Q.1. A healthy 65-year-old woman comes to the office complaining of urinary incontinence. She has the urge to void but cannot reach the toilet before leaking a moderate amount of urine. She lives alone and takes no medications. Her physical examination is normal except for a blood pressure of 148/88. Which of the following would not be appropriate in the initial evaluation?

A. Urinalysis
B. Postvoid residual volume
C. Bladder record
D. Urodynamic testing

**Answer:** D. The primary care physician should carry out the initial evaluation of urinary incontinence with an emphasis on the history and physical examination. A urinalysis should be performed to evaluate for evidence of inflammation or infection. A postvoid residual volume should be measured to exclude overflow incontinence because the history and physical are often insensitive. Bladder records can be helpful in understanding the timing and frequency of incontinence episodes, as well as behavioral factors that may be contributing to incontinence. Urodynamic testing should be reserved for instances when the diagnosis remains unclear after initial evaluation, when treatment fails, or when there is consideration for surgery.

Q.2. An 85-year-old man returns from the hospital following repair of a right hip fracture. Upon inspection of his skin he is found to have a 5- by 5-cm stage IV sacral pressure ulcer. The wound is foul-smelling with copious drainage and a large area of soft necrotic tissue at the base. The skin surrounding the wound is slightly erythematous. The patient is afebrile. His leukocyte count is normal. All of the following are appropriate except

A. Provide pressure relief
B. Sharply debride the necrotic tissue
C. Perform swab cultures and administer systemic antibiotics
D. Apply wet-to-dry dressings

**Answer:** C. A critical part of the treatment of any pressure ulcer is pressure relief. Pressure relief is accomplished by turning and repositioning the patient every two hours. Specialized beds that reduce skin pressure have become standard of care for deep wounds, but their efficacy has not been rigorously established. For wounds to begin healing, necrotic tissue must be removed. Debridement can be accomplished by mechanical means with wet-to-dry dressings.
dressings, or with enzymatic or autolytic agents, but can also be achieved with sharp debridement. Ulcers with a large amount of drainage tend to heal more slowly. Because all stage II to IV wounds are colonized with bacteria, swab cultures provide no clinical utility. Without evidence of sepsis, cellulitis, or osteomyelitis, systemic antibiotics are unwarranted.

Q.3. The prevalence of dementia in the general population at age 60 is
A. 1%
B. 10%
C. 20%
D. 33%

Answer: A. Only about 1% at age 60 has dementia. After age 60, the prevalence of dementia doubles every five years.

Q.4. What is the most common cause of falls in the elderly?
A. Cardiogenic syncope
B. Slipping on ice
C. Dehydration
D. Multifactorial

Answer: D. While environmental hazards are involved in nearly half of all falls, the majority of falls occur within the home, rather than outside on ice. Falls are generally distinguished from syncope. While dehydration may contribute to falls in some patients, particularly those on diuretics, falls are usually multifactorial in etiology, attributed to the combination of individual host factors that make them susceptible, environmental factors, and often an acute precipitant.

Q.5. An elderly man complains that for the past week he has leaked small amounts of urine without any warning that he has to void. This is unrelated to any position or activity. He does not have a fever. Of the potential causes of incontinence listed, which is the most likely in this case?
A. Urinary tract infection
B. Prostatic hypertrophy
C. Stroke
D. Pudendal nerve injury

Answer: B. He has symptoms that would suggest he has overflow incontinence. Stress incontinence, which results from a weakened pelvic floor such as with pudendal nerve injury, is characterized by leakage of small or large amounts of urine with maneuvers that increase intra-abdominal pressure. Stroke and urinary tract infections usually cause incontinence by precipitating
uncontrolled detrusor muscle contraction. He has neither dysuria described nor fever, and does not get any sensation of “urge” to void to suggest this diagnosis. His symptoms are most consistent with dribbling from overflow incontinence. This commonly occurs in men with prostatic hypertrophy, and that would be the most likely diagnosis in this case.

**Q.6.** A 71-year-old woman presents with a complaint of incontinence. She describes daily episodes of incontinence that come on suddenly and are associated with a strong desire to urinate. Urine loss occurs so quickly that she is unable to reach the bathroom in time. Which of the following medicines is most likely to improve her incontinence?
A. Pseudoephedrine
B. Doxazosin
C. Carbamazepine
D. Imipramine
E. Estrogen

**Answer:** D. This woman presents with urge incontinence. Urge incontinence results from detrusor overactivity, instability, or hyperreflexia. Urge incontinence may result from neurologic disease (e.g. stroke, cervical stenosis, CNS masses, multiple sclerosis, Parkinson’s disease and others), or from bladder infection or other genitourinary irritants. Nonpharmacologic treatment includes pelvic muscle exercises and bladder retraining. Medications with anticholinergic activity (i.e., imipramine, answer choice D, as well as oxybutinin and tolterodine) are also used in the management of urge incontinence. Pseudoephedrine may be used in the management of stress incontinence, but is not used in urge incontinence. Doxazosin has no role in the management of incontinence, and in fact may exacerbate it. Carbamazepine also has no role in the management of incontinence. Estrogen may be used (in combination with alpha-adrenergics) for the management of stress incontinence, but is not used for urge incontinence.

**Q.7.** You are evaluating a 67-year-old woman for incontinence. Past medical history is notable for diabetes and hypertension. Current medications include lisinopril, glipizide, and metformin. Laboratory examination shows the following:

Na: 135
K: 3.9
Cl: 103
CO₂: 21
BUN: 19
Cr: 1.6
Glucose: 132
Calcium 9.1

Glycosylated hemoglobin is 7.8. Urinalysis shows no protein or glucose, occasional RBCs, 1–3 WBC, 1–3 epithelial cells. The patient is asked to fully empty her bladder; then catheterization of her bladder is performed. 175 cc of fluid is drained. The most likely cause of incontinence in this patient is

A. Overflow incontinence
B. Stress incontinence
C. Osmotic diuresis
D. Renal insufficiency
E. Medication side effects

**Answer: A.** This patient with complaints of incontinence has an elevated postvoid residual of urine in her bladder, suggesting the diagnosis of overflow incontinence. There is insufficient information provided to diagnose this woman with stress incontinence, which usually occurs with coughing, laughing, sneezing, and exercising. While her overall glycemic control is suboptimal (glycosylated hemoglobin is 7.8), the glucose must typically be above 200 to cause an osmotic diuresis. Renal insufficiency is not a cause of incontinence, and the medications that she takes are not common causes of incontinence.

Q.8. The general surgery service asks you to assist in choosing an antibiotic to manage a stage III pressure ulcer in a 72-year-old woman admitted to their service with small bowel obstruction. Upon admission, the patient was noted to have a nondraining stage III pressure ulcer on her sacrum. A swab of the ulcer grew methicillin-resistant *Staphylococcus aureus*. The patient is afebrile and otherwise clinically stable; her small bowel obstruction has improved with nasogastric suction. An appropriate antibiotic choice would be

A. Vancomycin
B. Imipenem
C. Tetracycline
D. Gatifloxacin
E. No antibiotic treatment is indicated

**Answer: E.** This patient has a stage III sacral decubitus ulcer that apparently is colonized with methicillin-resistant *Staphylococcus aureus*. She is afebrile, there is no wound drainage, and she is clinically without evidence of systemic infection. In the absence of evidence of infection, skin ulcers should not be treated with systemic antibiotics. Topical antibiotics are used by some, but if used, should be discontinued after 48 hours of treatment.
Q.9. Pharmacotherapeutic options for dementia include treatment with donepezil, tacrine, rivastigmine, and galantamine. These medications share which of the following characteristics?
A. Cholinergic augmentation
B. Mild sedation
C. Anxiolytic properties
D. Nephrotoxic effects
E. Hyperglycemic effects
   Answer: A. All of these medications share cholinergic augmentation. None of the other options are shared by the medications mentioned.

CHAPTER 65: SELECTED TOPICS IN WOMEN'S HEALTH FOR THE INTERNIST

Q.1. A 23-year-old woman, pregnant for the first time, is admitted at 32 weeks gestation after an office visit where her blood pressure is 170/110. She has had epigastric pain and vomiting since last night. Examination reveals significant edema. On admission, her platelet count is 45,000 and her AST is 2300 IU/L. Which of the following would you not expect?
A. Hematocrit of 24%
B. Urine protein of 4 (3 grams/24 hours)
C. No increase in risk of seizure
D. Peripheral blood smear consistent with thrombotic thrombocytopenic purpura (TTP)
E. Possible recurrence with subsequent pregnancies
   Answer: C. This patient has severe preeclampsia and probable associated HELLP (hemolysis, elevated liver enzymes, low platelets) syndrome. It would not be surprising to find a low hematocrit secondary to hemolysis. The peripheral blood smear in HELLP is nondiagnostic and is also consistent with TTP or hemolytic uremic syndrome. The elevated urine protein is expected with preeclampsia. Severe preeclampsia puts this patient at high risk of seizure, and intravenous magnesium sulfate should be started. She is also at risk of recurrence of the preeclampsia with subsequent pregnancies.

Q.2. A 27-year-old women who has had diabetes since age 8 years and chronic hypertension since age 22 years, and who has had no previous pregnancies, comes to you for prepregnancy consultation. Her current medications include
A 19-year-old college student presents to your office for a routine health checkup. She has no significant medical history. She lives in a dormitory room with several friends and drinks alcohol on the weekends. She is sexually active with her boyfriend and uses condoms for birth control. Her physical examination, including pelvic exam, is normal. The Pap smear results return in one week as “low-grade squamous intraepithelial lesion” (LGSIL). Which of the following is true regarding her condition?

A. She will most likely require a surgical procedure, such as a laser conization, but cure is likely
B. HPV testing will be helpful in decision-making regarding colposcopy referral
C. If a repeat Pap smear in six months shows HGSIL, she will need colposcopy
D. Her risk for cervical cancer is low; repeat Pap testing in 12 months is appropriate
E. The finding of LGSIL has a high likelihood of regressing to normal

Answer: E. This patient’s Pap smear result, LGSIL, confers a 15% to 30% risk of having a high-grade lesion on colposcopy. In the majority of instances, LGSIL actually regresses to normal and has a benign prognosis. The need for eventual laser conization is unlikely. Nevertheless, the result does require further evaluation with colposcopy. Simply repeating the Pap smear in 6 to 12 months or using HPV testing to help triage the need for colposcopy (as with ASCUS) would not be aggressive enough or appropriate in this situation.
Q.4. A 38-year-old woman is currently on an oral contraceptive for birth control. She is married and monogamous with her husband. Her sons are 10 and 7 years old, respectively, and she is not interested in having any more children. Lately, she has become concerned about how the oral contraceptive makes her feel and is worried that it might cause breast or ovarian cancer. Her family history is notable for an older sister who died of ovarian cancer at age 50. The patient does not drink or smoke. Her physical examination is unremarkable. What do you tell her about her contraceptive options?

