has not vomited. She recalls receiving a blow to the left side of her neck 1 week ago when her dog jumped on her, but she has had no ill effects from that incident. Medical history is unremarkable. She takes no medications. Vital signs are normal. Physical examination shows mild ptosis of the left eyelid. The right pupil measures 4 mm in diameter and the left pupil measures 2 mm in diameter. Both pupils are reactive to light. Ocular motility is full. Nystagmus is present in both eyes on left lateral gaze. Left corneal reflex is diminished. Sensation to pinprick and cold is reduced over the left side of the face, right side of the chest, abdomen, and right upper and lower extremities. Which of the following pathophysiologic processes most accurately explains this patient's left-sided ptosis and decreased pupil size?
- (A) Parasympathetic overactivity
  - (B) Parasympathetic underactivity
  - (C) Postsynaptic neuromuscular junction defect
  - (D) Presynaptic neuromuscular junction defect
  - (E) Sympathetic overactivity
  - (F) Sympathetic underactivity
77. A 34-year-old woman comes to the office because of a 3- to 4-week history of swelling of her legs and a 9-kg (20-lb) weight gain. Medical history is significant for sickle cell trait and mild anemia. She has been taking 800 mg of ibuprofen three times daily for Achilles tendinitis diagnosed 1 month ago. She has smoked five cigarettes daily for the past 15 years, and she drinks one to five beers on weekends. She experimented with cocaine briefly 16 years ago, but she has never used intravenous drugs. She has been in a monogamous sexual relationship for the past 12 years. Today, vital signs are temperature 37.2°C (99.0°F), pulse 88/min, respirations 16/min, and blood pressure 145/95 mm Hg. Physical examination discloses periorbital edema but no jugular venous distention. Lungs are clear to auscultation. Cardiac examination discloses an S<sub>1</sub> and S<sub>2</sub> without murmurs or gallops. Abdominal examination discloses bulging flanks and shifting dullness to percussion. Examination of the lower extremities shows pitting edema from the mid thigh to the ankles bilaterally. Results of which of the following studies are most likely to be abnormal in this patient?
- (A) Echocardiography
  - (B) HIV antibody study
  - (C) Serum B-type natriuretic peptide concentration
  - (D) Toxicology screening of the urine
  - (E) Urine protein concentration

**NOTE: THIS IS THE END OF BLOCK 2.**  
**ANY REMAINING TIME MAY BE USED TO CHECK ITEMS IN THIS BLOCK.**

**Block 3: ACM**  
**Items 78–107; Time - 45 minutes**

**ALL ITEMS REQUIRE SELECTION OF ONE BEST CHOICE.**

78. A 54-year-old woman comes to the office because she has had intermittent shooting pain over her right cheek and jaw during the past 3 weeks. Each episode of pain lasts for 1 second or less. The pain is often triggered by cold air, chewing, tactile stimulation, and brushing her teeth. She has had no trauma to the face or head. Medical history is remarkable for tension headaches, obesity, and gastric bypass surgery. She is 165 cm (5 ft 5 in) tall and weighs 62 kg (137 lb); BMI is 23 kg/m<sup>2</sup>. Vital signs are normal. The patient cannot tolerate touch over the right side of the face. There is no facial weakness or loss of sensation. The remainder of the physical examination shows no abnormalities. CT scan of the head with and without contrast shows no abnormalities. Which of the following is the most appropriate pharmacotherapy at this time?

- (A) Carbamazepine
- (B) Lamotrigine
- (C) Levetiracetam
- (D) Topiramate
- (E) Zonisamide

79. A 25-year-old man, who was admitted to the hospital 5 hours ago because of nausea, light-headedness, and muscle aches that began after he completed a marathon, now reports worsening pain in his right leg. On admission, the patient reported only mild muscle aching, but he now rates the pain in his right lower extremity as a 9 on a 10-point scale. Laboratory studies on admission were notable for a serum creatine kinase concentration of 10,000 U/L and a serum creatinine concentration of 1.7 mg/dL. Since admission the patient has received 5 L of 0.9% saline and his nausea and light-headedness have resolved. He is alert and fully oriented. Vital signs are temperature 36.9°C (98.5°F), pulse 88/min, respirations 16/min, and blood pressure 126/82 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. Cardiopulmonary and abdominal examinations disclose no abnormalities. Passive flexion of the toes elicits pain over the anterior portion of the right lower extremity below the knee. Distal pulses are present in the lower extremities bilaterally. The remainder of the physical examination discloses no abnormalities. Results of laboratory studies obtained 1 hour ago are shown:

Serum		Blood	
Urea nitrogen	12 mg/dL	Hemoglobin	14.0 g/dL
Creatinine	1.2 mg/dL	WBC	14,000/mm <sup>3</sup>
Na <sup>+</sup>	140 mEq/L	Neutrophils, segmented	60%
K <sup>+</sup>	4.0 mEq/L		
Cl <sup>-</sup>	100 mEq/L		
HCO <sub>3</sub> <sup>-</sup>	24 mEq/L		

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

- (A) Application of ice to the right lower extremity
- (B) Cyclobenzaprine therapy
- (C) Measurement of lower extremity compartment pressures
- (D) MRI of the right lower extremity
- (E) Nonsteroidal anti-inflammatory drug therapy

80. A 9-year-old boy is brought to the office by his parents for a well-child examination. The patient and his family immigrated to the United States 2 months ago and he has not been evaluated by a physician in 4 years. He has been generally healthy. Medical history is significant for pneumonia at age 3 years. He takes no medications. He is at the 25th percentile for height, weight, and BMI. Vital signs are temperature 37.0°C (98.6°F), pulse 82/min, respirations 20/min, and blood pressure 112/74 mm Hg. Cardiac examination discloses a grade 3/6 systolic murmur audible along the left sternal border at the third and fourth intercostal spaces. Femoral pulses are weak and brachial pulses are strong; there is a radiofemoral delay. Chest x-ray discloses mild cardiomegaly with left ventricular prominence. ECG shows left ventricular hypertrophy. This patient is at greatest risk for which of the following complications?
- (A) Atrial fibrillation
  - (B) Cor pulmonale
  - (C) Systemic hypertension
  - (D) Tricuspid valve regurgitation
81. A 25-year-old woman comes to the office because of a 2-day history of right lower quadrant abdominal pain and vaginal spotting. She describes the abdominal pain as cramping and rates it as a 4 on a 10-point scale. Medical history is unremarkable and the patient takes no medications. Menses are typically irregular but she thinks her last menstrual period was approximately 5 weeks ago. She is sexually active with one male partner and they use condoms occasionally. Vital signs are temperature 37.2°C (99.0°F), pulse 90/min, respirations 16/min, and blood pressure 110/65 mm Hg. Abdominal examination discloses tenderness to palpation of the right lower quadrant. Pelvic examination discloses dark blood in the vaginal vault. Hematocrit is 36%. Urine pregnancy test is positive. Pelvic ultrasonography shows a thickened endometrial lining and no adnexal masses. Which of the following is the most appropriate next step in management?
- (A) Admission to the hospital for observation
  - (B) Diagnostic laparoscopy
  - (C) Dilatation and curettage
  - (D) Follow-up pelvic ultrasonography in 1 week
  - (E) Serial serum  $\beta$ -hCG concentrations
82. A 32-year-old woman, gravida 4, para 4, comes to the office 1 week after an uncomplicated vaginal delivery of a 3020-g (6-lb 11-oz) term female newborn. She has been breast-feeding her daughter since birth. The patient says that she cries frequently for no reason, is irritable, and is worried about her infant's long-term health. The patient reports having no appetite. She says that her husband and mother say that she is depressed and think she is anorexic. She has not had auditory hallucinations, confusion, or disorientation. She denies suicidal or homicidal ideation. She has a history of postpartum psychosis following the birth of her first child; she had no similar symptoms after the births of her second and third children. Which of the following factors in this patient's history most strongly indicates a poor prognosis?
- (A) Anorexia
  - (B) Depressed mood
  - (C) History of psychosis
  - (D) Multiparity

83. A 47-year-old man comes to the office to establish care. He recently moved to the area and has not been evaluated by a physician for more than 3 years. He reports a 1-year history of bilateral knee pain that worsens after prolonged standing, but he otherwise has felt well. Medical history is unremarkable and his only medication is acetaminophen as needed for his knee pain. Family history is significant for hypothyroidism in his mother and myocardial infarction in a paternal uncle at age 55 years. The patient drinks five to six beers weekly and does not smoke cigarettes. BMI is 32 kg/m<sup>2</sup>. Vital signs are temperature 36.1°C (97.0°F), pulse 78/min, respirations 12/min, and blood pressure 138/89 mm Hg. The patient is not in distress. Physical examination discloses no abnormalities. Results of fasting serum lipid studies obtained in preparation for today's visit are shown:

Cholesterol	
Total	264 mg/dL
HDL	54 mg/dL
LDL	170 mg/dL
Triglycerides	200 mg/dL

Which of the following is the most appropriate next step in management regarding the patient's laboratory study results?

