



American Board of Internal Medicine®

2020-2021 Update in Internal Medicine Self-Assessment Module

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Common Abbreviations

The following abbreviations are used in this examination:

ACE	Angiotensin-converting enzyme
ACTH	Adrenocorticotrophic hormone
ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
BMI	Body mass index
CSF	Cerebrospinal fluid
DASH	Dietary Approaches to Stop Hypertension
DXA	Dual-energy x-ray absorptiometry
eGFR	Estimated glomerular filtration rate
FEV ₁	Forced expiratory volume in one second
FVC	Forced vital capacity
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HDL	High-density lipoprotein
HIV	Human immunodeficiency virus
HMG-CoA	Hydroxymethylglutaryl coenzyme A
Ig	Immunoglobulin
INR	International normalized ratio
IU	International unit
LDL	Low-density lipoprotein
PaCO ₂	Partial pressure of carbon dioxide
PaO ₂	Partial pressure of oxygen
PHQ	Patient Health Questionnaire
RBC	Red blood cell
S ₁	First heart sound
S ₂	Second heart sound
WBC	White blood cell

Introduction

Please read the following information carefully.

On successful completion of this module, you will receive 10 points of self-evaluation of medical knowledge credit in the Maintenance of Certification Program.

Instructions

Read each one-best-answer question in the module and indicate your answer by clicking in the appropriate box. You should use educational resources (e.g., online medical references, textbooks, journal articles) to assist in answering the questions. Suggested resources are listed in the Education Resources section of the CME information.

On each question screen, the Help button will provide you with technical information and instructions on how to navigate through the module, including submitting your completed module. For common abbreviations that may appear in this module, click the "Resources" button on the right side of the screen.

CME information for this module, including CME expiration date, may be reviewed by clicking the "CME Credit for the ABIM Maintenance of Certification Program" link in the left-hand column.

Laboratory Studies and Reference Ranges

Reference ranges for laboratory test reports are included in the text of the ABIM exam questions. **As is true in practice, interpretation of a particular patient's test result in relation to the reference range depends on the clinical context.** For example, reference ranges for tests assessing lipid or glucose metabolism may not be applicable in certain clinical settings; ABIM reference ranges should not be confused with patient-specific targets for such tests.

Information on specific studies

The National Cancer Institute advises that there is no specific normal or abnormal level of prostate-specific antigen (PSA) in the blood. Therefore, ABIM is reporting "no specific normal or abnormal level" in place of the reference range for PSA.

The comprehensive metabolic panel contains the following assays: Albumin, alanine and aspartate aminotransferases (ALT and AST), alkaline phosphatase, total bilirubin, blood urea nitrogen, calcium, creatinine, electrolytes (sodium, potassium, chloride, and bicarbonate), glucose, and total protein.

Unless noted otherwise in examination questions:

- Arterial blood gas studies are done at sea level with the patient breathing room air
- Reticulocyte counts are uncorrected
- Tuberculin skin tests are done with purified protein derivative (PPD) at intermediate strength (5 TU)
- Electrocardiograms are recorded at normal standard and speed
- Lung volumes are determined by body plethysmography

Illustrations and Multimedia (if applicable)

Some questions are accompanied by illustrations, such as radiographs, electrocardiograms, photographs of physical or histologic findings, videos, and charts. All electrocardiograms are recorded at normal standard and speed unless otherwise specified.

Criteria for successful completion

In order to successfully complete this module and receive Maintenance of Certification credit, you must answer every question. Submission of this module will not be accepted until answers have been provided for every question.

1

An 83-year-old man comes to the clinic because he has intermittent chest pain and dyspnea when he transfers from bed to a chair. He has chronic atrial fibrillation and severe aortic stenosis, which was diagnosed by echocardiography two months ago during a hospital stay for delirium that was caused by a complicated urinary tract infection. Alzheimer disease was also diagnosed five years ago, and he has required 24-hour supervision and assistance in his home for the past six months. His last Montreal Cognitive Assessment, performed one year ago, was 7/30. He also has osteoarthritis in both knees. He has been limited to transfers from bed to a chair for the last year, and he is dependent in all instrumental activities of daily living; he requires help with transfers, bathing, dressing, and grooming. His current medications are memantine, metoprolol, warfarin, and acetaminophen.