A. The oral contraceptive agent will not increase her risk of ovarian cancer; in fact, it may be protective
B. She should discontinue the oral contraceptive as it is contraindicated in women over the age of 35 years
C. Injectable long-acting progesterone may be a better option as it will help protect against bone mineral density loss
D. An IUD would not be a good option given the increased risk of ectopic pregnancy at her age
E. Administering the contraceptive as a patch rather than a pill will avoid the increased risk of breast cancer

Answer: A. This woman has many options for contraception. Certainly, continuing her current oral contraceptive would be acceptable—as long as her anxiety with it is alleviated. Oral combination contraceptives are contraindicated only in women over 35 years who smoke. They are not associated with ovarian cancer and, in fact, may be protective. The association of oral contraceptive with breast cancer is less clear, but probably not significant. Using a patch rather than a pill will do nothing to attenuate this risk. Long-acting (depot) progesterone has been linked to reversible bone mineral density loss and thus may not be the best first-line choice for this older woman. Finally, an IUD is a very reasonable option for her and is not associated with an increased risk of ectopic pregnancy in any age group.

Q.5. A 20-year-old young woman presents to your office for an urgent appointment. She is distraught as she recently discovered her boyfriend, with whom she is sexually active, has genital warts. She is worried that she may contract these and that she might develop cervical cancer. She has been in a monogamous relationship with her boyfriend for about nine months. She is otherwise healthy. What do you recommend for cervical cancer screening?

A. After three annual Pap smears that are normal, she can increase the screening interval to Pap smears every three years
B. The HPV strains that cause cervical cancer do not cause genital warts; therefore, she can defer screening for another year
C. She should undergo a Pap smear with HPV testing
D. A finding of squamous metaplasia on Pap smear should prompt HPV testing
E. She does not require cervical cancer screening as she has not reached 21 years of age

**Answer: C.** This patient should undergo cervical cancer screening now as she is sexually active and has probable exposure to HPV. Guidelines suggest screening at age 21 or upon initiation of sexual activity, whichever is first. HPV testing in women less than 30 years of age is more controversial, given that many women will spontaneously clear the infection with no sequelae. This patient, however, has a known exposure, and HPV testing (with serotyping of low- vs. high-risk serotypes) will add in prognosticating her future risk of cervical cancer. It is true that the HPV strains that cause genital warts are usually low-risk strains, but that alone would not be sufficient to defer screening in this patient. Most guidelines do not recommend lengthening the screening interval to three years until a woman reaches 30 years of age, regardless of HPV status. A finding of squamous metaplasia is normal and does not require further testing of any kind.

**Q.6.** A 50-year-old woman presents to your office with moderate hot flashes that began about six months ago. They are worsening in severity and wake her up many times throughout the night. She is becoming increasingly sleep-deprived and describes inability to concentrate at work. Her last menses was 10 months ago. She is on a small dose of a thiazide diuretic for mild hypertension but is otherwise healthy. Which of the following is true about the treatment of her hot flashes?
A. Alpha-adrenergic agents are the best-tolerated option and would be a good choice for her
B. Venlafaxine is the most effective alternative to estrogen
C. Coping mechanisms alone may not be enough for her; estrogen is reasonable to try
D. Gabapentin provides the quickest onset and the fewest side effects; it should be prescribed for her
E. Estrogen will work for her, but its use should be limited to under a year

**Answer: C.** This woman has moderate hot flashes associated with menopause that are now affecting her quality of life and ability to work. She deserves treatment. There is no “right or wrong” choice for therapy, although estrogen has the quickest onset and best efficacy. It is very reasonable to try it in this patient, given her moderate to severe symptoms. Coping mechanisms will probably not be adequate. Estrogen use should be limited to five years, not one year. The other prescription alternatives are reasonable, but reduce hot flash frequency and severity by roughly 50%. It is not true that alpha-adrenergic agents are the best tolerated (they are the least well tolerated). Likewise, venlafaxine is not necessarily the most effective and gabapentin does not have the quickest
onset or fewest side effects. Head-to-head trials for most estrogen alternatives are lacking.

Q.7. As a practicing internist, you see many pregnant women as patients. While they often call their obstetrician for advice regarding their pregnancy, you still receive many phone calls about common problems, such as allergic rhinitis, urinary tract infections, and reflux disease. Which of the following is not appropriate advice for a pregnant woman?
A. For a urinary tract infection, nitrofurantoin is a good choice
B. For allergic rhinitis, chlorpheniramine is appropriate to try
C. For gastroesophageal reflux, omeprazole is recommended
D. For a severe headache, acetaminophen is an acceptable option
E. For acne, topical clindamycin is a reasonable strategy

**Answer: C.** As an internist, it is important to know how to treat commonly occurring medical conditions in pregnant women. All of the above choices are reasonable and correct except choice C. Proton pump inhibitors, such as omeprazole, are pregnancy class C and should be avoided if possible. H₂ blockers (e.g., famotidine, ranitidine) are pregnancy class B and are preferred for the treatment of gastroesophageal reflux.

Q.8. Which of the following is true regarding cervical cancer screening with a Papanicolaou (Pap) smear?
A. A finding of atypical squamous cells of undetermined significance (ASCUS) on Pap smear with a negative DNA test for human papilloma virus (HPV) test can be followed with a repeat Pap smear in one year
B. A finding of atypical glandular cells of undetermined significance (AGUS) is less serious than ASCUS and can be followed with a repeat Pap smear in four to six months
C. Cervical cancer screening with a Pap smear is recommended beginning at age 21 years, regardless of sexual activity
D. Trichomonas found on a routine Pap smear should be confirmed with a normal saline prep before initiating treatment
E. If a Pap smear shows ASCUS, but colposcopy reveals cervical intraepithelial neoplasia grade II, there was probably a sampling error and a repeat colposcopy should be performed

**Answer: A.** HPV testing can be useful in triaging patients with a finding of ASCUS on Pap smear. If negative, repeating the Pap at one year is an appropriate course of management. If positive, the patient should be referred for colposcopy. AGUS is often related to more serious disease than ASCUS (usually endometrial rather than cervical cancer) and should be followed more aggressively. Colposcopy
and biopsy are more appropriate that repeat Pap testing. Recommendations are to begin cervical cancer screening at age 18 years or when sexually active, whichever comes first. Any infection, including trichomonas, found on a routine Pap smear, should be treated. A normal saline prep is not necessary for confirmation. Finally, if there is a discrepancy between a Pap smear reading and a histological finding by colposcopy, treatment should be initiated if the histological diagnosis is more serious (as in this case). The patient should have definitive therapy with cold knife or laser conization or a loop electrosurgical excision procedure (LEEP). If the histological diagnosis is less severe, a sampling error may have occurred and a larger biopsy should be taken.

Q.9. A 25-year-old woman is 12 weeks pregnant with her second child. She presents to the emergency department with an acute onset of shortness of breath and wheezing. She has a history of mild, intermittent asthma for which she uses an albuterol metered dose inhaler on an as-needed basis. On examination, her blood pressure is 130/85 mm Hg and her heart rate is 110 bpm. She is tachypneic and has diffuse, polyphonic wheezes throughout her lung fields. Her oxygen saturation is 94% on room air. What is appropriate management?

A. Administer O2 by nasal cannula, prednisone, and -agonist nebulizer treatments
B. Administer O2 by nasal cannula and theophylline, as it is pregnancy class B
C. Administer O2 by nasal cannula and -agonist nebulizer treatments; avoid prednisone because of pregnancy and risk to the fetus
D. Administer O2 by nasal cannula and intravenous magnesium sulfate, as it is safe in pregnancy
E. Administer O2 by nasal cannula and prednisone; avoid -agonist nebulizer treatments because she is in the first trimester

Answer: A. This pregnant woman is having a severe asthma flare. The risk of hypoxemia from the asthma far outweighs any risk of treatment. She should be given oxygen by nasal cannula treated aggressively, no matter what her trimester. Prednisone and -agonist nebulizer treatments are both appropriate therapies. Theophylline is pregnancy class C and should be avoided unless absolutely required. Magnesium sulfate has not been proven to be efficacious in asthma and alone would not be enough to treat the flare.

Q.10. Which of the following women would not be a good candidate for the use of combination oral contraceptive pills?

A. A 40-year-old woman with no smoking history
B. A 30-year-old woman with a strong family history of ovarian cancer
C. A 29-year-old woman with mild hypertension that is well controlled with a thiazide diuretic

D. A 32-year-old woman with a history of autoimmune hepatitis that is under reasonable control

E. A 34-year-old woman with heavy menses secondary to uterine fibroids

**Answer: D.** Combination oral contraceptives are a safe and effective method of birth control. There are, however, certain relative contraindications regarding their use. Women with a history of liver disease should be advised not to use them (choice D). Other contraindications include a history of thromboembolic disease, a history of breast or endometrial cancer, and smokers over age 35 years. In choice A, the woman does not smoke and would still be a candidate. For choice B, oral contraceptives may actually decrease the risk of ovarian cancer. In choice C, the hypertension is well controlled. Only uncontrolled hypertension is a contraindication. Finally, use of an oral contraceptive may actually decrease menstrual bleeding in a woman with uterine fibroids.

**Q.14.** A 19-year-old woman comes to your office for counseling regarding birth control. She has been using condoms, but does not like “depending on someone else for protection.” She also has horrible migraines that only occur premenstrually (once a month) but force her to stay in bed for a day. She is interested in trying a combination oral contraceptive. She is healthy with no chronic medical conditions. When initiating oral contraceptives, which of the following statements would be appropriate advice for the patient?

A. Explain that if she misses a couple days of her oral contraceptive she should take one immediately, and then one twice a day until all the missed tablets have been taken. If she does so, she will not need an additional form of contraception for that cycle

B. Inform her that the mini-pill may be a good option for her; because it contains estrogen only, it tends to have fewer side effects

C. She should start the oral contraceptive midcycle, roughly 14 days before her expected menstruation

D. Oral contraceptives are not necessarily contraindicated for premenstrual migraines; in fact, she may opt to have a withdrawal bleed only every three months on the pill to decrease the frequency of her migraines

E. Symptoms of premenstrual syndrome (nausea, irritability, headache, bloating) usually worsen after starting an oral contraceptive

**Answer: D.** Oral contraceptives are a reasonable choice for this healthy, young woman with no contraindications. While oral contraceptives may worsen migraines in general, they may actually alleviate premenstrual headaches and migraines. An added bonus is the ability to take the inert pills only every three months (perfectly safe to do), thus decreasing the frequency of premenstrual
migraines. If she misses more than one dose, she should take the missed tablets as directed in choice A, but she should also use an additional form of contraception that cycle. The mini-pill contains progestin only (not estrogen) and is associated with a higher incidence of breakthrough bleeding. It is used predominantly in breastfeeding women or women who cannot tolerate estrogen. Oral contraceptives should be started on the first day of menses, not mid-cycle. Finally, symptoms associated with premenstrual syndrome tend to improve on oral contraceptives, not worsen.