- (A) Prescribe atorvastatin
  - (B) Prescribe cholestyramine
  - (C) Recommend diet and low-impact exercise
  - (D) Refer the patient to a cardiologist
  - (E) Repeat fasting laboratory studies in 1 month
84. A 37-year-old man comes to the emergency department because he has felt nauseated and light-headed for the past hour. Medical history is significant for esophageal varices secondary to alcohol-related cirrhosis and ascites treated with spironolactone. He drinks eight to ten alcoholic beverages daily. While you are obtaining additional history, the patient vomits a large volume of bright red blood and becomes difficult to arouse. Vital signs are temperature 36.0°C (96.8°F), pulse 110/min, respirations 12/min, and blood pressure 90/50 mm Hg. Following initiation of intravenous fluids, which of the following is the most appropriate immediate management?
- (A) Arrange for transjugular intrahepatic portal vein shunting
  - (B) Begin intravenous vasopressin therapy
  - (C) Do endotracheal intubation
  - (D) Do upper endoscopy
  - (E) Insert an esophageal tube for balloon tamponade

85. A 25-year-old man was admitted to the hospital yesterday with a massive hemothorax sustained as a result of a stab wound. Left lateral thoracotomy was done because more than 2 L of blood returned following chest tube placement. The thoracotomy disclosed a bleeding intercostal vessel that was repaired by suture ligation. Vital signs now are temperature 36.0°C (96.8°F), pulse 100/min, respirations 18/min, and blood pressure 120/78 mm Hg. Pulse oximetry on 5 L/min of oxygen via nasal cannula shows an oxygen saturation of 95%. Physical examination discloses a well-approximated staple line at the incision site and mild erythema. Decreased respiratory excursion is noted on the left side. The chest tube is draining a small amount of serosanguineous fluid; no air leak is noted. Which of the following is the most appropriate next step in management?
- (A) Administration of broad-spectrum antibiotics
  - (B) Initiation of tube feedings
  - (C) Pain reduction
  - (D) Physical therapy
  - (E) Psychological evaluation for post-traumatic stress disorder
86. A 45-year-old man returns to the office for ongoing treatment of tuberculous pericarditis. Pericardiocentesis 9 weeks ago showed a serosanguineous effusion; culture of the effusion was positive for *Mycobacterium tuberculosis*, and therapy with isoniazid, rifampin, and ethambutol was initiated. During the past 2 weeks, he has had increasing shortness of breath on minimal exertion, cough, pain in the right upper quadrant, and swelling of the lower extremities. BMI is 26 kg/m<sup>2</sup>. Vital signs today are temperature 37.0°C (98.6°F), pulse 100/min, respirations 22/min, and blood pressure 105/65 mm Hg. Physical examination discloses 10 cm of jugular venous distention. Lungs are clear to auscultation and percussion. Cardiac examination discloses distant but normal heart sounds. The liver is tender and is palpated 3 cm below the right costal margin. There is 2+ to 3+ pitting edema from the knees distally. HIV antibody test is negative. ECG shows nonspecific ST-T changes. Chest x-ray today is unchanged from the x-ray obtained at the time of diagnosis, which showed resolution of apical and perihilar infiltrates and a normal-sized heart. Which of the following is the most appropriate next step in management?
- (A) Add furosemide therapy and reevaluate in 4 weeks
  - (B) Add prednisone therapy
  - (C) Add streptomycin and cycloserine therapy
  - (D) Order bronchoscopy for brushings and cytology
  - (E) Order echocardiography
87. A 40-year-old woman, gravida 2 para 2, comes to the office because of bulging veins in her legs that have slowly become more visible since she first noticed them 2 years ago. She says they seem to worsen when she stands for long periods of time, but she reports no associated pain. She is concerned that this problem may be life-threatening. Medical history is otherwise unremarkable and she takes no medications. Both of her pregnancies resulted in uncomplicated vaginal deliveries at 40 weeks' gestation. BMI is 23 kg/m<sup>2</sup>. Vital signs are normal. Physical examination discloses compressible veins in both lower extremities below the knees that are worse on the left. The remainder of the examination discloses no abnormalities. Which of the following is the most appropriate next step?
- (A) Compression stockings
  - (B) Surgical ligation of the largest veins
  - (C) Venography
  - (D) Venous duplex ultrasonography
  - (E) Warfarin therapy



88. A 42-year-old woman, who sustained a bite to her left forearm from her cat 2 days ago, comes to the emergency department because of increased pain and redness at the injury site. The patient says the cat stays indoors and is up-to-date on its rabies vaccination. The patient's medical history is significant for type 1 diabetes mellitus. Her only medication is 70/30 insulin. BMI is 24 kg/m<sup>2</sup>. Vital signs are temperature 38.1°C (100.6°F), pulse 96/min, respirations 16/min, and blood pressure 134/76 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 98%. Examination of the left forearm discloses the wound shown in the photograph; the forearm is tender to palpation. The remainder of the physical examination discloses no abnormalities. Which of the following is the most appropriate antibiotic therapy to administer at this time?
- (A) Ampicillin-sulbactam
  - (B) Cefazolin and gentamicin
  - (C) Dicloxacillin and clindamycin
  - (D) Levofloxacin
  - (E) Vancomycin and metronidazole

89. A 39-year-old woman, gravida 2, para 2, comes to the community-based health center because of a 6-month history of a copious, foul-smelling vaginal discharge. She also reports spotting that began 6 months ago and has progressed to heavy bleeding during the past 3 weeks. Medical history is significant for an abnormal Pap smear in her 20s; her most recent Pap smear was done 12 years ago during her second pregnancy, and she recalls the results as being normal. She takes no medications. The patient was married for 18 years; her husband died 4 years ago and had undergone vasectomy after the birth of their last child. The patient has not had any new sexual partners since her husband's death. BMI is 32 kg/m<sup>2</sup>. Vital signs are temperature 37.2°C (99.0°F), pulse 90/min, respirations 14/min, and blood pressure 155/96 mm Hg. Speculum examination discloses normal vaginal mucosa. The cervix is friable with a 1-cm exophytic mass lateral to the cervical os at the nine o'clock position. Which of the following is the most critical factor in formulating a management plan for this patient?

- (A) Future fertility plans
- (B) Hypertension
- (C) Obesity
- (D) Patient age
- (E) Stage of disease

90. A 28-year-old man comes to the office for an annual health maintenance examination. He says he has been generally healthy. Three months ago he began walking three times weekly for at least 30 minutes, and he has eliminated salt from his diet after a blood pressure measurement at a local pharmacy was 160/96 mm Hg. Medical history is unremarkable and he takes no medications. Family history is remarkable for hyperlipidemia, hypertension, type 2 diabetes mellitus, and coronary artery disease. The patient is 188 cm (6 ft 2 in) tall and weighs 135 kg (298 lb); BMI is 38 kg/m<sup>2</sup>. Vital signs are temperature 36.8°C (98.2°F), pulse 102/min, respirations 18/min, and blood pressure 156/98 mm Hg. The abdomen is protuberant with no masses. The remainder of the physical examination discloses no abnormalities. Results of fasting laboratory studies are shown:

Serum		Blood	
Cholesterol		Hematocrit	46%
Total	202 mg/dL	Hemoglobin	15.6 g/dL
HDL	33 mg/dL	WBC	9800/mm <sup>3</sup>
LDL	137 mg/dL		
Triglycerides	158 mg/dL		
Glucose	104 mg/dL		

Pharmacotherapy should be directed toward which of the following?

- (A) Aiding with metabolism of glucose
- (B) Decreasing pulse rate
- (C) Decreasing serum LDL-cholesterol concentration
- (D) Lowering blood pressure
- (E) Suppressing appetite

91. A 22-year-old man comes to the office for evaluation 3 days after his girlfriend was diagnosed with trichomoniasis vaginalis. The patient has not had urethral discharge, dysuria, testicular pain, or genital skin lesions. He has been monogamous with his girlfriend and has been dating her for the past 6 months. He previously had one sexual partner at age 20 years. The patient has not consistently used condoms. He has never had any sexually transmitted diseases. Medical history is unremarkable and he takes no medications. Vital signs are normal. Genitourinary examination discloses no lesions or urethral discharge. Testes are symmetrical without tenderness or masses. There are shotty inguinal lymph nodes. In addition to recommending condom use, which of the following is the most appropriate next step?

- (A) Obtain a urethral swab for potassium hydroxide preparation
- (B) Order urinalysis and urine culture
- (C) Prescribe ceftriaxone and doxycycline therapy
- (D) Prescribe metronidazole therapy
- (E) Reassure the patient that no treatment is necessary

92. A 25-year-old man comes to the office because he has had a "coating" on his tongue during the past 2 weeks and has had an unintentional 4.5-kg (10-lb) weight loss during the past 6 months. He has not had oral pain or difficulty swallowing. Medical history is unremarkable and he takes no medications. He has smoked one pack of cigarettes daily for the past 5 years and he drinks two to three beers weekly. He is sexually active with two male partners and does not consistently use condoms. BMI is 25 kg/m<sup>2</sup>. Vital signs are temperature 37.1°C (98.8°F), pulse 83/min, respirations 16/min, and blood pressure 114/74 mm Hg. Oral examination shows a white plaque on the lateral aspect of the tongue bilaterally; an attempt to scrape the lesion from the tongue is unsuccessful. Anterior and posterior cervical lymph nodes are enlarged bilaterally but are mobile and not tender to palpation. The remainder of the physical examination discloses no abnormalities. A rapid HIV test is positive. Results of other laboratory studies are shown:

Blood	
CD4+ T-lymphocyte count	128/mm <sup>3</sup>
Hematocrit	36%
Hemoglobin	12.0 g/dL
WBC	1400/mm <sup>3</sup>
Neutrophils, segmented	79%
Eosinophils	3%
Lymphocytes	11%
Monocytes	7%
Platelet count	124,000/mm <sup>3</sup>

Which of the following is the most appropriate clinical intervention at this time?