The patient is not oriented to place or time, but is oriented to person. Temperature is normal, pulse rate is 66 per minute, respirations are 14 per minute, and blood pressure is 116/62 mm Hg. Oxygen saturation by pulse oximetry is 94%. Jugular venous pressure is not detected. Cardiac examination reveals irregular rhythm and a grade 2/6 late-peaking crescendo–decrescendo systolic murmur radiating to the bilateral carotids. Delayed carotid upstrokes are noted. Pulmonary examination reveals mild bibasilar crackles. Extremities have trace edema.

Complete blood count and basic metabolic panel are normal.

The patient's family's goals are to promote the best possible function for him while maintaining comfort and quality of life.

Which of the following is the most appropriate treatment for this patient?

- (A) Referral for hospice care
- (B) Isosorbide mononitrate
- (C) Transcatheter aortic valve replacement
- (D) Surgical aortic valve replacement

2

A 60-year-old woman with chronic knee pain due to osteoarthritis returns to your office for follow-up. She has been treated with opioids for the past five years. Her current pain medications include oxycodone (10 mg four times daily) and acetaminophen. She is satisfied with her activity level and pain control, and she notes no new adverse effects. She requests a refill of her oxycodone prescription. She has complied with her opioid contract, and information in the state prescription drug monitoring program raises no concerns.

Which of the following is indicated in the management of this patient?

- (A) Prescribe gabapentin
- (B) Prescribe intranasal naloxone
- (C) Prescribe methylnaltrexone
- (D) Reduce oxycodone by 25%

3

You see a 42-year-old nulliparous woman for a routine preventive office visit. She has no medical problems and has been able to be physically active with daily aerobic and weight-bearing exercise. She has regular menses, and she has not had hematuria or dysuria. She has been sexually active with one partner for over 20 years and has had no sexually transmitted infections. Her only medication is an oral contraceptive.

BMI is 35. Temperature is 36.6 C (98.0 F), pulse rate is 85 per minute, and blood pressure is 130/75 mm Hg. Physical examination is normal.

Which of the following should be done regarding screening this patient for urinary incontinence?

- (A) Use a validated tool to screen for urinary incontinence now
- (B) Use a validated tool to screen for urinary incontinence once she is 50 years of age
- (C) Use a validated tool to screen for urinary incontinence only if symptoms arise
- (D) Evidence does not support screening for urinary incontinence

4

A 41-year-old woman comes to the clinic for evaluation of a tender mass on her left thigh. She believes it began several days ago with a “bite,” and it has become increasingly red and painful over the past 3 days. She has not had any improvement in the erythema or warmth in her legs, and she has not had any fever or chills. She has not had similar symptoms in the past.

Height is 160 cm (63 in) and weight is 77.1 kg (170 lb); BMI is 30. Pulse rate is 80 per minute, and blood pressure is 122/75 mm Hg. Examination of the left thigh reveals a tender, fluctuant 3-cm mass with surrounding erythema. There is no crepitus or edema of the lower extremities. There are no other skin lesions, scabs, or bruises.

An incision and drainage of the abscess is completed in the office without complications. The patient expresses a preference for antibiotics.

Which of the following is the best next step for this patient?

- (A) Start cephalexin
- (B) Start trimethoprim–sulfamethoxazole
- (C) Explain that there is no benefit of antibiotics after incision and drainage

5

A 71-year-old woman comes to the clinic for evaluation of fatigue and weight gain of 6.8 kg (15 lb) since retiring five years ago. She has become increasingly sedentary since retirement, and she is no longer exercising regularly as she was when she was working. She feels more fatigued on the occasions when she tries to do work around the house, and she spends most of her waking hours watching television and reading. She has not had cold intolerance, snoring, dyspnea on exertion, or other symptoms. She also has mild knee osteoarthritis and hypertension. Her current medications are hydrochlorothiazide (25 mg daily) and acetaminophen (650 mg every six hours) as needed for knee pain.

The patient appears healthy. BMI is 30. Temperature is normal. Pulse rate is 72 per minute, respirations are 14 per minute, and blood pressure is 118/66 mm Hg. Hair and skin examinations show no thinning, rashes, or lesions. Cardiopulmonary examination is normal. There is no lower extremity edema.

Complete blood count and comprehensive metabolic panel are normal. Serum thyroid-stimulating hormone (TSH) is 9.5 mU/L [0.5–4.0] and serum free T4 is 1.4 ng/dL [0.7–1.9].

Which of the following should be prescribed?