CHAPTER 66: DERMATOLOGY FOR THE INTERNIST

Q.1. A 36-year-old man with a history of asthma presents with a rash on his leg that has been present for the past six weeks. His current medications include fluticasone and salmeterol inhalers. The lesion is a well-circumscribed, 2-cm diameter plaque just above the right medial malleolus. No surrounding erythema, papules, or vesicles are noted. A potassium hydroxide preparation is done and fails to reveal hyphae, pseudohyphae, or spores. What is the most appropriate therapy for this patient?
A. Topical corticosteroids and emollients
B. Oral griseofulvin
C. Topical antifungal agents
D. Oral antistaphylococcal antibiotics
E. Either B or C

**Answer:** A. This man presents with a well-circumscribed lesion on his extremity. He has a history of asthma, which suggests atopy. The most common lesions presenting in this fashion are nummular eczema and tinea infections. His potassium hydroxide preparation is not consistent with tinea, so he should be treated for eczema with topical corticosteroids and emollients. Because there are no signs of superimposed bacterial infection, oral antibiotics are unnecessary.

Q.2. A 55-year-old man presents for follow-up of his chronic plaque psoriasis. You instituted therapy with emollients and topical corticosteroids two months ago, but this has led to only minimal improvement. Which of the following is not an appropriate next step in his management?
A. A trial of oral prednisone with a taper over six to eight weeks
B. Methotrexate
C. Referral for psoralen and phototherapy with ultraviolet A light (PUVA)
D. Topical vitamin D derivatives (calcipotriene)
E. Topical vitamin A derivatives (tazarotene)
**Answer: A.** This patient has plaque psoriasis unresponsive to initial therapy. All of the choices would be appropriate (depending on the extent of disease) except for oral prednisone. Systemic corticosteroids should be avoided in these patients because tapering will predispose them to erythrodermic or pustular psoriasis.

**Q.3.** A 40-year-old woman comes to the office with fever and arthralgias. On examination, you note tender red nodules on her legs. Medical history includes hypertension, deep venous thrombosis, and endometriosis. Her medications are hydrochlorothiazide (HCTZ), warfarin, and ortho-tricyclen. Which medication is most likely the cause of her condition?

A. HCTZ  
B. Warfarin  
C. Ortho-tricyclen  
D. None of the above  

**Answer: C.** This woman has erythema nodosum. A septal panniculitis related to infection, autoimmune disorders and medications including oral contraception. Treatment includes stopping the offending agent, and if necessary oral NSAIDs, potassium iodide, or corticosteroids.

**Q.4.** A 70-year-old man presents with painful vesicles on his nose and left forehead, and no lesions elsewhere. His mental status is intact. What specialist must be consulted?

A. Neurologist  
B. Ophthalmologist  
C. Audiologist  
D. Cardiologist  
E. None, just start acyclovir  

**Answer: B.** This patient has herpes zoster in the V1 distribution. When lesions involve the nose, there is a concern for involvement of the ophthalmic nerve (Hutchinson’s sign). Herpes zoster ophthalmicus can cause viral keratitis and blindness. Ophthalmology must be consulted for a full examination.

**Q.5.** A 70-year-old man presents for evaluation of multiple scaly macules on the dorsum of his hands and scalp. You diagnose actinic keratosis. Which of the following statements regarding this condition is correct?

A. These lesions can transform into melanoma  
B. These lesions can transform into basal cell carcinoma  
C. These lesions can transform into squamous cell carcinoma
D. The malignant potential of these lesions can be predicted by the presence or absence of scaling
E. Both B and D are correct

**Answer: C.** Actinic keratosis is a premalignant condition seen on sun-exposed skin in patients over the age of 40. Although their presence may suggest a susceptibility to all types of ultraviolet light–related skin cancers, the lesions themselves carry a low risk of transformation into squamous cell carcinoma only. Unfortunately, there is no way to determine which lesions will progress to squamous cell carcinoma.

Q.6. A 26-year-old man presents complaining of a pruritic rash that has been present for about four weeks. On review of systems, he notes that he has been having intermittent episodes of diarrhea and abdominal cramping for the last year. He was told by another physician that he has irritable bowel syndrome so he has been increasing the fiber in his diet. His physical examination is notable for clusters of grouped vesicles on his elbows and buttocks. There is no involvement of the palms, soles, or mucous membranes. A skin biopsy is done and reveals a subepidermal vesicle with neutrophils and eosinophils in the dermal papillae. Direct immunofluorescence reveals IgA deposition at the basement membrane zone. Which of the following is most appropriate for the treatment of this patient?
A. Oral acyclovir
B. Oral corticosteroids
C. Topical corticosteroids
D. A gluten-free diet
E. Both B and D are correct

**Answer: D.** This patient has a pruritic, vesicular rash and abdominal symptoms that are suggestive of gluten-sensitive enteropathy. The biopsy and clinical findings are typical for dermatitis herpetiformis. Dermatitis herpetiformis is associated with gluten-sensitive enteropathy and other autoimmune diseases. The best treatment is a gluten-free diet. Dapsone can be used if dietary restrictions are not sufficient. Steroids and antiviral agents are not helpful for this condition.

Q.7. A 36-year-old woman presents complaining of a painful erythematous rash on her lower extremities. She reports that they have been present for the last week and are causing her significant discomfort. She denies any other complaints at this time. Her examination reveals subcutaneous, painful, erythematous nodules. All of the following are appropriate as part of an initial evaluation of this patient except
A. Epstein-Barr virus serology
B. Throat culture
C. Tuberculin skin test
D. Chest x-ray
E. Antistreptolysin O titer

Answer: A. This woman presents with erythema nodosum (EN) with no other localizing symptoms. Most cases are associated with streptococcal pharyngitis or are idiopathic. Given that sarcoidosis, tuberculosis, histoplasmosis, and Hodgkin’s disease can also cause EN, a basic evaluation should include a throat culture, ASO titer, PPD, and a chest x-ray. Epstein-Barr virus infection has not been shown to be associated with EN. Other associated conditions include inflammatory bowel disease, chlamydia infection, medications, and Behcet’s disease.

CHAPTER 67: OPHTHALMOLOGY FOR THE INTERNIST

Q.1. A 36-year-old woman is referred back to you by her ophthalmologist, who states that she has evidence of uveitis. She was begun on topical corticosteroids with some improvement. She says that her ophthalmologist wanted you to do a systemic evaluation. She has no complaints and no abnormalities on physical examination. Which of the following tests is an appropriate component of her evaluation?
A. Chest x-ray
B. MRI of the head
C. Purified protein derivative (PPD) test
D. Herpes simplex virus (HSV) serology

Answer: A. This woman was referred for an evaluation after being diagnosed with uveitis. Although she may have primary disease not related to an underlying disorder, it is necessary to exclude certain diseases before reaching that conclusion. The most common disorders associated with uveitis include juvenile chronic (rheumatoid) arthritis, seronegative spondyloarthropathies, Behcet’s syndrome, and sarcoidosis. Therefore, a chest x-ray to assess for lymphadenopathy from sarcoidosis would be the best answer. A PPD skin test is not recommended in patients with no risk factors for TB. HSV serology has a poor positive predictive value, and cranial MRI is rarely indicated as part of a workup for uveitis, especially if more common causes have yet to be ruled out.

Q.2. A 55-year-old man with a history of type 2 diabetes diagnosed 7 years ago presents to your office for a checkup. He reports that he had an eye examination about eight months ago that showed no evidence of retinopathy. Which of the following statements regarding screening for diabetic retinopathy is correct?
A. He should be screened again immediately because he is overdue for his every-six-month ophthalmologic examination
B. He should be screened yearly, so he should make an appointment in four months
C. Because he does not have existing retinopathy, he should be screened every two to three years
D. Because he does not have existing retinopathy, he should be screened very five years
E. Screening is not recommended for this patient

Answer: B. Current recommendations suggest that diabetics (both type 1 and type 2) be screened yearly when there is no evidence of retinopathy. In type 1 diabetics, screening may begin about five years after diagnosis, but in type 2 diabetics screening should begin at the time of diagnosis. If the patient previously had been diagnosed with retinopathy, he would need more frequent examinations.

Q.3. Which of the following statements regarding diabetic retinopathy is correct?
A. Glycemic control does not play a role in progression of disease
B. Diabetic patients who become pregnant will typically see some improvement in their retinopathy over the course of their pregnancy
C. Women who have gestational diabetes are not at increased risk to develop diabetic retinopathy
D. Diabetic retinopathy is the leading cause of blindness in elderly white Americans

Answer: C. Although patients with diabetic retinopathy who become pregnant can expect worsening of their eye disease, patients with gestational diabetes are not at increased risk for developing the disease. Diabetic retinopathy is the leading cause of blindness in patients aged 20 to 60 years. In older patients, however, macular degeneration is more common. Tight glycemic control is the best method to prevent disease onset and progression.

Q.4. A 65-year-old woman presents with severe pain in one eye associated with redness and light sensitivity. She describes decreased vision and “halos.” She has no previous history of eye problems except for needing glasses and has never had eye surgery or trauma. Her general health is good except for a recent upper respiratory infection for which she takes an over-the-counter “cold medication.” The most likely diagnosis is:
A. Scleritis
B. Anterior uveitis
C. Angle-closure glaucoma
D. Endophthalmitis
Answer: C. Angle-closure glaucoma is more common in older patients and can be triggered in anatomically susceptible eyes by certain medications, including decongestants found in many cold remedies. Her symptoms of unilateral pain and redness could be caused by any of the conditions listed, but she has no risk factors for endophthalmitis, and a first episode of scleritis or uveitis would be extremely unlikely at her age; furthermore, scleritis would be unlikely to cause halos (which are due to the corneal edema from the rapid elevation in intraocular pressure in angle-closure glaucoma).

Q.5. Which of the following medications increases the risk of open-angle glaucoma?
A. Anticholinergics
B. α-adrenergic agents
C. β-blockers
D. Corticosteroids

Answer: D. Corticosteroids in any form (especially eyedrops and oral formulations, and probably only rarely with dermatologic creams) can cause elevations in intraocular pressure without any visible anatomic changes (i.e., eyes with steroid-induced glaucoma look morphologically identical to those with primary open-angle glaucoma). Patients with open-angle glaucoma or with first-degree relatives with open-angle glaucoma are at increased risk for developing steroid-induced glaucoma. Anticholinergics and alpha-adrenergic agents can precipitate angle-closure glaucoma. Topical beta-blockers are one of the most commonly used and effective treatments for open-angle glaucoma and oral beta-blockers do not cause increases in intraocular pressure.

Q.6. Which of the following statements about cataracts is correct?
A. They usually cause pain
B. They are the leading cause of acute-onset “red eye” in patients over the age of 50
C. Cataracts are usually present bilaterally, although the severity of impairment may vary between eyes
D. A cataract should be operated on if the visual acuity in the affected eye is worse than 20/50

Answer: C. Cataracts occur when the lens of the eyes become opacified. They are usually bilateral and occur with advancing age. They typically do not cause pain or redness. The decision to operate should be based on functional impairment, rather than on visual acuity.
Q.7. Which of the following treatments has been shown in randomized, controlled clinical studies to reduce the likelihood of progression of moderate nonexudative (dry) age-related macular degeneration?
A. Photodynamic therapy (verteporfin)
B. Antioxidants
C. Vascular endothelial growth factors antagonists
D. Laser photocoagulation

**Answer: B.** The Age-related Eye Disease Study (AREDS) showed that a combination of vitamins A (e.g., beta-carotene), C, and E, along with zinc, reduced the risk of progression of moderate nonexudative macular degeneration (AMD). It did not show a benefit in reducing the risk of progression of mild AMD. The other treatments listed have been shown effective in the treatment of exudative (wet) AMD, in which choroidal neovascularization occurs beneath the retina, but are not effective for nonexudative AMD.