- (A) Antiretroviral therapy
- (B) Liquid nitrogen therapy applied to the tongue lesions
- (C) Micafungin therapy
- (D) Surgical excision of the tongue lesions
- (E) Systemic chemotherapy with liposomal doxorubicin

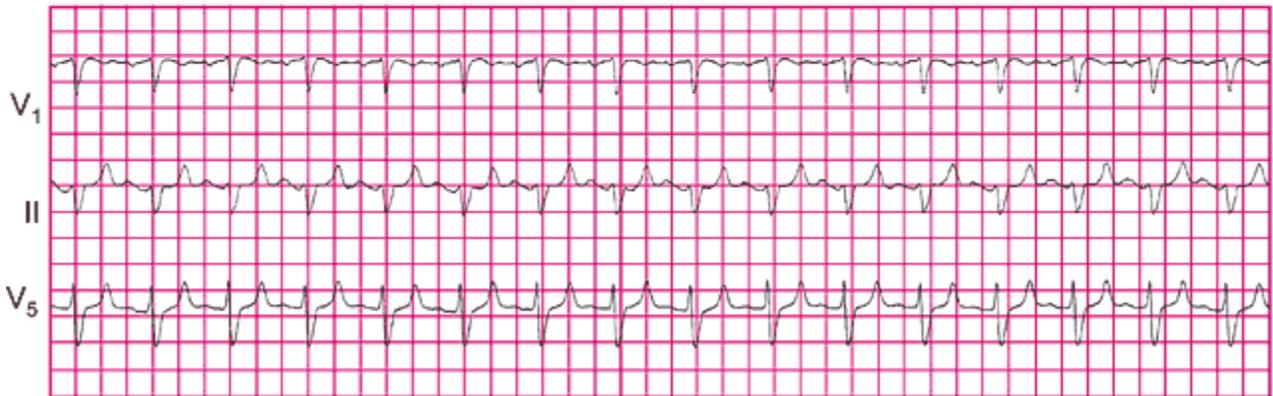
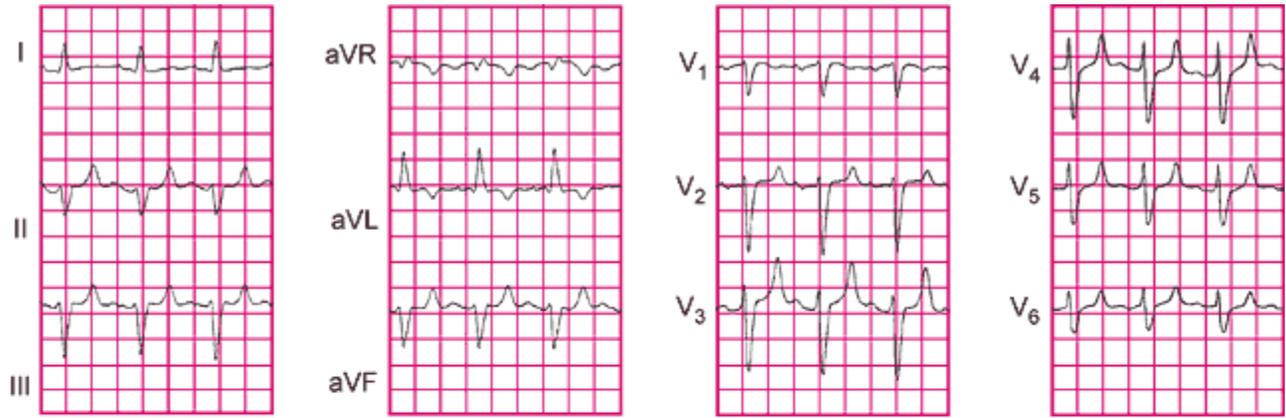
93. A 24-year-old recent college graduate comes to the office because of a 3-year history of increased frequency of urination and occasional incontinence whenever she travels. She says the urinary symptoms typically begin a few days before she is going to fly and they stop the day after she arrives at her destination. She says she is anxious about flying and even slightly "panicky." She reports having had similar but milder symptoms prior to examinations before graduating. Medical history is otherwise unremarkable. Her only medication is an oral contraceptive. Vital signs are normal. Physical examination discloses no abnormalities. Urinalysis and urine culture are normal. Which of the following is the most appropriate next step?
- (A) Recommend behavioral therapy
  - (B) Recommend psychoanalytic psychotherapy
  - (C) Recommend that the patient avoid any stressful activities that cause the problem
  - (D) Review the patient's sexual history
  - (E) Reassure the patient that her symptoms will resolve in time
94. A 22-year-old woman comes to the emergency department because of a 5-day history of sore throat and fever. During the past 3 days, she also has noticed a change in her voice and has had increased pain with swallowing. She has been taking acetaminophen since her symptoms began. Medical history is unremarkable and she takes no routine medications. Vital signs are temperature 40.0°C (104.0°F), pulse 130/min, respirations 18/min, and blood pressure 102/66 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 97%. Examination of the oropharynx shows erythema, edema, and anterior displacement of the right side of the soft palate. The uvula is deviated to the left. There is a white exudate on the right tonsil. Trismus is noted. Palpation of the neck discloses enlarged, tender, mobile anterior cervical lymph nodes. In addition to antibiotic therapy, which of the following is the most appropriate management?
- (A) Incision and drainage
  - (B) Intravenous methylprednisolone therapy
  - (C) Oral nystatin therapy
  - (D) Salt water gargle
  - (E) Tonsillectomy
95. A 26-year-old man, who is admitted to the hospital to undergo cholecystectomy, bleeds excessively during the procedure and then develops a large wound hematoma. Medical history discloses that he has always tended to bruise excessively with trauma. His wounds oozed blood for 3 days following a dental extraction, which was his only previous surgical procedure. He says that his maternal grandfather and uncle were "bleeders." Initial coagulation studies show a normal platelet count, bleeding time, and prothrombin time. The partial thromboplastin time is moderately prolonged. Which of the following is the most appropriate statement to this patient and his wife regarding their children?
- (A) There is no evidence of a familial coagulation defect
  - (B) Half of their daughters will have a clinically evident coagulation disorder
  - (C) The sons of their daughters will be at risk for a clinically evident coagulation disorder
  - (D) Their sons will be at risk for a clinically evident coagulation disorder
  - (E) Their sons and daughters will be at risk for a significant coagulation disorder



96. An 18-month-old boy is brought to the emergency department by his parents 2 hours after swallowing a dime. The parents note that the child has not had any choking, respiratory problems, feeding problems, or vomiting since the incident. Medical history is unremarkable and the child is up-to-date on vaccinations. He does not appear to be in pain. He is 82 cm (32 in; 50th percentile) long and weighs 12 kg (26 lb; 50th percentile). Vital signs are temperature 37.2°C (98.9°F), pulse 110/min, respirations 30/min, and blood pressure 90/51 mm Hg. Lungs are clear to auscultation. Abdominal examination discloses no tenderness. The remainder of the examination shows no abnormalities. X-ray of the abdomen is shown. Which of the following is the most appropriate management?
- (A) Administration of an oral bowel-cleansing solution
  - (B) Endoscopic retrieval of the coin
  - (C) Interventional radiologic retrieval of the coin
  - (D) Surgical exploration of the stomach with coin retrieval
  - (E) Observation only

97. A 29-year-old woman, gravida 3, para 3, comes to the office because of a 1-year history of recurrent low back pain. Rest and analgesics typically resolve the pain within 2 weeks. However, the pain recurs every 2 to 3 months. Medical history is remarkable for gestational diabetes during her pregnancies. She takes no medications except for an oral contraceptive. She walks 3 miles daily for exercise and works as a sales representative for a computer software company. She is 165 cm (5 ft 5 in) tall and weighs 100 kg (220 lb); BMI is 37 kg/m<sup>2</sup>. Vital signs are normal, and physical examination discloses no abnormalities. Which of the following is the most appropriate next step?
- (A) Administer an epidural injection of methylprednisolone
  - (B) Order MRI of the lumbosacral spine
  - (C) Order x-rays of the lumbosacral spine
  - (D) Recommend beginning a weight loss program
  - (E) Recommend decreasing physical activity
98. A 46-year-old woman comes to the office because of a 4-month history of irregular vaginal bleeding that occurs every 2 weeks and lasts 3 to 5 days. Until 5 months ago when she missed a period, her periods had occurred at regular 30-day intervals and lasted for 5 days. She has not had vaginal pain or discharge, headache, dizziness, chest pain, or shortness of breath. Medical history is unremarkable. She takes no medications. Vital signs are temperature 37.0°C (98.6°F), pulse 80/min, respirations 16/min, and blood pressure 120/60 mm Hg. Pelvic examination discloses normal external female genitalia. There is a small amount of blood in the cervical os. Uterus is 10 cm, mobile, anteverted, nontender, and irregular in shape. Adnexa are without masses or tenderness. Hemoglobin concentration is 10.2 g/dL. Which of the following is the most appropriate next step in evaluation?
- (A) Determination of serum thyroid-stimulating hormone and prolactin concentrations
  - (B) CT scan of the pelvis
  - (C) Endometrial biopsy
  - (D) Hysteroscopy with dilatation and curettage
  - (E) Trial of hormone replacement therapy
99. A 36-year-old female advertising executive is referred to the office for evaluation of a fasting serum total cholesterol concentration of 249 mg/dL. She has a family history of early coronary artery disease (CAD) and her father died suddenly at age 46 years of myocardial infarction. She tells you that she has never had chest pain. She is not currently sexually active and has no children. She claims that her high-stress lifestyle makes it impossible for her to eat regular meals or to follow a special diet, and she usually eats fast food. She exercises two or three times a week for about 20 minutes on a treadmill. She has smoked one pack of cigarettes daily for the past 20 years. Her only medication is acetaminophen for tension headaches. She is 165 cm (5 ft 5 in) tall and weighs 76 kg (167 lb); BMI is 28 kg/m<sup>2</sup>. Vital signs today are normal. Physical examination discloses no abnormalities except for mild obesity. Institution of which of the following is the most essential step in the prevention of CAD in this patient?
- (A) Biofeedback-based stress reduction program
  - (B) More rigorous and consistent exercise program
  - (C) Smoking cessation program
  - (D) Strict low-calorie diet
  - (E) Strict low-fat diet