- (A) Levothyroxine, 25 mcg daily
- (B) Levothyroxine, 75 mcg daily
- (C) No levothyroxine therapy; retest in 1 month
- (D) No levothyroxine therapy; retest in 6 to 12 months

6

A 46-year-old man comes to your clinic for evaluation of a severe sore throat and fever that he has had for the past 3 days. He has not had any cough, rhinorrhea, or other symptoms. He has an allergy to penicillin that was entered into his file 15 years ago. He states that he received penicillin for a tooth infection and developed itching on his torso, but he did not have a skin rash.

Temperature is 38.4 C (101.2 F), pulse rate is 92 per minute, respirations are 18 per minute, and blood pressure is 140/70 mm Hg. Oropharyngeal examination reveals bilateral tonsillar exudates. The remainder of the physical examination is normal.

Rapid streptococcal antigen testing is positive.

Which of the following is the best option for antibiotic therapy?

- (A) Clindamycin
- (B) Amoxicillin challenge under observation
- (C) Allergy skin testing and amoxicillin challenge if negative
- (D) Refer to allergist for desensitization to penicillin

7

A 65-year-old woman comes to your office for a follow-up check of her blood pressure. Hypertension was diagnosed six months ago, and she continues to have elevated blood pressure readings when checked at the office or in the community. She recently purchased a blood pressure cuff that she brought with her today. She does not have diabetes or hyperlipidemia, and she has not had any dizziness with standing. Her current medications are amlodipine and hydrochlorothiazide. She does not smoke cigarettes, and she leads a sedentary lifestyle; she is retired. Her father had a myocardial infarction at age 48.

Blood pressure is 148/90 mm Hg in the office, and 146/89 mm Hg with the patient's home cuff.

Serum creatinine is 1.0 [0.50–1.10 mg/dL], eGFR is 59 mL/min/1.73 m², and urine dipstick is negative for protein.

In such a patient, which of the following is associated with blood pressure self-monitoring after 12 months?

- (A) Improved blood pressure control only when integrated with telemonitoring
- (B) No change in blood pressure control
- (C) Worse control of blood pressure
- (D) Improved blood pressure control

8

You see a 24-year-old woman for ongoing management of type 1 diabetes mellitus. She has had excellent control of her blood sugars for several years, with a baseline hemoglobin A_{1C} of 5.8% [4.0–5.6] until six months ago, when her hemoglobin A_{1C} was noted to be 7.6%. A repeat measurement three months later was 8.7%. When exploring the possible causes of the change in her blood sugar, she reports that her boyfriend of the past year has become increasingly frustrated with the time and care she requires to manage her diabetes. He complains about her need for blood sugar checks and her use of insulin before meals; several times he has created situations where her access to before-meal insulin is delayed. To date he has not prevented her use of insulin, although she is becoming increasingly reluctant to care for her diabetes in his presence.

Temperature is 36.7 C (98.2 F), pulse rate is 82 per minute, respirations are 12 per minute, and blood pressure is 118/68 mm Hg. Physical examination is normal, with no signs of physical violence, bruises, or other injuries.

Current hemoglobin A_{1C} is 8.6%, and plasma glucose (fasting) is 218 mg/dL [70–99].

Which of the following is the best approach for the management of this patient?

- (A) Ask the patient to bring her boyfriend to the next clinic visit to discuss her medical needs
- (B) Provide the patient with community resources for individuals experiencing intimate partner violence
- (C) Arrange for a stay at a local women's shelter
- (D) Continue with current management and decrease frequency of office visits

9

You see a 72-year-old woman for follow-up. She has had mild postural instability over the past year. She has fallen once while descending two steps as she exited her house one month ago. She has not fallen since, but she now uses a cane regularly and is particularly careful descending stairs. She also has osteoarthritis and controlled hypertension, for which she takes losartan.

The patient is an elderly woman in no apparent distress. Vital signs and cardiopulmonary examination are normal. Joint examination reveals signs of chronic osteoarthritis. Timed Up-and-Go test is prolonged at 14 seconds.

Which of the following interventions offers the best reduction in fall risk?

- (A) Regular supervised stretching exercises
- (B) Low-impact weight training
- (C) Therapeutic Tai Ji Quan (Tai Chi) balance training
- (D) None of these interventions have been shown to reduce fall risk

10

A 55-year-old man comes to your clinic for hospital follow-up after a chronic obstructive pulmonary disease exacerbation; this was his third hospitalization in the last year. At that time, he completed a course of oral prednisone, and he is currently taking albuterol as needed and tiotropium.