Q.8. A 65-year-old Asian woman with a history of hypertension presents with a painful red left eye, nausea, headache, and vomiting. She notes that she was doing well until this morning when she developed the symptoms. Her only medications are hydrochlorothiazide and oxybutinin (which was just started by her gynecologist for urinary incontinence). Her physical examination reveals decreased visual acuity on the left. Which of the following is most appropriate regarding her management?
A. Refer her urgently to an ophthalmologist
B. Discontinue the oxybutinin and have her follow up in three days
C. Prescribe oral acetazolamide
D. Prescribe topical tobramycin eydrops
E. Prescribe a topical beta-blocker

**Answer: A.** This woman presents with acute narrow-angle glaucoma precipitated by the anticholinergic agent oxybutinin. Narrow-angle glaucoma is much less common than open-angle glaucoma. It presents with acute pain, redness, and decreased visual acuity. Headache, nausea, and vomiting are frequently seen. The constellation of these symptoms requires urgent referral to an ophthalmologist for laser iridotomy. Even though the oxybutinin should be discontinued, it is not sufficient at this time. Carbonic anhydrase inhibitors can be given to try to reduce the eye pressure but its use is an adjunct to prompt referral. Tobramycin is inappropriate since there is no evidence of infection. Topical beta-blockers are useful for open-angle glaucoma but do not play a significant role in the acute management of narrow-angle glaucoma.
Q.9. A 66-year-old woman with a history of asthma presents complaining of increased wheezing and dyspnea. She notes that her asthma had been under good control until about four weeks ago when she noted that she needed to use her inhalers more often. Her past medical history is notable for hypertension, diabetes, and asthma. Her current medications include glyburide, hydrocholorothiazide, lisinopril, and an eyedrop started by her ophthalmologist for open-angle glaucoma about six weeks ago. Her physical examination is notable for diffuse wheezing, fair air entry, and prolonged expiration. What is the most likely medication that was started by the ophthalmologist?

A. Topical corticosteroid
B. Topical $\beta$-blocker
C. Topical $\alpha$-agonist
D. Topical carbonic anhydrase inhibitor
E. Topical prostaglandin analog

**Answer:** B. All of the medications listed, except for the topical corticosteroids, are used in the treatment of primary open-angle glaucoma. Ocular medications can cause systemic side effects and must be considered when evaluating complaints. Corticosteroids can cause cataracts and can lead to glaucoma. Topical $\beta$-blockers can cause bronchospasm, bradycardia, and hypotension similar to systemic $\beta$-blockers. Care must be taken in asthmatics and in patients with congestive heart failure. $\alpha$-agonists cause dry mouth, dizziness, and hypotension. Nausea, fatigue, hypokalemia, and depression are usually seen with oral carbonic anhydrase inhibitors but can occasionally be associated with topical administration. Prostaglandin agonists can cause myalgias and arthralgias.

Q.10. Which of the following statements regarding age-related macular degeneration is correct?

A. It is the leading cause of blindness in patients aged 20 to 60 years in the United States
B. Central vision is typically lost while peripheral vision remains intact
C. Patients typically present with redness in one or both eyes without pain
D. Antioxidant vitamins have been shown to be effective in prevention and treatment of disease
E. A dendritic pattern is seen when the cornea is stained with fluorescein

**Answer:** B. Age-related macular degeneration (AMD) is the leading cause of blindness in white elderly patients. An estimated 30% of people between age 75 and 85 have evidence of AMD. In younger patients (aged 20–60), diabetes is the leading cause of blindness. Patients with AMD typically have loss of central vision and retention of peripheral vision. The eyes are usually not painful or red. Antioxidant vitamins that include a combination of zinc, vitamins C and E, and
beta carotene may reduce the risk of progression from moderate to severe AMD, but has not been shown to reduce the risk of progression from mild to moderate AMD or to prevent disease. The dendritic pattern on fluoroscein staining is seen in patients with HSV keratitis. Patients with non-neovascular AMD typically have bright, yellow macular deposits (drusen) on ophthalmoscopy.

Q.11. A 28-year-old woman presents complaining of red right eye of three days’ duration. She denies any fever, nausea, vomiting, or trauma to the eye. There is no pain in the eye but some itching and discharge. On examination, the eye is diffusely injected. There is crusting and copious amounts of mucopurulent discharge. Visual acuity is normal. There is no lymphadenopathy. Fluoroscein examination reveals no abnormalities. Which of the following statements regarding her management is most appropriate?

A. She should be prescribed topical tobramycin to treat her infection
B. She should be prescribed a topical corticosteroid to reduce her inflammation
C. She should be prescribed a topical antiviral agent
D. She should be treated with a topical antihistamine
E. She should be told to stay home from work for about 14 days to prevent person-to-person spread of the infection

Answer: A. This woman has evidence of bacterial conjunctivitis. She has unilateral mucopurulent discharge and redness of the eye. There is no lymphadenopathy. These findings are highly suggestive of a bacterial process for which tobramycin eyedrops would be appropriate. Topical corticosteroids should not be prescribed unless a specific diagnosis such as uveitis has been made. Viral infections and allergic conjunctivitis will typically be associated with a clear discharge. Antihistamines and antiviral agents are not appropriate in this case. Patients with viral conjunctivitis are highly infectious and should avoid close contact with others for 7 to 14 days.

CHAPTER 68: PSYCHIATRY FOR THE INTERNIST

Q.1. A 44-year-old man with a history of long-standing HIV presents to your office complaining of depression and fatigue. He reports that he has been going through an emotionally rough time recently because of a breakup with his significant other. His review of symptoms reveals anhedonia, insomnia, decreased appetite, and some feelings of guilt. He has had undetectable HIV RNA levels for two years, ever since starting on zidovudine (AZT), lamivudine (3TC), and indinavir. His only other medications include TMP/SMZ. He also takes a multivitamin and saw palmetto and recently began self-treating his depression with St. John’s wort. You obtain some blood work, which reveals no significant changes except that his HIV RNA level is now 10,000 copies/mL. What is the most appropriate next step?
A. Tell him that his depression and fatigue are caused by a worsening of his HIV, so a change in his protease inhibitor will be necessary
B. Tell him that his depression and fatigue are caused by a worsening of his HIV, so his AZT should be changed to didanosine (DDI)
C. Discontinue his saw palmetto
D. Discontinue his St. John’s wort
E. Add an SSRI to his current medical regimen

**Answer: D.** This patient has a history of HIV and began treating some depressive symptoms with St. John’s wort, an herbal supplement with probable efficacy for patients with mild depressive symptoms. St. John’s wort, however, has been found to lower levels of some protease inhibitors (including indinavir), rendering them less effective. The rise in this patient’s HIV RNA level could therefore be caused by the herbal supplement. Discontinuation and monitoring of symptoms and RNA levels would be the initial approach given a patient with a highly active antiretroviral therapy (HAART) regimen that had previously been effective. Saw palmetto, often used for prostatic symptoms, has not been shown to have significant drug interactions. Even though an SSRI may ultimately be useful for treatment of depression in this patient, it should not be added in a patient taking St. John’s wort because it can increase the risk for serotonin syndrome.

**Q.2.** A 56-year-old man whom you have been treating for depression returns eight weeks after you initiated therapy with paroxetine (an SSRI). He reports that his symptoms have improved tremendously and wishes to discontinue his antidepressant at this time because he does not like taking medications. He has a history of three episodes of depression in the past, all requiring treatment. Which of the following is correct?
A. It is fine to discontinue his antidepressant at this time, but it will need to be tapered
B. The medication should be continued for two more months; then it can be discontinued without taper
C. The medication should be continued indefinitely at this time
D. He should be changed to a tricyclic antidepressant that can be slowly tapered over six weeks

**Answer: C.** This patient has now had four episodes of major depression. It is wise to consider chronic treatment in such cases. Even in patients presenting with their first episode, antidepressants should be continued for four to six months before tapering. Discontinuation before this may result in a recurrence of depressive symptoms. Medications should not be stopped abruptly because of the risk of withdrawal symptoms.
Q.3. A 32-year-old male presents to you with worsening complaints of depression. He gives a several-month history of decreasing mood, insomnia, decreased appetite, and lethargy. He also reported feeling as though he is a “worthless” person and feels that his coworkers are upset because his job performance has suffered recently. Additional stressors include recent separation from his wife of three years. He reported a similar episode in his mid-20s that responded to an unknown antidepressant. He is not currently on any medications and his medical history is significant only for seasonal rhinitis. What is the next step for this patient?

A. Given his insomnia and decreased appetite, he should be prescribed a month’s supply of nortriptyline 75 mg, taken at night, and scheduled to return in 30 days for follow-up
B. Refer patient for psychological counseling as he is experiencing significant stress at work, which could be affecting his self-image
C. The patient should not be started on any treatment until his suicide risk is assessed
D. Given that this most likely represents a recurrence of major depressive disorder, he should be placed on two different agents from the start to aggressively treat this episode

Answer: C. The patient gives a history consistent with an episode of major depression, which may represent a recurrence of a previous illness. His symptoms include a decrease in self-esteem and are occurring in the setting of real and perceived stressors. Before deciding the next step in treatment, the patient should be assessed for the presence of suicidal ideation/intent. Nortriptyline is an effective antidepressant, but carries the risk of lethal overdose given its effect on the myocardium and should not be given to patients until their risk of suicide is known. Psychotherapy could be an adjunctive therapy, but in cases of severe depression is not as effective as combination pharmaco- and psychotherapy. Despite its recurrence, the patient will not necessarily need two antidepressants to treat this episode effectively.

Q.4. A 72-year-old male patient is seen in your office for evaluation and treatment of complaints of bilateral knee pain. The patient’s past history is remarkable for mild hypertension and bipolar disorder. Current medications include hydorchlorothiazide 25 mg and lithium carbonate 300 mg orally twice a day. You diagnose osteoarthritis and prescribe naproxen sodium. The patient calls in a week and states that his pain has improved significantly. Two weeks later, his wife calls and states that the patient appears confused and disoriented, has not recognized her at times, has fallen, and has become incontinent of urine. What is the most likely cause of the patient’s new symptoms?
A. A recurrence of the patient’s mixed- or manic-state bipolar disorder
B. Normal pressure hydrocephalus
C. Lithium intoxication
D. Catatonic depression

**Answer: C.** The patient’s fairly acute onset of disorientation and confusion suggests a delirium. While further workup is necessary, the most likely cause of his delirium and associated symptoms is lithium intoxication. The presentation is not consistent with a recurrence of his affective illness. Normal pressure hydrocephalus is associated more with dementia than delirium and has a more insidious course. Lithium intoxication causes altered mental status, ataxia, polyuria as well as nausea, vomiting, and a gradually coarsening tremor. Both thiazide diuretics and nonsteroidals affect lithium clearance through the kidney and can be associated with increased lithium levels. Their use is not contraindicated in patients taking lithium, but should be used with caution and close collaboration with the physician prescribing the lithium, especially in older patients who may have some baseline renal insufficiency.