100. A 57-year-old man was admitted to the intensive care unit from the emergency department 3 hours ago for treatment of an acute exacerbation of chronic obstructive pulmonary disease. He was brought to the emergency department by ambulance following a 2-hour history of severe shortness of breath and non-productive cough. Chest x-ray obtained on arrival showed significant air-trapping but no infiltrate. The patient was intubated in the emergency department, but now his ventilator pressure alarm is sounding and his blood pressure is dropping. Medical history is otherwise unremarkable. Medications include ipratropium and prednisone. He has smoked 1½ packs of cigarettes daily for about 40 years. Vital signs are temperature 37.7°C (99.9°F), pulse 106/min, respirations 12/min on intermittent mandatory ventilation, and blood pressure 72/46 mm Hg. Pulse oximetry on 40% FIO<sub>2</sub> shows an oxygen saturation of 91%. He appears obtunded and is poorly responsive. Physical examination shows jugular venous distention in the supine position; trachea is midline. Auscultation of the lungs discloses decreased breath sounds bilaterally with inspiratory and expiratory wheezing and a prolonged expiratory phase. Examination of the upper extremities shows 2+ digital clubbing bilaterally. There is no cyanosis or edema. Which of the following is the most appropriate management?
- (A) Adjustment of the ventilator settings
  - (B) Insertion of bilateral chest tubes
  - (C) Intravenous dopamine
  - (D) Intravenous low-molecular-weight heparin
  - (E) 1-L bolus of intravenous 0.9% saline
  - (F) Needle decompression
101. A 32-year-old woman comes to the office because of a 2-week history of burning rectal pain and bleeding. She says, "The pain is like being burned with a hot poker." The pain is at its worst when she has a bowel movement and for approximately 20 minutes after defecation. She rates the pain at its worst as an 8 on a 10-point scale. She has noticed small amounts of bright red blood on the toilet paper when wiping, as well as drops of blood on her underwear. Medical history is unremarkable and she takes no medications. BMI is 28 kg/m<sup>2</sup>. Vital signs are normal. Abdominal examination discloses no abnormalities. The patient has pain during rectal examination. Anoscopy shows a small tear in the anal mucosa. Test of the stool for occult blood is positive. Which of the following is the most appropriate next step in management?
- (A) Colonoscopy
  - (B) Excision and drainage
  - (C) Internal banding
  - (D) Oral docusate
  - (E) Sclerotherapy



102. A 10-year-old boy is receiving postoperative care in the pediatric intensive care unit 24 hours after undergoing ventricular septal defect repair. The procedure was uncomplicated. Medical history is otherwise unremarkable. Current intravenous medications include cefazolin and dopamine. The patient appears well hydrated. Vital signs are temperature 37.4°C (99.3°F), pulse 110/min, respirations 24/min, and blood pressure 96/72 mm Hg. Physical examination discloses no abnormalities. Determination of serum potassium concentration is 6.4 mEq/L. ECG is obtained and shown. Which of the following is the most appropriate next step?

- (A) Administration of intravenous calcium
- (B) Administration of intravenous 0.9% saline
- (C) Administration of oral sodium polystyrene sulfonate
- (D) Consultation with a cardiologist
- (E) Determination of plasma potassium concentration

103. A 16-year-old girl is brought to the office by her mother because she is concerned that she may have contracted meningitis from her soccer teammate, who was diagnosed with meningococcal meningitis and admitted to the hospital yesterday. The patient's soccer team traveled to a neighboring state to participate in a tournament 1 week ago and she shared a hotel room with the girl who was hospitalized. The patient feels well but is concerned she may have "caught the same bug." Medical history is remarkable for asthma. Medications include inhaled albuterol. Vital signs are temperature 37.2°C (98.9°F), pulse 64/min, respirations 16/min, and blood pressure 107/58 mm Hg. Physical examination shows no abnormalities. Which of the following is the most appropriate intervention for this patient at this time?
- (A) Administer the meningococcal vaccine
  - (B) Prescribe doxycycline
  - (C) Prescribe penicillin
  - (D) Prescribe rifampin
  - (E) Assure the patient that no anti-infective prophylaxis is necessary
104. A 27-year-old nulligravid woman comes to the office because of a 1-month history of daily vaginal bleeding associated with lower abdominal pain and, more recently, shortness of breath. Three days ago, she also developed aching pain of her sternum, which she rates as a 10 on a 10-point scale. During the 6 months prior to her current symptoms, the patient's menstrual periods occurred regularly but were heavy in flow. Her current bleeding has required changing her sanitary pad every 2 hours. Medical history is significant for sickle cell anemia. Medications include hydroxyurea (500 mg daily). The patient appears younger than her stated age. She is 162 cm (5 ft 4 in) tall and weighs 54 kg (120 lb); BMI is 21 kg/m<sup>2</sup>. Vital signs are temperature 37.7°C (99.8°F), pulse 99/min, respirations 19/min, and blood pressure 129/79 mm Hg. Auscultation of the chest discloses coarse breath sounds in both lung bases and a grade 2/6 systolic murmur heard best at the second left intercostal space. Results of laboratory studies are shown:

Blood	
Hematocrit	18.0%
Hemoglobin	5.7 g/dL
RBC	3.8 million/mm <sup>3</sup>
WBC	3000/mm <sup>3</sup>
Reticulocyte count	<0.4% of red cells

Which of the following is the most appropriate management of this patient's sternal pain?

- (A) Exchange transfusion
- (B) Increased dose of hydroxyurea
- (C) Initiation of erythropoietin therapy
- (D) Iron supplementation
- (E) Transfusion of packed red blood cells

105. A 67-year-old man with Parkinson disease is admitted to the hospital for treatment of pneumonia. The patient's daughter, who is visiting the patient, says he has had increased lethargy for the past day and decreased ambulation during the past 6 months. She also says that there are times during the day when his tremors increase in severity, although he continues to care for himself at home. Medical history is also remarkable for hypertension. Medications include hydrochlorothiazide, atenolol, levodopa, and carbidopa. He is 168 cm (5 ft 6 in) tall and weighs 78 kg (172 lb); BMI is 28 kg/m<sup>2</sup>. Vital signs are temperature 38.9°C (102.0°F), pulse 60/min supine and 68/min standing, respirations 22/min, and blood pressure 100/60 mm Hg supine and 80/50 mm Hg standing. The patient appears ill and older than his stated age. He is fully oriented but lethargic. Auscultation of the chest discloses rhonchi in the right mid lung field. Abdominal examination discloses no abnormalities. Neurologic examination discloses masked facies, bradykinesia, and cogwheel rigidity; gait was not assessed on admission. Chest x-ray shows a right lower lobe infiltrate. ECG shows no abnormalities. Appropriate intravenous antibiotic therapy is initiated. Prior to discharge, which of the following is the most appropriate step?
- (A) Obtain CT scan of the chest
  - (B) Obtain a swallowing evaluation
  - (C) Place a percutaneous endoscopic gastrostomy (PEG) tube
  - (D) Prescribe fludrocortisone
  - (E) Prescribe prophylactic levofloxacin
106. A 47-year-old man is admitted to the hospital through the emergency department because of the sudden onset of palpitations, left-sided chest pain, light-headedness, and shortness of breath that began while he was watching television 2 hours ago. Medical history is remarkable for paroxysmal atrial fibrillation. The patient is 180 cm (5 ft 11 in) tall and weighs 82 kg (180 lb); BMI is 25 kg/m<sup>2</sup>. ECG obtained in the emergency department showed atrial fibrillation with narrow QRS complex. Pulse was 146/min. Physical examination was remarkable for rapid heart rate. The patient was given oxygen via nasal cannula and intravenous metoprolol 5 mg every 5 minutes for a total of 15 mg. His pulse slowed to 90/min. Two hours after admission, he is pain free but his pulse is now 160/min. Blood pressure is 122/78 mm Hg. In order to decrease the patient's pulse, which of the following should be administered intravenously?
- (A) Adenosine
  - (B) Digoxin
  - (C) Enalapril
  - (D) Lidocaine
  - (E) Metoprolol
107. A 23-year-old man comes to the clinic to establish care after moving to the area for his first job since graduating from college. He has felt well. Medical history is remarkable for Hodgkin lymphoma diagnosed 10 years ago, which was treated with radiation therapy and a chemotherapy regimen of vinblastine, doxorubicin, methotrexate, and prednisone. BMI is 20 kg/m<sup>2</sup>. Vital signs are within normal limits. The patient appears well. Physical examination discloses no abnormalities. Which of the following screening studies is most appropriate to include in this patient's annual examinations?
- (A) Bone marrow aspiration and complete blood count
  - (B) CT scan of the chest, abdomen, and pelvis
  - (C) Echocardiography
  - (D) Fine-needle aspiration biopsy of the thyroid gland
  - (E) Nerve conduction studies