Temperature is 37.0 C (98.6 F), pulse rate is 80 per minute, respirations are 20 per minute, and blood pressure is 130/80 mm Hg. Oxygen saturation by pulse oximetry is 92%. Heart rhythm is regular, and apical breath sounds are generally diminished without audible wheezing.

Addition of which of the following maintenance treatments is indicated?

- (A) Budesonide–formoterol
- (B) Fluticasone
- (C) Montelukast
- (D) Salmeterol

11

A 48-year-old woman comes to the clinic with hot flashes. Six months ago, she underwent a total hysterectomy with bilateral salpingo-oophorectomy related to leiomyoma and endometriosis. In the past two months, frequent hot flashes have become bothersome, occurring multiple times each day; they are interfering with her daily activities and disturbing her sleep. She has also noted mild mood fluctuations, worsening fatigue, and mild dyspareunia without urinary symptoms. She also has hypertension and hypertriglyceridemia, and she is currently taking losartan and atorvastatin. She has never smoked cigarettes. Her father underwent coronary artery bypass at age 55. There is no family history of stroke or cancer.

Which of the following is the best treatment option for this patient?

- (A) Low-dose vaginal estrogen
- (B) Oral conjugated estrogen
- (C) Transdermal estrogen
- (D) Behavioral measures only; no medication

12

A 36-year-old woman comes to your office for evaluation of recurrent urinary tract infections. She is currently asymptomatic, but she has had four episodes of simple cystitis over the past year; each time, she was treated with three days of antibiotics. She has not had any vaginal pain, pruritus, or other pelvic symptoms at this time. She estimates her daily consumption of fluid at about 1 liter. She is currently sexually active with one partner and uses condoms for birth control. She has never been pregnant and has normal menstrual cycles.

Which of the following should be done to prevent future episodes of cystitis in this patient?

- (A) Instruct the patient to drink 240 ml of cranberry juice daily
- (B) Instruct the patient to drink 1.5 additional liters of water daily
- (C) Prescribe probiotics
- (D) Prescribe vaginal estrogen

13

A 55-year-old woman comes to your office because she is undergoing a cholecystectomy in one week. She has had intermittent symptoms of biliary colic, and recent imaging studies suggest the presence of gallstones. She also has controlled hypertension. Her medications include amlodipine and lisinopril.

Blood pressure is 125/80 mm Hg.

Which of the following is the best approach to perioperative management of ACE inhibitors?

- (A) Hold lisinopril starting now
- (B) Hold lisinopril 3 days prior to surgery
- (C) Hold lisinopril on the day of surgery
- (D) Continue lisinopril through the day of surgery

14

A 57-year-old woman comes to your office for evaluation of a painful skin lesion on her abdominal wall. She developed pain in the right lateral abdominal wall 3 weeks ago. Several days later, a red papule developed, which ulcerated and began draining serous fluid. She reports no injury to the area. She has diabetes mellitus, but she does not recall insulin injections in the area of the lesion. She also has hypertension, paroxysmal atrial fibrillation, hyperlipidemia, and end-stage renal disease, for which she receives hemodialysis. Her current medications are amlodipine, metoprolol, atorvastatin, warfarin, insulin glargine, multivitamins, and calcium acetate.

BMI is 36.8. Temperature is 36.8 C (98.4 F), pulse rate is 82 per minute, respirations are 14 per minute, and blood pressure is 146/88 mm Hg. Skin examination reveals a 3-cm abdominal wall ulcer with a necrotic base. There is no surrounding tissue erythema, but there is an adjacent 1-cm rim of dusky skin discoloration extending halfway around the lateral edge of the ulcer. Laboratory studies are unchanged from testing one month earlier.

Laboratory studies:

Hemoglobin	9.8 g/dL [12–16]
Leukocyte count	7800/ μ L [4000–11,000]
Segmented neutrophils	68% [50–70]
Lymphocytes	28% [30–45]
Monocytes	4% [0–6]
Platelet count	288,000/ μ L [150,000–450,000]
INR	2.3
Serum creatinine	5.2 mg/dL [0.50–1.10]
eGFR	9 mL/min/1.73 m ²
Serum calcium	7.8 mg/dL [8.6–10.2]
Serum phosphorus	6.8 mg/dL [3.0–4.5]
Serum total cholesterol	198 mg/dL [<i>desirable: less than 200</i>]

Which of the following is the most likely explanation for this patient's skin findings?