**Q.5.** A 23-year-old woman with no significant past medical history presents complaining of burning in her chest. She notes that the problem was intermittent but is now fairly constant. She is working at a local news station, hoping to ultimately become a reporter. She describes her job as stressful due to the intense competition for work. She denies any cigarette or alcohol use. She has had four sexual partners over the last two years and notes regular condom use. She notes irregular menstrual periods, but she notes it has been that way for a few years. Her last period was two months ago. She says that she exercises one to two hours per day and is on the “Zone” diet in an effort to control her weight. Her review of systems is notable for some generalized hair loss. Her physical examination reveals a temperature of 98.6°F, pulse 80/min, blood pressure 98/70, weight 110 pounds, height 5’5”, and her BMI equals 18.3 kg/m². Her oral cavity is notable for dental erosions. There is generalized thinning of the hair but no patches of alopecia. Her chest is clear. Her heart is regular S1, S2 without murmurs. Her abdomen is soft, scaphoid, and nontender. Her extremity examination reveals calluses over the knuckles of the 2nd, 3rd, and 4th digits of the right hand. Her labs reveal a sodium of 138 mEq/L, a potassium of 3.2 mEq/L, an HCT of 35%, and an MCV of 92. Urinalysis is HCG negative and HIV negative. Which of the following is most appropriate for long-term management of this woman?

A. Send off an anti-nuclear antibody (ANA)
B. Start omeprazole 20 mg twice per day
C. Refer her to a gastroenterologist
D. Refer her for psychotherapy
E. Prescribe lifestyle changes (e.g., elevation of the head of the bed, cessation of caffeine, avoidance of eating late at night) and see her back in two to three weeks.

**Answer: D.** This woman presents with symptoms of esophagitis but the underlying etiology is bulimia nervosa. She is concerned over her weight despite being underweight. She has intermittent irregular menses, hair loss, dental erosions, calluses on the knuckles (Russell's sign), hypokalemia, and a mild anemia. This suggests an eating disorder, specifically bulimia. Although treatment of her esophageal symptoms may be appropriate, they are unlikely to be successful unless her purging behavior is stopped. Psychotherapy (e.g., cognitive behavioral therapy) is the most effective mode of therapy. Antidepressants may be helpful as an adjunct.

**Q.6.** A 29-year-old man with a history of asthma presents to your office complaining of chest pain. The pain is reportedly substernal, without radiation, and associated with dyspnea, diaphoresis, nausea, and a sense of doom. The discomfort seems to come on during stressful situations and usually resolves within 30 minutes. He notes that the symptoms are not typical for his asthma attacks and do not seem to be helped by use of albuterol. The symptoms are not worse at night or with exertion. He denies any past medical problems. He denies cigarette use. He drinks about two beers per week. He is employed as an accountant and has been under significant stress recently with his job and with a personal relationship. He exercises three days per week by jogging up to five miles at a time. He has never experienced chest pain with exercise. He is concerned because he knows his grandfather died of a heart attack a few years ago, shortly after turning 80. His physical examination reveals pulse of 68, and blood pressure of 120/75. His heart is regular and without murmurs. His abdomen is soft and nontender. His EKG reveals no abnormalities. His total cholesterol is 180 mg/dL, LDL 105 mg/dL, HDL 50 mg/dL, and triglycerides 125 mg/dL. Which of the following is the most appropriate next step?

A. Obtain a stress echocardiogram  
B. Begin a two-week steroid taper  
C. Begin paroxetine  
D. Begin a two-week trial of omeprazole  
E. Begin a two-week trial of celocoxib

**Answer: C.** This man has symptoms highly suggestive of panic attacks. He has no risk factors for coronary heart disease and has no exertional symptoms. The symptoms are not typical for asthma so steroids should not be given. Although gastroesophageal reflux could be responsible for atypical chest pain, the association of the other symptoms in addition to the trigger of stress makes panic disorder most likely. Tricyclic antidepressants, SSRIs, MAO inhibitors, and
cognitive behavioral therapy have all been shown to be effective for treatment of panic attack, although there is a high relapse rate after discontinuation of therapy.

CHAPTER 69: ALLERGY AND IMMUNOLOGY FOR THE INTERNIST

Q.1. A 26-year-old woman carries the diagnosis of hereditary angioedema. She is anxious about the risk of recurrence of her angioedema during an upcoming wisdom tooth extraction. What agents are most likely to be useful in prevention of such a recurrence?
A. Danazol
B. Prednisone
C. Antihistamine
D. Leukotriene antagonist

Answer: A. The use of androgen derivatives has been shown to reduce the frequency of attacks of angioedema in individuals who have hereditary angioedema. The apparent mechanism seems to involve induction of synthesis of C1 and rise in C4 levels. None of the other agents has been shown to be of benefit in this disorder.

Q.2. A 25-year-old pregnant female has a five-year history of nasal congestion, sneezing, and rhinorrhea on a year-round basis, with peaks in April and late summer. She resides in a 100-year-old home with a water-damaged basement along with her husband, two dogs, and a cat. The patient admits to the daily use of an over-the-counter nasal spray for the last several months. What is the most likely diagnosis in this patient?
A. Perennial allergic rhinitis secondary to animal danders or indoor mold
B. Seasonal allergies caused by oak tree pollen and ragweed sensitivities
C. Rhinitis of pregnancy
D. Rhinitis medicamentosa

Answer: A. Given that this woman lives in an old house and has pets, she is most likely suffering from perennial allergic rhinitis, secondary to animal danders or indoor mold. Answer B does not explain year-round symptoms in this patient; it may, however, explain seasonal peaks in April and late summer. Answer C would only explain recent symptoms occurring during the pregnancy and does not fit the duration and character of the symptoms. Choice D may be a complication in this patient, but only during the last year and still does not adequately explain symptoms for five years.

Q.3. Which diagnostic test would be most helpful for a patient with possible indoor mold allergy?
A. Nasal smear for eosinophils
B. Puncture skin tests
C. RAST testing
D. Total IgE levels
E. Patch testing

Answer: B. Identification of specific allergen sensitivity by skin testing is more rapid (20 minutes) and of greater sensitivity than RAST testing. A nasal smear positive for eosinophils would support the diagnosis of allergic rhinitis, but without the additional information offered by skin testing (e.g., allergen identification followed by specific treatment). A total serum IgE may be elevated above the normal range and support the presence of an atopic disease, but does not offer specific information. Lastly, patch testing is best used for contact-mediated sensitivities (e.g., nickel allergy) and does not involve an IgE-mediated allergic mechanism.

Q.4. Which of the following is considered appropriate management for a patient with a history of bee-sting anaphylaxis?
A. Prescription of auto-injectable epinephrine upon discharge
B. Referral to an allergist for specific bee venom skin testing
C. Serum β-tryptase measurement
D. All of the above
E. None of the above

Answer: D. A prescription for self-injectable epinephrine would be appropriate in this case given the high (50% to 60%) risk that the patient may suffer a similar severe reaction with a future sting. The need for referral for skin testing is based on the experience that specific venom immunotherapy provides 98% protection against a future severe venom reaction. The demonstration of an elevated serum β-tryptase level (i.e., mast cell activation) within a few hours of a presumed anaphylactic event supports the diagnosis of anaphylaxis.

Q.5. A 34-year-old man who currently uses injection drugs (cocaine and heroin) is admitted to the hospital with bacterial endocarditis which requires penicillin and aminoglycoside treatment. The patient, however, has a history of a penicillin allergy. How would you proceed?
A. Major and minor penicillin skin tests
B. Infectious disease consultation for alternative agent
C. Desensitization to penicillin
D. Obtain specific details of previous penicillin reactions
**Answer:** **D.** A careful review of the drug allergy history is the most logical next step. Often the term drug “allergy” is applied to any untoward drug reaction including known medication side effects. If the history supports a classic, IgE-mediated process, then skin testing with the major and minor determinants is indicated. If the patient is positive to either determinant, a penicillin-based antibiotic is the drug of choice, and if no other alternative class of antibiotic is effective, drug desensitization should be performed.

**Q.6.** A 50-year-old male is at a party and eats fresh shrimp. Within minutes, he feels nauseated, flushed, and reports a tightening in his throat. Ten minutes later he describes difficulty in breathing and a 911 call is made. What blood test would assist the diagnosis in this case?

A. Total IgE  
B. Serum histamine  
C. Specific IgE to shrimp  
D. None of the above  

**Answer:** **C.** A total IgE level does not readily discriminate allergic and nonallergic persons. Serum histamine may be elevated acutely in anaphylaxis but is rapidly metabolized and therefore is not helpful, whereas a serum tryptase is elevated in many but not all food-based anaphylaxis. The detection of an elevated specific IgE level to shrimp would support the diagnosis of food allergy.

**Q.7.** A college freshman presents with a well-demarcated erythematous rash on her right wrist. She reports wearing a new wristwatch for the last week on her right wrist. What is the most likely diagnosis?

A. Atopic dermatitis  
B. Allergic contact dermatitis  
C. Urticaria  
D. None of the above  

**Answer:** **B.** The well-demarcated nature of the lesions argues for an exposure-related skin eruption such as seen with acute contact dermatitis. Urticaria is a transient lesion, whereas the distribution of a rash to a single wrist is not typical for atopic dermatitis. In allergic contact dermatitis, the eruptions tend to have a sharp margin, which reflects the causative agent, such as possibly nickel in the watch case.

**Q.8.** A 50-year-old female presents to the office for a possible sinus infection. A review of the chart reveals this is the sixth visit in the past year for sinusitis. After finishing a course of antibiotics, the patient had a recent sinus CT scan that was unremarkable. She typically responds to prolonged courses of antibiotics. The
patient also was hospitalized last year for pneumonia. What diagnosis is most likely in this patient?

A. Nasal polyps with chronic sinusitis
B. Allergic rhinitis
C. Common variable immunodeficiency
D. None of the above

**Answer: C.** In the case of nasal polyposis, one would expect to see opacification, which is persistent of sinus imaging. Allergic rhinitis would not typically respond to repeated antibiotic courses. In common variable immunodeficiency, patients often experience an increased number of sino-pulmonary infections that require repeated courses of antibiotics.

**Q.9.** A 22-year-old male presents for a new patient physical examination. His past history is notable only for aspirin allergy; exposure to aspirin results in dyspnea and hives. He has been to the emergency department for this allergy only once, three years ago. He was told at that time never to take aspirin or related products again. The immune response that resulted in this patient’s clinical presentation three years ago was due to which of the following?

A. IgE-mediated basophil stimulation
B. IgE-mediated mast cell stimulation
C. Both
D. Neither

**Answer: D.** Aspirin and other NSAIDs do not result in an IgE-mediated immune response. Although the clinical presentation of a patient with an aspirin- or NSAID-mediated immune reaction may be similar to that of a patient with an anaphylactic response, IgE does not trigger the immune reaction. Therefore, the immune response is termed an “anaphylactoid” response. Aspirin, NSAIDs, and radiocontrast agents can stimulate an anaphylactoid response in certain individuals.