**NOTE: THIS IS THE END OF BLOCK 3.  
ANY REMAINING TIME MAY BE USED TO CHECK ITEMS IN THIS BLOCK.**

**Block 4: ACM**  
**Items 108–137; Time - 45 minutes**

**ALL ITEMS REQUIRE SELECTION OF ONE BEST CHOICE.**

108. A 5-year-old boy returns to the office with his 19-year-old mother to discuss results of studies done to evaluate his behavior of eating dirt. The patient sits quietly while his mother answers questions about his health. She says her son seems healthy, although he does not seem to be as active as other children his age. He has said his head hurts three or four times during the past 2 weeks. He has not had fever, sweats, or chills. She says he has a good appetite but has had a habit of eating sand and dirt since age 3 years. She says, "I don't know where he gets that habit. I used to eat dirt, but I stopped years ago. I try to stop him from eating dirt, but I'm not around much since I work two jobs." The patient takes no medications. Vaccinations are up-to-date. Height, weight, and BMI are at the 50th percentile. Vital signs are normal. Physical examination discloses no abnormalities except for symmetrical nontender cervical adenopathy. Results of laboratory studies, including serum zinc, lead, and iron concentrations, are within the reference ranges. Serologic testing confirms toxoplasmosis. In addition to prescribing pyrimethamine and sulfadiazine therapy, which of the following is the most appropriate next step in management?
- (A) Prescribe fluoxetine
  - (B) Prescribe methylphenidate
  - (C) Prescribe risperidone
  - (D) Refer the patient to a child psychiatrist
  - (E) Refer the patient to a dietician
109. A 55-year-old woman is brought to the office by her husband because of increasingly severe pain in her mid back for the past week. She says the pain is especially severe with walking. Her husband says she has been favoring her right leg for the past 3 days. Ibuprofen no longer controls the pain. She enjoys gardening but had to discontinue it 1 week ago because of the pain. She has not had bowel or bladder dysfunction. She underwent a right mastectomy 3 years ago for carcinoma and has been taking tamoxifen since that time. She is 173 cm (5 ft 8 in) tall and weighs 66 kg (145 lb); BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 38.0°C (100.4°F), pulse 90/min, respirations 15/min, and blood pressure 118/72 mm Hg. Strength is 3/5 in all muscle groups of the right lower extremity and 5/5 in the left lower extremity. Achilles and patellar reflexes are hyperactive on the right and normal on the left. Sensation to pinprick and temperature is decreased in the left lower extremity to the level of the inguinal ligament. Sensation to vibration is decreased in the right lower extremity. Reflexes and sensation are otherwise intact. Rectal sphincter tone is normal. Which of the following is the most appropriate next step?
- (A) Acetaminophen-oxycodone therapy and referral for physical therapy
  - (B) Admission to the hospital for pain control
  - (C) Electromyography and nerve conduction studies
  - (D) MRI of the thoracic spine
  - (E) Technetium 99m scan

**Items #110–111** are part of a sequential item set. In the actual examination environment, you will **not** be able to view the second item until you click "Proceed to Next Item." After navigating to the second item, you will not be able to add or change an answer to the first item.

A 7-year-old boy with sickle cell disease is brought to the office by his father because of fever and bone pain. The father says that his son was discharged 5 days ago after a 3-day hospitalization for the same symptoms. The patient had been admitted with a diagnosis of vaso-occlusive crisis with bone infarct, with resolution of symptoms after treatment with intravenous fluids, narcotics, and antibiotic therapy for 3 days. Blood cultures were negative. The patient's back pain and fever recurred 2 days ago and seem more severe than prior to the hospitalization. His medical chart shows that he had one other uncomplicated hospital admission at age 4 years for a vaso-occlusive crisis with lower extremity bone pain. Vital signs today are temperature 39.2°C (102.5°F), pulse 110/min, respirations 24/min, and blood pressure 115/60 mm Hg. The patient is uncomfortable but does not appear toxic. Cardiac examination discloses a grade 2/6 systolic ejection murmur at the left lower sternal border. Spleen is not palpated. There is considerable tenderness over the L1–L3 region of the back without fluctuation. There is diffuse pain in both thighs without localization, but range of motion is normal.

110. Which of the following studies is most likely to establish the diagnosis at this time?

- (A) Blood culture
- (B) CT scan of the spine
- (C) MRI of the lumbar spine
- (D) Ultrasonography of the spine
- (E) X-ray of the spine

111. MRI of the spine confirms the diagnosis. Which of the following is the most appropriate initial intravenous pharmacotherapy?

- (A) Ceftriaxone
- (B) Cephalothin and clarithromycin
- (C) Clindamycin and gentamicin
- (D) Nafcillin
- (E) Vancomycin and cefotaxime

**END OF SET**

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112. A 24-year-old man comes to the emergency department because of right lower quadrant abdominal pain and nausea that began suddenly 6 hours ago. He rates the pain as a 6 on a 10-point scale and asks for pain medication. Medical history is unremarkable. He takes only a multivitamin. Vital signs on arrival are temperature 38.7°C (101.6°F), pulse 105/min, respirations 16/min, and blood pressure 110/85 mm Hg. Physical examination discloses exquisite tenderness in the right lower quadrant of the abdomen. The remainder of the examination discloses no abnormalities. The surgical consultant cannot evaluate the patient for 2 hours. Which of the following is the most appropriate next step?

- (A) Administer acetaminophen
- (B) Administer gabapentin
- (C) Administer lorazepam
- (D) Administer morphine
- (E) Explain to the patient that analgesics would interfere with the surgical examination



113. A 20-year-old woman comes to the clinic for an initial visit because of dry skin that has been present since childhood but worsens each winter. The dry skin is most prominent on her lower extremities, but it is not present behind the knees or over the ankles. Her father and younger brother also have similar skin changes. The patient's medical history otherwise is unremarkable and she takes no medications. BMI is 24 kg/m<sup>2</sup>. Vital signs are normal. Physical examination discloses no abnormalities except for the findings shown in the photograph. Which of the following is the most appropriate treatment for this patient?
- (A) Oral tretinoin
  - (B) Topical ketoconazole cream
  - (C) Topical lactic acid lotion
  - (D) Topical triamcinolone ointment
  - (E) Use of antibacterial soap

114. A 74-year-old man who had a stroke 2 years ago is admitted to the hospital from the nursing care facility because of a 4-day history of reduced urinary output, and worsening abdominal pain, nausea, and lethargy. The stroke had resulted in right-sided hemiparesis and difficulties with speech and swallowing. Medical history is also significant for hypertension. The patient has been hospitalized twice during the past 3 months for pneumonias that did not respond to oral antibiotic therapy in the nursing facility. He underwent bladder catheterization during each of the recent hospitalizations for a total of 6 days to monitor urine output. The catheter was removed prior to each discharge. Bladder catheterization attempts during the past several days in response to his current symptoms have been unsuccessful. Now on admission, the patient appears agitated and confused. Vital signs are temperature 36.9°C (98.4°F), pulse 110/min, respirations 24/min, and blood pressure 160/100 mm Hg. Physical examination discloses jugular venous distention, 8 cm at 45 degrees. Lungs are clear to auscultation. Auscultation of the heart discloses regular tachycardia with no gallops. There is fullness and tenderness to palpation of the low central abdomen but no rebound or guarding. Examination of the extremities shows 1+ pedal edema bilaterally. The prostate is normal in size and has no palpable nodules or tenderness. Results of laboratory studies are shown:

Serum		Blood	
Urea nitrogen	73 mg/dL	Hematocrit	32%
Creatinine	4.2 mg/dL	Hemoglobin	10.6 g/dL
Calcium	8.6 mg/dL	WBC	8200/mm <sup>3</sup>
Na <sup>+</sup>	134 mEq/L	Platelet count	359,000/mm <sup>3</sup>
K <sup>+</sup>	5.6 mEq/L		
Cl <sup>-</sup>	100 mEq/L		
HCO <sub>3</sub> <sup>-</sup>	20 mEq/L		
Mg <sup>2+</sup>	2.0 mEq/L		
Glucose	126 mg/dL		
Phosphorus	4.8 mEq/L		

Ultrasonography shows distention of the bladder and bilateral hydronephrosis. ECG shows sinus tachycardia. Which of the following is the most appropriate next step?