- (A) Calciphylaxis
- (B) Cellulitis
- (C) Cholesterol embolization
- (D) Warfarin-induced skin necrosis

15

A 45-year-old white man is seen in the clinic for routine health care maintenance. He has a healthy diet and he has no urinary tract complaints. Family history is significant for diabetes mellitus in his mother, who died of a myocardial infarction at age 60. His father is still alive and has dementia.

Which of the following is true regarding prostate-specific antigen (PSA) testing for prostate cancer?

- (A) New guidelines recommend starting PSA screening at age 45
- (B) There is a clear benefit (reduced all-cause mortality) for testing but there remains controversy around the age to begin
- (C) Screening does not improve outcomes and should not be offered to this patient
- (D) PSA testing remains controversial and should be based on shared decision making

16

An 80-year-old woman is evaluated for new onset atrial fibrillation in the clinic. She has heart failure with preserved ejection fraction (which is well-controlled on her current regimen), hypertension, and stage III chronic kidney disease. She also had peptic ulcer disease and gastrointestinal bleeding associated with *Helicobacter pylori*, which was treated 15 years ago without recurrence. Her current medications are metoprolol, lisinopril, and furosemide.

Patient is afebrile. Pulse rate is 70 per minute, respirations are 14 per minute, and blood pressure is 130/72 mm Hg. Heart examination reveals rate of 82 per minute with irregular rhythm. Lungs are clear to auscultation. There is trace lower extremity edema.

Complete blood count, electrolytes, and serum thyroid-stimulating hormone are normal. eGFR is 45 mL/min/1.73 m² and stable.

Electrocardiogram performed in clinic shows atrial fibrillation with rate of 90 per minute and no ischemic changes. Echocardiogram performed after visit shows preserved ejection fraction and no valvular abnormalities.

Metoprolol is increased for palpitations. Anticoagulation is recommended, and the patient expresses that her main concern is increased risk of gastrointestinal bleeding given her history of peptic ulcer disease.

Which of the following anticoagulants should be prescribed for this patient?

- (A) Apixaban
- (B) Dabigatran
- (C) Rivaroxaban
- (D) Warfarin

17

A 32-year-old woman comes to your office seeking advice about Zika virus exposure. Her husband frequently travels for business to Central and South America, including areas known to have risk of Zika virus exposure. They are currently not using contraception and intend to conceive a child. She asks about her risk of infection with Zika virus, and if there are any precautions that should be taken.

Which of the following is the best approach to preventing Zika virus transmission for this couple?

- (A) Abstain from sexual intercourse for the duration of symptoms consistent with the infection
- (B) Abstain from sexual intercourse for 14 days after visiting an area where there is risk of Zika exposure
- (C) Abstain from sexual intercourse or consistently use condoms for 3 months after visiting an area where there is risk of Zika exposure
- (D) No restrictions of sexual intercourse are necessary

18

A 69-year-old woman comes to the hospital because she has had dysuria and left flank pain for the past three days. She has also had fever, mild nausea, and generalized malaise. Intravenous ceftriaxone was started in the emergency department.

Patient appears ill. Temperature is 39.0 C (102.2 F), pulse rate is 94 per minute, respirations are 16 per minute, and blood pressure is 110/64 mm Hg. There is mild suprapubic and left costovertebral angle tenderness. The remainder of the physical examination is normal.

Leukocyte count is 23,000/ μ L [4000–11,000], with 7% band forms [0–5] noted. Urinalysis shows leukocytes and bacteria too numerous to count.

Gram stain shows gram negative rods. In less than 24 hours, two of two blood cultures are positive for Gram-negative rods.

On day three of the hospital stay, blood and urine cultures grow *Escherichia coli* sensitive to ceftriaxone and ciprofloxacin. The patient feels well and has been afebrile for 24 hours. Tenderness at the costovertebral angle has resolved, and leukocyte count is now 9200.

Which of the following should you recommend now?

- (A) Continue intravenous antibiotics for the remainder a two-week course
- (B) Continue intravenous antibiotics for 7 days, then switch to oral ciprofloxacin for the remainder of a two-week course
- (C) Discontinue intravenous antibiotics now and start oral ciprofloxacin for the remainder of a two-week course
- (D) Discontinue all antibiotics now

19

A 55-year-old man comes to your clinic for a periodic health evaluation. He has benign prostate hyperplasia and hyperlipidemia. His current medications include tamsulosin and atorvastatin.