**Q.10.** A 40-year-old woman presents with “hives.” She was in her usual state of health until six weeks ago, when she developed a pruritic rash over her extremities. She otherwise felt well, and had no febrile illness with the rash, no recent travel, and no sick contacts. She went to an emergency room, and was diagnosed with urticaria, and told to follow up with you. She has been taking diphenhydramine around the clock, with moderate relief of symptoms. She otherwise has no past medical history, and takes no medications or over-the-counter substances. She eats a consistent diet, and recalls no unusual or novel foods. Physical exam confirms urticaria. Management at this point includes all of the following except
A. Hepatitis B and C serologies
B. Cryoglobulin assay
C. Bacterial throat culture
D. Antinuclear antibodies
E. Skin biopsy

**Answer: C.** This patient has urticaria. Urticaria may result from medications, certain foods, physical triggers (heat, cold, pressure), or underlying disease. Chronic urticaria is defined as urticaria present for greater than six weeks. Autoimmune thyroid disease is associated with urticaria, as are infections with certain viruses (e.g., hepatitis B or C, as noted in choice A). Autoimmune disease, such as systemic lupus erythematosus or other forms of vasculitis, may result in urticaria; any patient with urticaria lasting over 72 hours should have a skin biopsy performed, and ANA testing is recommended (answers D and E). Cryoglobulinemia, either essential or secondary to other causes (e.g., hepatitis C) may result in chronic urticaria, as noted in choice B. Bacterial throat culture has no role in the evaluation of the patient with chronic urticaria as bacterial throat infections are not associated with the development of urticaria.

**Q.11.** A 37-year-old woman presents for follow-up. On her last visit, she had streptococcal pharyngitis, and was treated with penicillin. Three days into therapy, she developed urticaria, so penicillin was discontinued, and erythromycin was used. She completed her course of antibiotics, but had nausea with erythromycin. You arrange skin testing for penicillin allergy, which comes back negative. Which one of the following statements is true?

A. If penicillin is administered in the future, she is likely to develop urticaria
B. First-generation cephalosporins should be used as a substitute for penicillin
C. Imipenem can safely be used in patients that are allergic to penicillin
D. Patients allergic to penicillin should not be administered sulfonamides
E. Aztreonam should be avoided in patients with penicillin allergy

**Answer: A.** Allergic reaction to penicillin is among the most common adverse drug reactions. Skin testing is often used to evaluate the patient with an adverse drug reaction. Skin testing detects the presence of specific IgE, and does not predict non-IgE-dependent reactions. Only 10% to 20% of penicillin “allergic” patients will have an IgE-mediated response. Therefore, skin testing will be normal (i.e., negative) in the majority of patients who develop an “allergic” reaction to penicillin. Considering these statistics, this patient is more likely to have a recurrent reaction to penicillin than to be among the 10% to 20% of penicillin-allergic patients who have positive skin testing. Cross-reactivity of cephalosporins and penicillins ranges from 6% to 30%, but is less common with second- and third-generation cephalosporins. First-generation cephalosporins should not be
used in penicillin-allergic patients. Imipenem also cross-reacts with penicillin, and should be avoided in patients allergic to penicillin. Aztreonam and sulfonamides do not cross-react with penicillin.

CHAPTER 70: GENETICS FOR THE INTERNIST

Q.1. A 52-year-old man presents with fatigue, arthralgia, vague abdominal pain, and decreased libido. He has mild dyspnea on climbing two flights of stairs. Testosterone is mildly low, transaminases are normal, serum ferritin is 512, and transferrin saturation is 72%. Echocardiogram shows an ejection fraction of 40%. DNA testing confirms homozygosity for the C282Y mutation of the HFE gene. Which of the following is most likely to occur or persist with therapeutic phlebotomy?

A. Anemia
B. Arthralgia
C. Cardiomyopathy
D. Diabetes
E. Hepatic cirrhosis

**Answer: B.** Most patients with hereditary hemochromatosis have substantial iron stores and tolerate several months of weekly phlebotomy without developing anemia. Cardiomyopathy, transaminase elevations, fatigue, and general nonspecific symptoms usually improve as iron stores are depleted. However, arthralgia (correct Answer B) and endocrine insufficiencies often continue despite adequate phlebotomy. Additional organ failure (such as diabetes and cirrhosis), if not present at the time of initial diagnosis, is prevented by iron depletion therapy.

Q.2. A 39-year-old man is diagnosed with hereditary hemochromatosis due to mutation in the HFE gene. His unrelated wife of Northern European descent asks about the chance that their son is genetically affected. Which of the following is the best estimate of the likelihood that both of their son’s HFE alleles are mutated?

A. Nearly 0%, but he is a carrier
B. Approximately 5%
C. Approximately 10%
D. 25%
E. 50%

**Answer: B.** Hereditary hemochromatosis is inherited in an autosomal recessive pattern. The affected man must be homozygous and can only pass along a mutated copy of the gene to his children, so all must at least be carriers. However, because the condition is so common among those of Northern European descent, the chance of both their son’s HFE alleles being mutated is approximately 5%.
descent, there is a 10% chance that his wife is a carrier. If so, then 50% of their children will inherit a mutated copy of the gene from her as well, and will therefore be genetically affected (regardless of their current iron levels or clinical status). The correct answer of 5% (choice B) is calculated by multiplying the 10% chance that his wife is a carrier by the 50% chance that a carrier parent (i.e., the wife) passes the mutated gene to her child.

**Q.3.** A 33-year-old woman in good health has the following family history (Fig. 70Q-1). Which of the following is the best assessment of her family colon cancer history?

A. Attenuated familial adenomatous polyposis  
B. Familial adenomatous polyposis  
C. Familial colon cancer  
D. Hereditary nonpolyposis colon cancer  
E. Late-onset sporadic (random) colon cancer

**Answer: C.** Familial adenomatous polyposis and attenuated familial adenomatous polyposis present with dozens or hundreds of polyps, with cancer onset much earlier than the 60s or 70s. This family history is suggestive of hereditary non-polyposis colon cancer, but does not meet clinical diagnostic criteria. However, the clustering of her mother’s adenoma under age 50 with her grandfather’s and great-aunt’s colon cancer is statistically unlikely to be a random association. This most likely represents multifactorial familial colon cancer (correct choice C).

**Q.4.** A 45-year-old woman has type 1 neurofibromatosis with multiple café au lait macules and dermal neurofibromas. She does not have any plexiform neurofibromas. To allay her anxiety, another physician ordered a cerebral MRI two years ago, which revealed several unidentified bright objects and some thickening of the right optic nerve. Her vision and neurologic examination have been normal, and she does not have proptosis. She is otherwise in good health, but has recently developed hypertension. Which of the following is the most likely cause of her hypertension?

A. Coarctation of the aorta  
B. Enlarging intracranial lesion  
C. Essential hypertension  
D. Pheochromocytoma  
E. Renal artery stenosis

**Answer: C.** Hypertension occurs at increased frequency in patients with neurofibromatosis type 1 (NF1), but is usually essential (correct choice C). Aortic coarctation, pheochromocytoma, and renovascular hypertension must be
considered and ruled out, but are less common than essential hypertension. The findings on cerebral MRI are common in NF1 and usually have no clinical consequence.

**Q.5.** An otherwise healthy 45-year-old woman has not been sleeping well due to anxiety about developing breast cancer. Her paternal aunt died of metastatic breast cancer at age 50, and her 42-year-old first cousin (the aunt’s daughter) was recently diagnosed with the disease through screening mammography. She desires genetic testing to see if she is at risk. Which of the following statements regarding genetic (DNA) testing is most correct?

A. Genetic testing is unnecessary because the breast cancer is on the paternal side and does not increase her risk
B. A negative genetic test would be reassuring that her chance of developing breast cancer is less than 5%
C. Finding an abnormality in her BRCA1 gene implies up to an 80% chance that she will develop breast cancer
D. Her cousin should be tested first
E. Her father should be tested first

**Answer: D.** For genetic testing in an unaffected person, the closest available affected relative should be tested first (in this case, the cousin). This establishes what, if any, detectable genetic mutation is present in the family. Testing her father is inappropriate, since it is not known whether he is carrying the same genetic predisposition as the aunt and cousin. However, familial breast cancer is equally likely to be transmitted through the mother or the father. Genetic testing is subject to both false positives (some DNA changes do not cause disease) and false negatives (some DNA changes cannot currently be detected). Even a true negative test does not give complete reassurance, as the lifetime prevalence for sporadic breast cancer is roughly 12%. Certainly, genetic testing may increase her anxiety, but the benefits may outweigh the risks. For this reason, genetic counseling by a fully informed professional should precede genetic testing.

**Q.6.** Which of the following is a true statement regarding inheritance of genetic disorders?

A. A 30-year-old man with polycystic kidney disease may have sons affected with the disorder, but his daughters will be spared
B. A 35-year-old man with Marfan’s syndrome has a 50% chance of having an affected son
C. A 23-year-old woman with cystic fibrosis has a 100% chance of passing the disease to her daughter
D. A 28-year-old man with hemophilia A has a 50% chance of having an affected son.

E. A 28-year-old woman with sickle cell anemia has a 25% chance that her daughter will also have sickle cell anemia.

**Answer:** B. To answer this question one must be familiar with the inheritance patterns of common, single-gene genetic disorders. Both polycystic kidney disease and Marfan’s syndrome are autosomal dominant disorders, and each patient has a 50% chance of having an affected child (son or daughter). Cystic fibrosis and sickle cell anemia are autosomal recessive disorders. All children of affected patients must inherit one mutant allele (thus being carriers), but will not be affected unless the other parent is also a carrier. The 25% risk for autosomal recessive conditions applies when both parents are carriers; it increases to 50% if one parent is affected and the other is a carrier. Hemophilia A is an X-linked disorder; male-to-male transmission does not occur.

**Q.7.** A healthy 31-year-old man is concerned about the chance of having a child with cystic fibrosis. His brother died from cystic fibrosis, and both of his parents are known to be carriers. Which of the following represents the chance that he is also a carrier of cystic fibrosis?

A. 67%
B. 50%
C. 33%
D. 25%
E. 5%

**Answer:** A. Cystic fibrosis is an autosomal recessive condition. If both parents are carriers, each child has a 1 out of 4 chance of being affected, a 2 out of 4 chance of being a carrier, and a 1 out of 4 chance of being a noncarrier. However, since the patient is known not to be affected with cystic fibrosis, there are only three possible choices, two of which result in him being a carrier (2 out of 3, or 67%). In a Punnet square, the calculation looks like this [Fig. 70Q-2]:

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**CHAPTER 71: COMPLEMENTARY AND ALTERNATIVE MEDICINE**

**Q.1.** A 54-year-old woman with a history of recently diagnosed breast cancer comes to see you before her second round of chemotherapy. She reports that she had terrible nausea, vomiting, and fatigue with the first round and was wondering what you thought about acupuncture. Which of the following is correct regarding this modality?
A. Given the risk of transmission of hepatitis B, hepatitis C, and HIV with acupuncture needling, it should be avoided
B. Given the risk of cellulitis with acupuncture needling, it should be avoided
C. The most common side effect from acupuncture therapy is organ puncture
D. It may add to the fatigue that she experiences, especially within the first few hours after each treatment
E. It could be useful in this setting, but it carries a risk of significant bleeding and/or hemorrhage

**Answer: D.** Acupuncture has been proven to be quite safe in the hands of experienced practitioners. In the United States transmission of infection through needling is rare because disposable needles are routinely used. Organ puncture and bleeding are also quite rare and have usually been linked to improper training of the practitioner. Acupuncture is thought to be useful for postoperative nausea and vomiting but may cause localized pain, minor bleeding at the insertion site, fatigue, and occasionally vasovagal syncope.