- (A) Administration of bethanechol
  - (B) Administration of prazosin
  - (C) Hemodialysis
  - (D) Placement of a suprapubic catheter
  - (E) Ultrafiltration
115. A 47-year-old man comes to the emergency department because of a 3-day history of increasing pain, tenderness, and swelling near the fingernail of his right index finger. He rates the pain as an 8 on a 10-point scale. He has not had fever or chills, and he has not sustained any trauma to the finger. Medical history is unremarkable and the patient takes no medications. He appears generally well and is not in distress. Vital signs are temperature 37.1°C (98.8°F), pulse 72/min, respirations 14/min, and blood pressure 120/80 mm Hg. Physical examination of the right hand discloses swelling, erythema, warmth, and tenderness of the periungual region of the right index finger. There is a mildly fluctuant area near the nail edge. The remainder of the physical examination discloses no abnormalities. Which of the following is the most appropriate next step in management?
- (A) Incision and drainage
  - (B) Oral cefazolin therapy
  - (C) Topical neomycin therapy
  - (D) Warm-water soaks

116. A 12-year-old girl with type 1 diabetes mellitus is brought to the emergency department by her parents because of a 2-day history of nausea, vomiting, and decreased oral intake. Medications are insulin glargine and insulin aspart. She decreased her insulin dose at the onset of symptoms but her condition has since worsened and she now is unable to consume solids or liquids without subsequent vomiting. She reports feeling dizzy on standing. Medical history is otherwise unremarkable. She is at the 50th percentile for height, weight, and BMI. Vital signs are temperature 37.8°C (100.1°F), pulse 118/min, respirations 27/min, and blood pressure 85/47 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 99%. Physical examination discloses dry mucous membranes, delayed capillary refill time, and poor skin turgor. Palpation of the abdomen discloses diffuse tenderness with no rebound or guarding. The remainder of the physical examination discloses no abnormalities. Results of laboratory studies obtained on arrival are shown:

Serum		Arterial blood gas values on room air	
Urea nitrogen	28 mg/dL	HCO <sub>3</sub> <sup>-</sup>	10 mEq/L
Creatinine	1.2 mg/dL	PO <sub>2</sub>	98 mm Hg
Na <sup>+</sup>	126 mEq/L	PCO <sub>2</sub>	22 mm Hg
K <sup>+</sup>	4.3 mEq/L	pH	7.20
Cl <sup>-</sup>	95 mEq/L		
HCO <sub>3</sub> <sup>-</sup>	9 mEq/L		
Glucose	563 mg/dL		

Boluses of intravenous 0.9% saline are administered and an infusion of insulin is initiated. Three hours later the patient becomes somnolent and develops a headache. She has had one episode of emesis and one episode of incontinence. Her urine output has been 30 mL/h. Results of follow-up serum laboratory studies are shown:

Urea nitrogen	24 mg/dL
Creatinine	1.1 mg/dL
Na <sup>+</sup>	127 mEq/L
K <sup>+</sup>	3.7 mEq/L
Cl <sup>-</sup>	98 mEq/L
HCO <sub>3</sub> <sup>-</sup>	11 mEq/L
Glucose	287 mg/dL

Which of the following is the most appropriate intravenous pharmacotherapy?

- (A) Bicarbonate
- (B) Dexamethasone
- (C) 50% Dextrose
- (D) Furosemide
- (E) Mannitol

117. A 54-year-old female nurse, gravida 2, para 2, comes to the office because of a 4-month history of hot flushes that awaken her from sleep on most nights. She also reports increased irritability during this time. She has not had fever, shortness of breath, or cough. She says her appetite has been good and her weight has been stable. Medical history is remarkable for hysterectomy done 5 years ago for symptomatic leiomyomata uteri. The patient takes calcium and vitamin D supplements. She has never smoked cigarettes. She drinks one glass of wine 1 night weekly. She is 165 cm (5 ft 5 in) tall and weighs 48 kg (106 lb); BMI is 18 kg/m<sup>2</sup>. Vital signs are temperature 37.0°C (98.6°F), pulse 66/min, respirations 12/min, and blood pressure 108/64 mm Hg. Physical examination discloses no abnormalities. Screening PPD skin test shows 15 mm of induration. Chest x-ray shows densities consistent with granulomata. Which of the following pharmacotherapies is most likely to alleviate this patient's symptoms?
- (A) Clonidine
  - (B) Conjugated estrogen
  - (C) Fluoxetine
  - (D) Isoniazid and rifampin
  - (E) Raloxifene



118. A 44-year-old male accountant comes to the office for an initial visit because of a progressively worsening rash and recent joint pain for the past 2 years. He works at a small computer firm. He is not exposed to chemicals, uses a mild soap for personal cleaning and has no pets. He describes the rash as scaly and red but not itchy. He says, "The rash is embarrassing when I have to work with clients." Several months ago he had mild transient joint pain but there has been no recurrence. On physical examination you evaluate the rash shown. There are similar lesions on his elbows and knees. The rash has never been treated before. Which of the following is the most appropriate initial treatment option for this patient?
- (A) Cyclosporine, orally
  - (B) Methotrexate, orally
  - (C) Phototherapy
  - (D) Vitamin D, orally
  - (E) Topical corticosteroids

119. A 55-year-old woman, gravida 1, para 1, comes to the office because she is concerned that she has continued to have regular menses while her friends of the same age have gone through menopause. She reports having her usual premenstrual breast tenderness and menstrual cramping. She has not had change in flow, intermenstrual spotting, hot flushes, or night sweats. Medical history is unremarkable. She takes no medications. She does not smoke cigarettes. She drinks one glass of wine each evening. Her last menstrual period occurred 3 weeks ago. Screening mammogram obtained 1 year ago and all previous Pap smears, including her most recent Pap smear 2 years ago, have shown no abnormalities. Her 50-year-old sister also has not gone through menopause. The patient does not exercise. She is 157 cm (5 ft 2 in) tall and weighs 80 kg (176 lb); BMI is 32 kg/m<sup>2</sup>. Vital signs are normal. Physical examination discloses adiposity of the abdomen. Pelvic examination discloses pink and rugose vaginal walls and a small uterus. The remainder of the physical examination discloses no abnormalities. Which of the following is the most appropriate next step to address the patient's continued menstruation?
- (A) Order fine-needle biopsy of the endometrium
  - (B) Order pelvic ultrasonography
  - (C) Order serum estradiol and follicle-stimulating hormone concentrations
  - (D) Provide reassurance that she is simply still premenopausal
  - (E) Recommend losing weight to help facilitate the onset of menopause
  - (F) Recommend monthly leuprolide acetate injections for a 3-month duration
  - (G) Refer the patient to an endocrinologist
120. A 25-year-old man comes to the emergency department because he developed chest pain and shortness of breath 1 hour ago, shortly after snorting cocaine for the first time. He rates the chest pain as a 7 on a 10-point scale and notes that the pain is radiating down his left arm. Medical history is unremarkable and the patient takes no medications or any other illicit drugs. He is 178 cm (5 ft 10 in) tall and weighs 70 kg (154 lb); BMI is 22 kg/m<sup>2</sup>. The patient is diaphoretic. Vital signs are temperature 37.5°C (99.5°F), pulse 110/min, respirations 16/min, and blood pressure 200/100 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 95%. Pupils are equal, round, and reactive to light and accommodation. Lungs are clear to auscultation and percussion. Auscultation of the heart discloses an audible S<sub>1</sub> and S<sub>2</sub>. There is no edema, cyanosis, or clubbing of the digits. The patient is fully oriented. He is treated with supplemental oxygen, a 325-mg aspirin tablet, and intravenous nitroglycerin and lorazepam. Despite therapy, he continues to have chest pain and shortness of breath. ECG shows sinus tachycardia with no ST-segment or T-wave abnormalities. Which of the following is the most appropriate additional pharmacotherapy to initiate at this time?
- (A) Carvedilol
  - (B) Furosemide
  - (C) Metoprolol
  - (D) Phentolamine
  - (E) Streptokinase

121. A 70-year-old man, who was admitted to the hospital 3 days ago for treatment of pneumonia, has now developed diarrhea and severe lower abdominal cramping. The patient has passed watery and yellow stools every 2 hours for the past 12 hours. Since admission, the patient has been treated with intravenous levofloxacin therapy and albuterol/ipratropium nebulizers every 4 hours, with only mild improvement of his respiratory symptoms. Medical history is also significant for hypertension, type 2 diabetes mellitus, and hyperlipidemia. Routine medications include rosiglitazone, amlodipine, and atorvastatin. He has smoked one pack of cigarettes daily for the past 50 years. BMI is 20 kg/m<sup>2</sup>. Vital signs are temperature 36.7°C (98.0°F), pulse 102/min, respirations 16/min, and blood pressure 100/50 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 93%. Physical examination discloses dry mucous membranes and cracked lips. Lungs are clear to auscultation bilaterally. Cardiac examination discloses a tachycardic but regular rhythm. Abdomen is diffusely tender to palpation with no distention, rebound, or guarding. Test of the stool for occult blood is negative. Results of serum laboratory studies are shown:

Urea nitrogen	30 mg/dL
Creatinine	1.5 mg/dL
Calcium	8.2 mg/dL
Na <sup>+</sup>	150 mEq/L
K <sup>+</sup>	3.7 mEq/L
Cl <sup>-</sup>	115 mEq/L
HCO <sub>3</sub> <sup>-</sup>	22 mEq/L
Glucose	120 mg/dL

Stool culture is obtained. Intravenous infusion of which of the following substances is the most appropriate next step?