Vital signs are normal.

The patient and his partner are considering conceiving a child, and they would like to discuss risks related to his advanced paternal age.

Which of the following best describes the risks associated with advanced paternal age?

- (A) Increased risk to mother, but not offspring
- (B) Increased risk to offspring, but not mother
- (C) Increased risk to both mother and offspring
- (D) No increased risk to mother or offspring

20

A 60-year-old man comes to the clinic for follow-up after admission for acute coronary syndrome. Four weeks ago, he was discharged after undergoing placement of a drug-eluting stent in the setting of a non-ST elevation myocardial infarction. He has had no further chest pain and he is able to walk one mile at the gym without chest pain or dyspnea, but he does not feel motivated to go every day. He reports that he has been feeling sad, sleeping more than usual, and has a lack of interest in previously enjoyable activities. He has not had suicidal ideations. He had hypertension, hyperlipidemia, and coronary artery disease with stable angina prior to his recent hospitalization. During the hospital stay, clopidogrel was added to his regimen of baby aspirin, metoprolol, lisinopril, isosorbide mononitrate, and atorvastatin.

Patient is afebrile. Pulse rate is 62 per minute, respirations are 14 per minute, and blood pressure is 110/60 mm Hg. Physical examination is normal. The right radial access site has healed well.

Complete blood count, basic metabolic panel, and serum thyroid-stimulating hormone are all normal.

Which of the following antidepressant treatments should you offer now?

- (A) No antidepressant treatment required
- (B) Escitalopram
- (C) Mirtazapine
- (D) Nortriptyline

21

A 78-year-old man with NYHA class III systolic heart failure is admitted to the hospital after 2 weeks of worsening dyspnea on exertion, paroxysmal nocturnal dyspnea, peripheral edema, and orthopnea. He has coronary artery disease with remote stenting, and essential hypertension. His current medications are furosemide, carvedilol, enalapril, clopidogrel, rosuvastatin, and aspirin.

On admission, NT-proBNP was 6399 pg/mL [*high probability of heart failure: 1800 or greater*].

Over 3 days of hospitalization, the patient's ACE inhibitor is uptitrated and intravenous furosemide is administered.

The patient notes significant improvement of his symptoms, and he no longer requires supplemental oxygen. Serum creatinine and hemoglobin remain at baseline, and he is now able to ambulate independently. Follow-up NT-proBNP is 5200 pg/mL.

Which of the following is the most appropriate management?

- (A) Continue inpatient therapy until the NT-proBNP level has reduced to less than 1000
- (B) Continue inpatient therapy until the NT-proBNP level has reduced at least 30% from baseline
- (C) Discharge to home and follow symptoms clinically
- (D) Discharge to home and continue to titrate therapy until the NT-proBNP level reduces to less than 1000 ng/L

22

A 63-year-old man comes to urgent care because he has had severe diarrhea consisting of eight to ten stools per day for the past three days. Metastatic melanoma was recently diagnosed, and he has been undergoing treatment with nivolumab and ipilimumab combination therapy under the direction of his oncologist for the past two months. He has not taken antibiotics in the past year and he has had no contact with anyone with a diarrheal illness. He has increased his fluid intake in an attempt to maintain hydration.

Temperature is 37.1 C (98.9 F), pulse rate is 95 per minute, respirations are 14 per minute, and blood pressure is 110/62 mm Hg. Abdominal examination reveals hyperactive bowel sounds, mild diffuse tenderness, and voluntary guarding over the left lower quadrant; there is no rebound tenderness.

Laboratory studies:

Hemoglobin	12.2 g/dL [14–18]
Leukocyte count	11,500/ μ L [4000–11,000]
Platelet count	330,000/ μ L [150,000–450,000]
Blood urea nitrogen	28 mg/dL [8–20]
Serum creatinine	1.70 mg/dL [0.70–1.30]
eGFR	42 mL/min/1.73 m ²
Serum electrolytes	
Serum sodium	137 mEq/L [136–145]
Serum potassium	3.4 mEq/L [3.5–5.0]
Serum chloride	94 mEq/L [98–106]
Serum bicarbonate	20 mEq/L [23–28]

Which of the following is the most likely cause of this patient's symptoms?