**Q.2.** A 34-year-old woman presents to your office to discuss her weight. She is obese and has tried a number of fad diets with varying success. She continues to walk three to four days per week for an hour at a time. On her request, you discussed the prescription weight loss medication Orlistat with her during her last visit, but she realized that she could not afford it and did not want to deal with potential side effects. She returns today with a printout for a nonprescription weight loss remedy called *Blubberwacker 2000,* which consists of a combination of various herbs. The advertisement states that it is “100% natural” and “clinically proven to be safe and effective.” You decide that you want to discuss supplement and drug regulation with her so that she can make an informed choice. Which of the following statements is correct?

A. *Blubberwacker 2000* has not been evaluated by the Food and Drug Administration (FDA) prior to being marketed while Orlistat has
B. *Blubberwacker 2000* has been evaluated by the FDA prior to being marketed but the efficacy and safety data required was much less than for Orlistat
C. The efficacy and safety data required by the FDA prior to marketing of *Blubberwacker 2000* is equivalent to Orlistat
D. The efficacy and safety data required by the FDA prior to marketing of *Blubberwacker 2000* is not equivalent to Orlistat but the safety data required is equivalent to nonprescription medications such as diphenhydramine

**Answer: A.** After the passage of the Dietary Supplement Health and Education Act (DSHEA) of 1994, botanicals, vitamins, and other biologics no longer required efficacy and safety data prior to marketing. This is in stark contrast to
drugs (both prescription and nonprescription), which require extensive efficacy and safety trials prior to reaching the shelves.

Q.2. A 58-year-old woman with a history of hypertension and atrial fibrillation presents for a physical. On questioning, she reports a number of complaints including neck pain, menopausal symptoms, depression, and arthritis of the knees. Her current medications include lisinopril, hydrochlorothiazide, and warfarin. The patient does not like taking medications and is looking for natural ways to improve her symptoms. Which of the following CAM modalities should be avoided in patients taking warfarin?

A. Biofeedback
B. Chiropractic
C. Glucosamine sulfate
D. Black cohosh
E. Both B and D should be avoided

**Answer: B.** Given that chiropractic therapy involves vigorous thrusting of spinal axis, it should be avoided in patients with coagulopathies of any kind. Biofeedback is a mind-body modality that uses monitoring (e.g., electroencephalograms, electrocardiograms, blood pressure) to assist in voluntary control of physiologic processes. It is not contraindicated in patients on warfarin. Although a number of supplements including St. John’s Wort, gingko biloba, and garlic may interfere with INR, glucosamine and black cohosh have not been shown to affect warfarin metabolism.

Q.3. Consumption of high-dose (>2 grams/day) fish oil has been shown to have which of the following effects on the lipid profile?

A. Lowers HDL
B. Lowers LDL
C. Lowers triglycerides
D. Both B and C are correct
E. Both A and C are correct

**Answer: C.** Doses of fish oil greater than 2 grams per day have been shown to decrease triglyceride levels in a dose-dependent manner while having little effect on HDL and LDL. At higher doses, a 5% to 10% *increase* in LDL levels can be seen.
CHAPTER 72: SUBSTANCE ABUSE

Q.1. A 43-year-old man presents to your primary care office for his routine annual physical. During the visit, he reports having decreased libido and fatigue that he feels is related to stress at work. He also describes increased tension. He asks your opinion regarding a trial of sildenafil. His past history is unremarkable other than one episode of palpitations that resolved on its own a few months ago. Physical examination is notable for an elevated blood pressure of 148/98. He has an ecchymosis on his left flank that he attributes to a fall on a slippery surface a few weeks ago. Otherwise his examination is unremarkable. Based on this presentation, what condition(s) would you like to rule out with more information?
A. Essential hypertension
B. Depression with an anxiety component
C. Drug/alcohol abuse
D. A and C
E. All of the above

Answer: E. Patients with an active substance abuse disorder can present with symptoms that both mimic and are associated with many different physical and mental health conditions. Alcohol abuse and dependence are associated with hypertension. Many with alcohol dependence also have comorbid depression and anxiety disorders. Finally, alcohol and drug abuse are commonly associated with some of the findings in this presentation, such as impotence and sexual dysfunction and non-sports-related adult traumas. Because hypertension and depression can coexist with substance abuse, as well as contribute to or be the result of drinking and drug use, all the conditions listed should be considered.

Q.2. To rule out substance abuse in the patient in the previous question, what is the most important additional information you would need to obtain?
A. Blood alcohol and urine toxicology screen
B. CAGE questionnaire
C. Both
D. Neither

Answer: B. Alcohol abuse and dependence are diagnosed both by the absolute quantity of weekly intake and the effect that intake has on normal functioning and interpersonal relations. More than 14 drinks a week for men and 7 drinks a week for women are warnings that the patient may be a hazardous drinker. The CAGE questionnaire is a useful screening instrument that is easy to administer in a primary care setting. It assesses the effect alcohol or drugs may have on a patient’s day-to-day functioning. The more positive answers a person gives, the more likely he or she has a substance use disorder. Blood alcohol and
urine toxicology screens are not helpful because of the limited window for when someone will test positive. They are also nonspecific and time-dependent in terms of chronicity of use or quantity ingested.

**Q.3.** You diagnose a 45-year-old male patient with alcoholism. He takes your advice, completes a 28-day program, and begins attending Alcoholics Anonymous meetings. He returns to see you six weeks after the initial visit. He is appreciative of your help but is struggling to maintain sobriety while balancing the stresses of home and work life. He also reports continued cravings for alcohol, particularly when his office plans Friday happy hour social functions. What is your advice to him?

A. “Twenty-eight days was not enough. Return to an inpatient treatment program for at least another month and possibly six months.”

B. “The stresses you are experiencing are normal and relapses are a part of recovery. Hang in there and keep attending meetings.” You also prescribe naltrexone 50 mg daily to help with the cravings.

C. “I’m glad we got through this problem. Now let’s get back to focusing on your medical issues.”

D. “The stresses you are experiencing are real and interfering with your normal functioning.” You prescribe a short course of low-dose benzodiazepines to help with the anxiety and encourage him to keep up the good work.

**Answer: B.** Relapse is extremely common in recovery and poses unique challenges for the primary care provider. It is important to be supportive and encouraging and to acknowledge and offer help with these issues. Naltrexone has been reported to be useful in patients with a history of alcohol abuse in reducing subsequent cravings. If it is prescribed, you will need to first check for liver dysfunction. It should also be avoided in pregnant women.

**Q.4.** A 57-year-old man is found wandering on the street and is brought to the emergency room. He is disoriented, confused, and apathetic. On physical examination, he is disheveled and smells of alcohol. Blood pressure is 145/90, pulse is 94, and respirations are 16. His skin is notable for several telangectasias, and he is mildly ataxic. Which of the following is not an appropriate initial step in his evaluation?

A. Lumbar puncture

B. Head CT

C. Administration of dextrose followed by thiamine

D. Complete blood count

**Answer: C.** The patient may have Wernicke’s encephalopathy, which consists of the triad of confusion, ataxia, and ophthalmoplegia in chronic alcohol users. The
initial management is the administration of thiamine; this is followed by dextrose. Administration in the reverse order may worsen Wernicke’s through altered glucose metabolic pathways. Certainly, performing a lumbar puncture, head CT, and a complete blood count are other reasonable options in any patient who presents with confusion.

Q.5. A 34-year-old female presents to your primary care office for a new patient visit. She has a history of hepatitis C, systemic lupus erythematosus, fibromyalgia, and depression. After a detailed history, she reveals to you that she still uses cocaine a couple of times a week with her boyfriend but is interested in quitting because it causes her asthma to flare. She has previously participated in several outpatient treatment programs but has relapsed shortly after completing them. What would your next step be?
A. Begin fluoxetine
B. Provide feedback on the risks to her of continued cocaine use
C. Refer her to an inpatient substance abuse treatment program
D. Explore a menu of treatment options and alternatives with her

Answer: D. The patient is likely in the determination phase of readiness to change her drug use behavior but has not yet taken action to quit. Starting an antidepressant might treat an underlying depression but would not address the cocaine use. A referral to an inpatient substance abuse treatment program might be appropriate but the patient may not follow through with this recommendation unless she has achieved enough self-efficacy to make her own decision regarding this type of treatment. A FRAMES approach to addressing her interest in quitting is an appropriate intervention for this encounter, but she already sees the health risks of continued cocaine use. Exploring a menu of treatment options and alternatives, that could include an inpatient program, would be the best next step at this point to help the patient move to quit.

Q.6. A 55-year-old man is brought to the emergency department by his niece who found him down on the floor of his kitchen. He is somnolent and barely arousable, with shallow respirations at 7/min, blood pressure of 90/60, and a heart rate of 58 bpm. After establishing an airway, what is the most appropriate next step?
A. Administer naloxone 0.4 mg IM
B. Send off a urine sample for toxicology screening
C. Obtain an EKG
D. Obtain blood sample for serum chemistry testing

Answer: A. Although the differential diagnosis for severe respiratory depression is broad, one of the early goals of management is to reverse any potential toxic ingestions. An opioid overdose, whether from heroin or prescription
opioids, is easily reversed with naloxone. An initial dose of 0.4 mg can be followed by subsequent doses if an incomplete response was achieved. Patients require frequent assessments with possible repeat naloxone doses until their sensorium remains clear. Sending off a urine sample for toxicology screening, obtaining an EKG, and testing serum chemistries are all appropriate after establishment of an airway and the initial dose of naloxone has been administered.

Q.7. The patient in the previous question has recovered from the opioid overdose and is now seeing his primary care doctor for a follow-up visit. Further history reveals that he recently came home from an inpatient detoxification program where he had weaned off large amounts of daily heroin. He was still fatigued, irritable, and was having a difficult time sleeping so he took a handful of old oxycodone pills he found to fall asleep. He has no other medical problems, is divorced with no children, but his niece lives next door and looks in on him from time to time. What would be the most appropriate next step?

A. Prescribe a sleeping agent such as Ambien
B. Refer him to a methadone maintenance treatment program
C. Discuss relapse triggers and ways of coping with cravings
D. Refer him to psychiatry for evaluation of depression

Answer: C. Although the patient recently completed an opioid detoxification program, he was discharged with symptoms suggestive of physiologic withdrawal that may become protracted and last for 6 to 12 months. As self-medication for this, the patient relapsed by taking an unknown amount of oxycodone and overdosed. Prescribing a sleeping medication at this point might provide the patient with some short-term relief but it does not address the underlying opioid dependence, which is at the root of his difficulties. In addition, although he may have an underlying mood disorder, at this point the focus should be on preventing any further relapses and then consider referring him to psychiatry or screening for depression. The patient might benefit from methadone or sublingual buprenorphine to help maintain abstinence from heroin but those are treatment options that may not be immediately available. Discussing relapse triggers and ways of coping with cravings, such as attending Narcotics Anonymous groups or calling his niece, are relapse prevention interventions that can be provided immediately in the office.