- (A) Bicarbonate
  - (B) Calcium gluconate
  - (C) 5% Dextrose in water
  - (D) 0.9% Saline
122. A 3-week-old male infant is brought to the office by his mother because of a 2-day history of white lesions in the mouth. The infant was born at term via uncomplicated spontaneous vaginal delivery; he has been breast-feeding well and is urinating and having bowel movements normally. At birth, he weighed 3289 g (7 lb 4 oz; 30th percentile). Today, he weighs 3629 g (8 lb; 25th percentile). He appears adequately hydrated. Vital signs are normal. Physical examination discloses white patches on the tongue and buccal mucosa that do not come off when gently scraped with a tongue blade. Which of the following is the most appropriate pharmacotherapy?
- (A) Acyclovir
  - (B) Fluconazole
  - (C) Nystatin
  - (D) Valacyclovir
  - (E) No pharmacotherapy is necessary

123. A 55-year-old man is brought to the emergency department by his wife because he told her he did not want to live anymore. During the past 6 weeks, he has experienced fatigue, loss of interest in usual activities, a 7-kg (15-lb) weight loss, and insomnia. He has no history of serious medical or psychiatric illness. Vital signs are temperature 37.0°C (98.6°F), pulse 80/min, respirations 16/min, and blood pressure 140/82 mm Hg. Physical examination discloses no abnormalities. Beck Depression Inventory score is 35 (severely depressed). He says he feels guilty that his investments have not done well and that he has ruined his family finances. He reports he hears voices at night telling him he has sinned. In addition to olanzapine, which of the following is the best treatment option for this patient?
- (A) Divalproex
  - (B) Fluoxetine
  - (C) Lamotrigine
  - (D) Lithium carbonate
  - (E) No other therapy is necessary
124. A 78-year-old man, who underwent coronary angiography with stent placement 8 years ago, comes to the office for a routine health maintenance examination. The patient reports no new symptoms except for shortness of breath and fatigue during exercise that began 3 months ago when he tried to increase the distance of his daily walk from 1 mile to 3 miles. He has not had orthopnea, paroxysmal nocturnal dyspnea, or chest pain. Additional medical history is significant for hypertension, coronary artery disease, dyslipidemia, and polymyalgia rheumatica. The patient also has a heart murmur that was discovered at an armed forces screening physical examination at age 18 years, but it did not prevent him from serving in the military. Medications are metoprolol, atorvastatin, lisinopril, omeprazole, and a low dose of prednisone every other day. The patient is active and manages a small farm. BMI is 26 kg/m<sup>2</sup>. Vital signs are temperature 37.0°C (98.6°F), pulse 60/min, respirations 18/min, and blood pressure 124/61 mm Hg. Cardiac examination discloses a normal S<sub>1</sub>, pronounced S<sub>2</sub>, and a grade 2/6 late systolic murmur heard at the right upper parasternal border. Pulses are normal in contour. Results of laboratory studies are within the reference ranges. ECG shows no abnormalities. Which of the following is the most appropriate next step in management?
- (A) Decrease the dose of metoprolol
  - (B) Increase the dose of prednisone
  - (C) Obtain serum vitamin D concentration
  - (D) Order a transthoracic echocardiography
125. A 28-year-old man comes to the office because he would like to quit smoking cigarettes. He says, "I cannot go more than a day without cigarettes because I get so anxious and irritable. I even wake up at night to smoke." The patient began smoking cigarettes at age 12 years; he was smoking two packs of cigarettes daily by age 17 years, and he has not curtailed his use since that time. He does not drink alcoholic beverages or use illicit drugs. Medical history is remarkable for childhood febrile seizures. He takes no medications. Vital signs are normal. The patient is interested in using a nicotine patch and bupropion therapy because he says his friend found the treatments to be helpful. In combining these two therapies, this patient is at greatest risk for which of the following?
- (A) Cold intolerance
  - (B) Hypertension
  - (C) Polyuria
  - (D) Renal insufficiency
  - (E) The patient is at no increased risk

126. A 25-year-old woman comes to the office because of a 24-hour history of right-sided facial weakness. Two days ago she developed mild aching behind the right ear, which resolved spontaneously. This morning, however, the entire right side of her face was drooping and she was unable to close her right eye. When she tried to drink coffee this morning, the liquid ran out the right side of her mouth. She has been otherwise healthy and she takes no medications. Vital signs are normal. Examination of the ears and oral mucosa shows no abnormalities. Cranial nerve examination shows moderate weakness of the right orbicularis oculi and oris, frontalis, buccinator, and platysma muscles. Sound is perceived as louder in the right ear. The remainder of the neurologic examination shows no abnormalities. Which of the following is the most accurate statement regarding this patient's prognosis for neurologic recovery?
- (A) Prognosis cannot be determined without results of cerebral angiography
  - (B) Prognosis cannot be determined without results of MRI of the brain and cerebrospinal fluid analysis
  - (C) She has an 80% chance of complete recovery within the next 12 months without treatment
  - (D) With oral corticosteroid therapy she has a 20% chance of complete recovery within the next 12 months
  - (E) It is unlikely that the patient will achieve functional recovery from this condition regardless of therapy
127. A 20-year-old woman comes to the office because of a 2-day history of nasal congestion, runny nose, and nonproductive cough that has made it difficult for her to sleep. She has not had fever. Her brother with whom she resides also has similar symptoms. The patient's medical history is significant for mild persistent asthma for which she takes inhaled fluticasone-salmeterol twice daily and albuterol as needed. She has been using her albuterol more frequently during the past 2 days without much effect. During this time, her peak expiratory flow rates have been 70% to 80% of her baseline. Vital signs today are temperature 37.2°C (99.0°F), pulse 70/min, respirations 20/min, and blood pressure 110/70 mm Hg. Physical examination discloses inflamed nasal mucosa with clear discharge. The posterior oral pharynx is erythematous. Auscultation of the lungs discloses rare expiratory wheezes. Which of the following is the most appropriate pharmacotherapy for this patient's cough?
- (A) Codeine
  - (B) Diphenhydramine
  - (C) Guaifenesin
  - (D) Ipratropium bromide
  - (E) Prednisone
128. A 34-year-old woman, gravida 2, para 1, comes to the office at 26 weeks' gestation to establish prenatal care after obtaining health insurance coverage. She has gained 14 kg (31 lb) during this pregnancy. Her last pregnancy 4 years ago resulted in delivery of a 4564-g (10-lb 1-oz) male newborn. Today, the patient is 162 cm (5 ft 4 in) tall and weighs 99 kg (218 lb). Vital signs are normal. Physical examination discloses a fundal height of 30 cm. Fetal heart rate is 146/min. Prenatal laboratory studies and ultrasonography are ordered. This patient is most at risk for which of the following?
- (A) Gestational diabetes
  - (B) Multiple gestation
  - (C) Placenta previa
  - (D) Polyhydramnios
  - (E) Preeclampsia

129. A 39-year-old woman, gravida 6, para 5, is admitted to the hospital at 39 weeks' gestation for a scheduled induction of labor for delivery of twins. Her prior pregnancies were uncomplicated. Her current pregnancy has been complicated by well-controlled gestational diabetes. Vital signs are temperature 36.7°C (98.1°F), pulse 80/min, respirations 16/min, and blood pressure 134/84 mm Hg. Uterine size is consistent with a 36-week gestation. The fetuses are estimated to weigh 1814 g (4 lb) each. The patient delivers healthy twins. After the delivery of the placenta, examination discloses decreased uterine tone, increased bleeding, and increased hypotension. Which of the following is the most appropriate initial pharmacotherapy?
- (A) Ergonovine
  - (B) Intramuscular vitamin K
  - (C) 15-Methylprostaglandin F<sub>2α</sub>
  - (D) Misoprostol
  - (E) Oxytocin



130. A 33-year-old woman comes to the office because of "welts" on her neck, chest, and shoulders that appeared yesterday shortly after she returned home from an ice-skating outing with her church. She says, "It doesn't itch now, but I'm afraid it may get worse and not go away this time." She notes that cold weather has always caused "redness" to her face; however, it has never been this extensive or severe. She reports no other symptoms and has had no recent changes in her diet. Medical history is remarkable for mild asthma controlled with a metered-dose albuterol inhaler. She takes no other medications. The patient is single and lives with a roommate, who has not had any similar skin symptoms. She is 168 cm (5 ft 6 in) tall and weighs 58 kg (127 lb); BMI is 21 kg/m<sup>2</sup>. A photograph of the patient's skin is shown. The remainder of the physical examination shows no abnormalities. Which of the following is the most appropriate initial management?
- (A) Counseling for avoidance of reexposure to cold
  - (B) Oral pseudoephedrine therapy
  - (C) Subcutaneous epinephrine therapy
  - (D) Topical hydrocortisone therapy
  - (E) Admission to the hospital for 24-hour observation

131. A 32-year-old woman comes to the emergency department because of a 3-day history of worsening fever, dry cough, and shortness of breath. She also has had abdominal discomfort, diarrhea, and nausea, but she has not vomited. She returned home from a business trip to a midwestern city 2 days ago. She has had no known contact with any ill individuals. She had been generally healthy and medical history is unremarkable. She takes no medications. Her last menstrual period was 6 weeks ago and she thinks she might be pregnant. She does not smoke cigarettes, drink alcoholic beverages, or use illicit drugs. She is married and uses no contraception. She appears well developed and well nourished but is short of breath and lethargic. Vital signs are temperature 38.3°C (101.0°F), pulse 104/min, respirations 28/min, and blood pressure 100/60 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 92%. Auscultation of the chest discloses crackles at the right lung base, tachycardia, a normal S<sub>1</sub> and S<sub>2</sub>, and no other abnormalities. Abdominal examination discloses no abnormalities. Petechiae are present over both lower extremities. Results of laboratory studies are shown:

Serum		Blood	
ALT	80 U/L	Hematocrit	30.3%
AST	63 U/L	Hemoglobin	10.2 g/dL
Urea nitrogen	14 mg/dL	WBC	11,300/mm <sup>3</sup>
Creatinine	1.7 mg/dL	MCV	76 μm <sup>3</sup>
Na <sup>+</sup>	130 mEq/L	Platelet count	104,000/mm <sup>3</sup>
K <sup>+</sup>	3.9 mEq/L	Red cell distribution width	16% (N=11.5–14.5)
Cl <sup>-</sup>	104 mEq/L		
HCO <sub>3</sub> <sup>-</sup>	16 mEq/L		
Iron, total	18 μg/dL		
Iron binding capacity, total	428 μg/dL (N=250–350)		
Iron saturation	5% (N=20–50)		
β-hCG	Positive		

Which of the following is the most appropriate intravenous pharmacotherapy at this time?