- (A) Autoimmune colitis
- (B) *Clostridioides (Clostridium) difficile* colitis
- (C) Cytomegalovirus colitis
- (D) Norovirus gastroenteritis

23

A 58-year-old woman is brought to the hospital after experiencing a witnessed 3-minute tonic-clonic seizure. She developed fatigue and mild confusion two days ago. Today, her family noticed that she had grown more confused and experienced some problems with her balance and difficulty walking independently. Prior to this event, she had been in good health with no other medical conditions; she does not have a history of seizures.

On physical examination, patient is lethargic and unable to answer questions. Temperature is 37.8 C (100.2 F), pulse rate is 96 per minute, respirations are 18 per minute, and blood pressure is 120/70 mm Hg. Cranial nerve examination is normal. Patient is able to move all extremities without apparent limitation. Pain sensation is intact. The remainder of the physical examination is normal.

Laboratory studies:

Plasma glucose (fasting)	120 mg/dL [70–99]
HIV	Negative
CSF cell count	
RBC	22 cells/ μ L
WBC	128 cells/ μ L [0–5]
Lymphocytes	82%
Neutrophils	18%
CSF glucose	82 mg/dL [50–75]
CSF opening pressure	150 mm H ₂ O [70–180]
CSF protein	110 mg/dL [15–45]

T2-weighted FLAIR images on brain MRI show increased signal intensity in the thalamic region bilaterally.

In addition to supportive medical care in a closely monitored setting, which of the following is the best approach to the management of this patient?

- (A) Start acyclovir
- (B) Start dexamethasone
- (C) Start ganciclovir
- (D) Treat with intravenous immunoglobulin
- (E) No directed medical therapy beyond appropriate supportive care

24

You see an 83-year-old man because he has noticed a large, right-sided groin hernia which is worse at the end of the day and nearly resolves overnight. He has moderate Alzheimer dementia, hypertension, coronary artery disease, paroxysmal atrial fibrillation, and mild to moderate aortic stenosis. His current medications are apixaban, metoprolol, donepezil, and baby aspirin. They are concerned that the hernia may rupture or become incarcerated as it has steadily enlarged over the past two years. He is not currently experiencing pain at the site but is alarmed by the size of the hernia.

Examination of the groin in the standing position reveals a large right groin hernia approximately 5 cm by 4 cm in diameter. It is easily reduced into the inguinal canal in the supine position.

Which of the following is the most appropriate approach to evaluating and managing this patient's hernia?

- (A) Obtain ultrasound of the hernia
- (B) Obtain noncontrast computed tomography of the pelvis with Valsalva
- (C) Schedule elective surgical repair after optimizing cardiac status
- (D) No further testing or intervention at this time

25

A 67-year-old woman presents for outpatient preoperative evaluation for a right total hip arthroplasty for severe osteoarthritis. She had a left hip arthroplasty one year ago. She also has hypertension, and she is currently taking hydrochlorothiazide.

Temperature is normal, pulse rate is 70 per minute, respirations are 14 per minute, and blood pressure is 120/62 mm Hg. Crepitus is present with movement of the right hip. The remainder of the physical examination is normal.

Electrolytes, liver function tests, and kidney function tests are normal.

The patient and her family are concerned about pain control because she experienced sedation with higher doses of oxycodone after her last hip surgery. You are consulted for medical co-management.

Which of the following perioperative regimens is most likely to reduce the need for breakthrough opioid dosing in this patient?

- (A) Acetaminophen (1000 mg) every six hours
- (B) Acetaminophen (500 mg) and ibuprofen (200 mg) every six hours
- (C) Acetaminophen (1000 mg) and ibuprofen (400 mg) every six hours

26

A 65-year-old woman comes to your office because her neuropathic pain remains a barrier to functioning and sleep, and she is considering the use of cannabinoids. Type 2 diabetes mellitus was diagnosed 20 years ago, and it is well-controlled; her last hemoglobin A_{1C} measurement was 6.0% [4.0–5.6]. Her current medications are metformin, insulin glargine, exenatide, lisinopril, amitriptyline, pregabalin, and capsaicin cream. She currently drinks one alcoholic beverage every two weeks, she does not smoke cigarettes, and she has no history of illicit drug use.

Based on what has been studied, which of the following should you advise the patient regarding the benefits and risks of cannabinoids and cannabis for treating chronic non-cancer pain?