- (A) Cefuroxime alone
  - (B) Cefuroxime and azithromycin
  - (C) Levofloxacin alone
  - (D) Levofloxacin and ticarcillin
  - (E) Piperacillin-tazobactam
132. A 72-year-old man is admitted to the intensive care unit for pain management and observation of ventricular ectopy 4 hours after undergoing uncomplicated left total knee replacement. He is receiving fentanyl via systemic patient-controlled analgesic pump for pain management. Medical history is remarkable for coronary artery disease, for which he takes atorvastatin, furosemide, carvedilol, lisinopril, and 81-mg aspirin. Baseline echocardiogram showed an ejection fraction of 0.20. Vital signs now are temperature 38.0°C (100.4°F), pulse 90/min, respirations 16/min, and blood pressure 130/90 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 96%. Physical examination discloses no unexpected abnormalities. Which of the following regimens for prophylaxis of deep venous thrombosis will likely be most beneficial in this patient?
- (A) Continuous application of bilateral lower extremity pneumatic compression devices
  - (B) Continuous intravenous infusion of heparin titrated to a PTT of 1.5 to 2.0 times the control value
  - (C) Oral warfarin
  - (D) Subcutaneous enoxaparin
  - (E) Subcutaneous heparin

133. A 45-year-old man comes to the emergency department because of a 1-month history of fatigue, generalized muscle weakness, and a 4-kg (8-lb) weight loss. He also reports a loss of appetite and nausea without vomiting during the past 2 weeks. Medical history is unremarkable and he takes no medications. He does not smoke cigarettes or drink alcoholic beverages. He is 180 cm (5 ft 11 in) tall and weighs 70 kg (155 lb); BMI is 22 kg/m<sup>2</sup>. Vital signs are temperature 36.4°C (97.5°F), pulse 100/min, respirations 20/min, and blood pressure 88/50 mm Hg. Physical examination shows bronze darkening of the elbows, on the creases of his hands, and around the areolae of his nipples. Muscle strength is 4.5/5 in all extremities. The remainder of the physical examination shows no abnormalities. Results of laboratory studies are shown:

Serum		Blood	
Na <sup>+</sup>	128 mEq/L	Hemoglobin	12 g/dL
K <sup>+</sup>	5.2 mEq/L	WBC	3500/mm <sup>3</sup>
Cl <sup>-</sup>	95 mEq/L		
HCO <sub>3</sub> <sup>-</sup>	20 mEq/L		

In addition to administering intravenous fluids, which of the following is the most appropriate pharmacotherapy?

- (A) Calcitonin
- (B) Dehydroepiandrosterone
- (C) Hydrocortisone
- (D) Levothyroxine
- (E) Mitotane

134. A 45-year-old man comes to the office because of severe pain of the right foot that awoke him from sleep last night. He says the pain kept him awake for the rest of the night. Walking has been difficult due to the pain, which he rates as a 9 on a 10-point scale. He reports no recent trauma. Medical history is remarkable for hypertension, type 2 diabetes mellitus, and asthma. Medications include hydrochlorothiazide, metformin, atorvastatin, and an albuterol inhaler. He is allergic to penicillin. He does not smoke cigarettes, but he has drunk three to four glasses of red wine daily for the past 5 years. Family history is significant for arthritis in his father. He is 168 cm (5 ft 6 in) tall and weighs 111 kg (245 lb); BMI is 40 kg/m<sup>2</sup>. Vital signs are temperature 37.9°C (100.2°F), pulse 100/min, respirations 16/min, and blood pressure 160/100 mm Hg. Examination of the right foot discloses erythema and increased warmth over the first toe extending over the dorsum of the foot. The involved area is very tender and the patient resists movement of his toes. There is moderate swelling of the first metatarsophalangeal joint. The remainder of the physical examination discloses no abnormalities. Results of laboratory studies are shown:

Serum		Blood	
Urea nitrogen	15 mg/dL	Hemoglobin	16 mg/dL
Creatinine	1.0 mg/dL	WBC	12,500/mm <sup>3</sup>

Examination of joint aspirate shows a leukocyte count of 50,000/mm<sup>3</sup>; no organisms are seen on Gram stain. Which of the following is the most appropriate pharmacotherapy to treat this patient's acute condition?

- (A) Acetaminophen
- (B) Allopurinol
- (C) Ceftriaxone
- (D) Indomethacin
- (E) Vancomycin

135. A 2-year-old boy is brought to the emergency department by his babysitter because of a 30-minute history of respiratory distress. The babysitter reports that she is 15 years old and has cared for the patient on numerous occasions during the past year. The child's mother, who is a single parent, is currently out of town for business but will return later tonight. The babysitter says, "He has had a runny nose since I started babysitting yesterday, but this afternoon he awoke from a nap with a barking sound and he was breathing real heavy." She does not know the child's prior health history, nor does she know if the boy takes any medications on a regular basis. The child looks tired and sits upright on the babysitter's lap. He is obviously comfortable with his caregiver. Vital signs are temperature 38.7°C (101.7°F), pulse 110/min, respirations 28/min and labored, and blood pressure 85/50 mm Hg. Pulse oximetry on room air shows an oxygen saturation of 89%. Physical examination discloses inspiratory stridor. Neck is supple, tympanic membranes are normal, and there is a profuse nasal discharge. Examination of the pharynx discloses no abnormalities. Auscultation of the chest discloses equal air entry on both sides and no crackles. The remainder of the examination shows no abnormalities. Treatment with 40% oxygen via venturi mask and intravenous fluids is initiated. Despite continued supplemental oxygen and hydration, the child remains tachypneic and stridorous at rest. Oxygen saturation is now 93%. In addition to administering racemic epinephrine by nebulizer, which of the following is the most appropriate next step?
- (A) Intravenous aminophylline therapy
  - (B) Intravenous antibiotic therapy
  - (C) Intubation
  - (D) Oral dexamethasone therapy
  - (E) Rectal acetaminophen therapy
136. A 30-year-old man comes to the office because of an itchy and painful facial rash that has worsened since he first noticed it 1 day ago. He has no other symptoms and says he otherwise has been generally healthy. Medical history is unremarkable and he takes no medications. He does not use any substances. He is unmarried and is not currently in a romantic relationship but has been sexually active with multiple female partners during the past year. Vital signs are within normal limits. Physical examination shows an erythematous macular rash with several 1- to 2-mm raised vesicles that do not cross the midline over the left forehead and periorbital area. There are no other abnormalities. Acyclovir therapy is initiated. Which of the following is the most appropriate next step?
- (A) Referral to a dermatologist
  - (B) Serum HIV antibody test
  - (C) Skin biopsy
  - (D) Tzanck test

137. A 31-year-old man with a 5-year history of HIV infection comes to the office because of anal pain, particularly on defecation, for the past 4 months. He says he has seen spots of blood on the toilet tissue but has not had any other noticeable bleeding. He reports no change in bowel habits and has not had recent fever, chills, or rectal drainage. He says he and his partner engage in anal-receptive intercourse. His most recent CD4+ T-lymphocyte count 2 months ago was 350/mm<sup>3</sup>; HIV viral load at that time was undetectable. He currently is being treated with antiretroviral therapy. He has had no opportunistic infections. Medical history is also significant for syphilis and genital herpes treated with penicillin and acyclovir, respectively. He does not smoke cigarettes or drink alcoholic beverages. Vital signs are normal. Physical examination shows small bilateral inguinal lymph nodes, but respiratory, cardiac, and abdominal examinations disclose no abnormalities. There are several tender fleshy lesions around the perianal area. Rectal examination produces tenderness, but there is no rectal discharge. Test of the stool for occult blood is trace positive. Which of the following is the most appropriate pharmacotherapy at this time?
- (A) Acyclovir
  - (B) Imiquimod
  - (C) Levofloxacin
  - (D) Metronidazole
  - (E) Penicillin

**NOTE: THIS IS THE END OF BLOCK 4.  
ANY REMAINING TIME MAY BE USED TO CHECK ITEMS IN THIS BLOCK.**

## Answer Key for USMLE Step 3 Sample Questions

### Block 1: FIP

1. E	9. A	17. A	25. A	33. E
2. A	10. A	18. B	26. C	34. D
3. C	11. E	19. B	27. A	35. A
4. D	12. C	20. B	28. D	36. A
5. C	13. B	21. E	29. B	37. C
6. E	14. B	22. A	30. A	38. A
7. E	15. E	23. C	31. C	
8. E	16. C	24. D	32. A	

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### Block 2: FIP

39. D	47. D	55. C	63. A	71. B
40. D	48. B	56. C	64. D	72. D
41. E	49. C	57. E	65. D	73. D
42. E	50. A	58. A	66. D	74. E
43. B	51. C	59. C	67. D	75. E
44. E	52. A	60. B	68. B	76. F
45. D	53. D	61. A	69. C	77. E
46. C	54. D	62. E	70. C	

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### Block 3: ACM

78. A	85. C	92. A	99. C	106. E
79. C	86. E	93. A	100. A	107. C
80. C	87. A	94. A	101. D	
81. E	88. A	95. C	102. A	
82. C	89. E	96. E	103. D	
83. C	90. D	97. D	104. E	
84. C	91. D	98. C	105. B	

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### Block 4: ACM

108. D	115. A	122. C	129. E	136. B
109. D	116. E	123. B	130. A	137. B
110. C	117. B	124. D	131. B	
111. E	118. E	125. E	132. D	
112. D	119. D	126. C	133. C	
113. C	120. D	127. E	134. D	
114. D	121. D	128. A	135. D	