- (A) Side effects and harms are less likely than improvements in pain
- (B) Side effects and harms are as likely as improvements in pain
- (C) Side effects and harms are more likely than significant improvements in pain
- (D) No improvement in pain is expected compared to standard treatments

27

A 35-year-old man presents to the emergency department with severe right lower quadrant pain, nausea, and fever that developed over the past 24 hours. He has no significant medical history and review of systems is otherwise negative. He has taken acetaminophen for the pain with mild relief.

Temperature is 39.2 C (102.6 F), pulse rate is 110 per minute, respirations are 18 per minute, and blood pressure is 146/72 mm Hg. Physical examination is remarkable for right lower quadrant tenderness and voluntary guarding.

An abdominal contrast CT scan is obtained, which reveals appendiceal wall thickening and a small fluid collection adjacent to the appendix without evidence of abscess or other abnormality, consistent with acute uncomplicated appendicitis.

The patient is admitted to the hospital. He expresses that he wishes to avoid surgery unless absolutely necessary.

Which of the following is the most appropriate management strategy for this patient?

- (A) Trial of antibiotics alone
- (B) Observation alone, with elective appendectomy if symptoms persist
- (C) Laparoscopic appendectomy followed by a 10-day course of antibiotics
- (D) Ten-day course of antibiotics now, followed by elective appendectomy in two weeks

28

A 48-year-old woman comes to your office to discuss recent changes in her family history. Her 52-year-old brother was recently found to have colorectal cancer, and genetic screening confirmed Lynch syndrome. She also has a 43-year-old brother who is healthy. Neither of her parents have had a cancer diagnosis, but she has a maternal aunt with uterine cancer and a maternal uncle with colon cancer. Based upon her brother's genetic testing, the patient was screened for the familial mutation and found to have the same mutation as her brother in the mismatch repair gene, *MSH2*. The patient is healthy without any active medical conditions.

In addition to initiation of regular colorectal cancer screenings with colonoscopy, which of the following is the best approach to cancer surveillance and prevention in this patient?

- (A) Regular esophagogastroduodenoscopy screening for gastric and duodenal cancers
- (B) Annual magnetic resonance imaging of the breasts in addition to mammography screening for breast cancer
- (C) Annual pelvic ultrasound screening for gynecologic cancers
- (D) Referral to gynecologist to discuss hysterectomy and oophorectomy
- (E) Referral to surgery to discuss bilateral mastectomy

29

A 42-year-old man contacts your office to report that a recent blood pressure measurement on a self-assessment machine at his local pharmacy was 150/94 mm Hg. His most recent assessment in the office was two months ago for symptoms of an upper respiratory infection. His blood pressure at that time was 132/84 mm Hg. Multiple previous blood pressure readings in the office have also been in the normal range, although the patient reports that an earlier reading at a health fair was also mildly elevated at 148/90. He does not have a history of hypertension, heart disease, diabetes mellitus, or hyperlipidemia. He does not smoke cigarettes, and he leads a sedentary lifestyle. His father had a myocardial infarction at age 48.

Which of the following is the best next step in the management of this patient?

- (A) Repeat office-based blood pressure measurement in one month
- (B) Daily self-assessment of blood pressure at home
- (C) Arrange for ambulatory blood pressure monitoring
- (D) No additional blood pressure assessment; return to clinic in 6 months

30

A 38-year-old man comes to your office because he has had a cough and dyspnea. He felt well until two days ago, when he developed a cough productive of yellow sputum and myalgias. His symptoms worsened over the next day, and he noted some dyspnea with climbing two flights of stairs. He has not had fevers, chills, chest pain, or hemoptysis. He is heroin dependent, using the drug daily. He was seen in the emergency department 1 week ago after he lost consciousness due to drug use; he received supportive care and was discharged.

On physical examination, patient appears comfortable. Temperature is 38.0 C (100.4 F), pulse rate is 92 per minute, respirations are 16 per minute, and blood pressure is 132/68 mm Hg. Oxygen saturation is 94% by pulse oximetry. Head, eyes, ears, nose, and throat examination does not reveal any pharyngeal erythema or exudates. Patient has good dentition. There is no cervical or supraclavicular enlargement of the lymph nodes. Coarse breath sounds are heard in both lung fields posteriorly that do not clear with coughing.

Chest radiograph show patchy infiltrates in the superior segment of the lower left lobe.

Which of the following should be prescribed?

- (A) Amoxicillin–clavulanate
- (B) Clindamycin
- (C) Metronidazole
- (D) Initiate antibiotics only with clinical deterioration