Q.10. A 62-year-old female presents to your primary care office complaining of falls over the last two years. She recently was hospitalized for a severely sprained right wrist after a fall she sustained while walking down her front steps. On physical examination her blood pressure is 145/96, heart rate 87 bpm, and she weighs 132 lbs. She ambulates with a cane. Her neurologic exam is notable for an abnormal
heel-knee-shin test but intact finger-to-nose testing. What is the most likely diagnosis?
A. Alcoholic cerebellar degeneration
B. Benzodiazepine intoxication
C. Paraneoplastic cerebellar degeneration
D. Cobalamin deficiency

**Answer:** A. The patient exhibits typical signs of alcoholic cerebellar degeneration; gait abnormalities causing falls, slightly elevated blood pressure from chronic alcohol use, abnormal lower extremity cerebellar involvement but more intact upper extremity findings. Cognitive function is often spared in alcoholic cerebellar degeneration. Benzodiazepine intoxication may mimic this diagnosis but cognition may be more affected and symptoms are typically reversible with cessation of the hypnotic drugs. Paraneoplastic cerebellar degeneration can be associated with small cell lung, breast, and ovarian cancer, Hodgkin’s lymphoma, or Lambert-Eaton myasthenic syndrome. Patients with this disorder typically have the acute onset of dizziness, nausea, and vomiting, followed by gait abnormalities.

**Q.11.** A 42-year-old woman presents to your office for evaluation of chronic insomnia. She has recently sustained a fracture to her left wrist while falling down the stairs. Several months ago, she sprained her ankle in a separate fall. She denies any difficulty with mood or appetite and describes her energy as fair. She does experience frequent colds each winter. Her examination is unrevealing. She is married and denies any difficulty with her spouse. She describes herself as a social drinker and denies illicit drug use. She is taking no medications. The most appropriate initial evaluation is
A. Detailed questions regarding possible cerebellar disorders
B. CAGE questionnaire
C. Prescription of diphenhydramine for sleep
D. Serum and urine toxicology screens
E. Prescription of zolpidem for sleep

**Answer:** B. The patient has several warning signs in her history that she may have an alcohol abuse problem. She has insomnia, possible evidence of immune dysfunction manifested as frequent colds, and a history of falls. Further questioning revealed that her definition of social drinking was two to three mixed drinks per evening and even more on weekends. There is nothing in her history or physical to suggest a cerebellar disorder. It would not be appropriate to start a medication for insomnia without attempting to determine the underlying etiology. Serum and urine toxicology screens are not useful due to the narrow window in
which they are positive. One could easily miss the diagnosis of substance abuse using these alone.

Q.12. A 19-year-old college student presents to the emergency department on Monday morning with symptoms of persistent palpitations and lightheadedness for the last two hours. She is on no medications and has no prior medical problems. It was homecoming weekend, and she admits to drinking beer all day Saturday and Sunday. Her blood pressure is stable at 120/85. Her heart rate is 145 bpm. What is the best initial treatment of her underlying disorder?
A. Intravenous procainamide
B. Heparin followed by warfarin
C. Aspirin
D. Intravenous diltiazem
E. Intravenous lidocaine

Answer: D. This patient presents with an episode of binge drinking and probably is in atrial fibrillation (“holiday heart”). Her vital signs are stable. The first step would be to slow her heart rate by using intravenous diltiazem. This will alleviate her symptoms of palpitations. Atrial fibrillation related to heavy alcohol ingestion is usually self-limited. Intravenous anti-arrhythmics, such as procainamide and lidocaine, are not needed. Likewise, as long as the patient avoids future episodes of binge drinking and atrial fibrillation, she will not need chronic antiplatelet or anticoagulation therapy to prevent stroke.

Q.13. A long-time patient of yours returns to the office for a physical. He is quite irritable that you are running 15 minutes late and has been somewhat disruptive in the waiting room. On examination, he has a new elevation in his blood pressure to 150/90. His breath smells of alcohol. On questioning, he reports often needing an “eye-opener” morning drink to get the day going and is really getting tired of people telling him he needs to cut back on his alcohol consumption. Based on this information, your advice to the patient should be
A. “You have a drinking problem that is at the root of your other problems. Go see a psychiatrist and get some help. You are welcome back into my practice once this problem is treated appropriately”
B. You have a drinking problem, along with hypertension and probably an anxiety disorder. I’m going to start you on nifedipine XL 30 mg daily and sertraline. I’ll see you back in one month”
C. “You have a drinking problem. Here is a prescription of disulfiram 50 mg to be taken orally each day. This will help you stop drinking. If you drink while taking this medicine you will get violently ill”
D. “You have a drinking problem that may be contributing to the other problems we have identified on this visit. You need some professional help. I am going to make a referral, but I also want to see you back here in two weeks”

**Answer: D.** When discussing a substance abuse disorder with a patient, it is best to try to follow the principles behind motivational interviewing and brief interventions as much as possible. Be direct with the patient in identifying that they have a problem and be clear in the advice that you give to him or her. Similarly, it is important that you impress to your patient the self-responsibility that they have for addressing this problem while being empathic and encouraging. Finally, it is important to make sure that early follow-up is included so that you can monitor progress and be supportive, particularly in early stages of recovery when relapse is so common. (Answer A is not supportive; B treats only the obvious medical problems and not the underlying alcoholism; C does not provide the patient with a sense of self-responsibility, nor does it provide the patient with professional help.)

**Q.14.** A 26-year-old man presents to the emergency room with symptoms of diffuse myalgias and tea-colored urine. He has a fever of 39.2°C. His blood pressure is 140/95 and heart rate is 105 bpm. His muscles are diffusely tender. EKG reveals sinus tachycardia and urinalysis shows large hemoglobin but no RBCs. His urine toxicology is most likely to show which of the following substances?

A. Heroin  
B. LSD  
C. Benzodiazepines  
D. Alcohol  
E. Cocaine

**Answer: E.** Given the muscle pains, tea-colored urine, and fever this patient most likely has rhabdomyolysis. Of the substance listed, cocaine is the most common cause. Heroin and alcohol can also cause rhabdomyolysis, but usually in patients who have been found unconscious for a prolonged period of time. LSD and marijuana do not cause it.

**Q.15.** Which withdrawal syndrome is potentially life-threatening?

A. Alcohol  
B. Cocaine  
C. Heroin  
D. Marijuana  
E. LSD
**Answer:** A. Only alcohol and benzodiazepine withdrawal syndromes are potentially life threatening, typically related to the delirium tremens (DTs) and complications from withdrawal seizures. Patients who have had DTs or seizures in the past are more prone to having them in the future and need to be monitored more closely. Heroin withdrawal, while extremely uncomfortable, is not life-threatening. There is no withdrawal syndrome with marijuana or LSD.

**CHAPTER 73: PREOPERATIVE EVALUATION**

**Q.1.** Which one of the following statements concerning cardiovascular risk is true?
A. Patients with Wenckebach (Mobitz I) second-degree heart block should have an intraoperative pacing wire placed because complete heart block perioperatively is common in this population
B. A patient who has a myocardial infarction should have elective surgery postponed for at least six weeks
C. Aortic insufficiency, even if severe, is well tolerated during surgery
D. The risk of perioperative myocardial infarction (MI) in patients who have had an MI remains elevated for up to three months post-MI
E. All antihypertensives should be held on the day of surgery

**Answer: B.** Patients with a prior history of MI have an increased risk of perioperative MI for at least six weeks, and all elective surgeries should be postponed until at least six weeks following myocardial infarction. Elective surgery is also postponed six weeks following coronary stent placement. Patients with first-degree and Mobitz I heart block do not need special operative interventions, but patients with Mobitz II or complete heart block require intraoperative pacing. Aortic valve disorders (particularly stenosis, but also insufficiency) are tolerated poorly during surgery. All antihypertensives (except diuretics) should be given on the day of surgery.

**Q.2.** Which one of the following statements concerning perioperative β-blockers is true?
A. They should be discontinued in all patients for one week following surgery
B. They should be discontinued in all patients who are on them for one week leading up to surgery
C. They should be given to all patients for one week following surgery
D. They should be considered for patients with known or suspected CAD for administration perioperatively
E. They are poor agents for control of preoperative hypertension

**Answer: D.** β-blockers have been shown to reduce the risk of perioperative myocardial infarction in selected patients undergoing noncardiac surgery,
especially when undergoing intermediate- or high-risk surgery. This benefit has been shown to persist for at least two years postoperatively and should be considered for patients with known or suspected coronary artery disease. All antihypertensives should be continued on the day of surgery, with the exception of diuretics, which are held on the morning of surgery. β-blockers are the agent of choice for control of perioperative hypertension. Patients with known or suspected (i.e., two or more cardiovascular risk factors) should be treated with β-blockers perioperatively when undergoing intermediate- or high-risk surgery.

Q.2. The following are series of operative procedures. In which series are the operative procedures correctly listed from one with the lowest risk to one with the highest risk?
A. Cataract surgery < total hip replacement < mastectomy
B. Mastectomy < prostatectomy < femoral/popliteal bypass
C. Laparoscopy < aortic valve replacement < carotid endarterectomy
D. Arthroscopy < emergency colectomy < hysterectomy
E. Mastectomy < pulmonary lobectomy < cataract surgery

**Answer:** B. Surgical procedures are divided into low risk (<1% risk of death), intermediate risk (1%-5% risk of death), and high risk (>5% risk of death). Low-risk procedures include superficial surgeries, breast surgery, endoscopic procedures, and cataract surgery. Intermediate-risk procedures include prostatectomy, orthopedic surgery, intra-abdominal and intrathoracic surgery, carotid endarterectomy, and head and neck surgery. Vascular surgery, including aortic or major vascular surgery (but excluding carotid endarterectomy), emergency surgery, and prolonged surgery are all high-risk surgeries. Only choice B lists surgeries from low risk to high risk.

Q.3. Which of the following statements about noninvasive cardiac testing (e.g., dobutamine echocardiogram) is true?
A. A patient with minor clinical risk (such as advanced age) may proceed directly to surgery without cardiac testing, even if functional status is poor
B. Low-risk surgical procedures (such as endoscopic surgery) do not need noninvasive cardiac testing, even if functional status is poor
C. High-risk surgical procedures always require noninvasive cardiac testing before surgery
D. A patient with high clinical risk (e.g., decompensated CHF) can proceed with low-risk surgery without noninvasive cardiac testing
E. Noninvasive cardiac testing is required for all intermediate- and high-risk surgical patients, regardless of clinical or functional status
**Answer: B.** The majority of patients being evaluated for elective surgery will have risk assessment completed by reviewing their clinical risk predictors, their functional status, and the procedure planned. In some clinical scenarios, risk assessment will require noninvasive cardiac testing. The most common reason for wanting this testing is poor functional status (defined as the inability to perform at least 4 METs of activity without symptoms). Low-risk surgical procedures, however, present such a low level of cardiovascular stress that noninvasive cardiac testing is of no clinical use, even when functional status is poor. A patient with minor clinical risk (choice A) typically does not require noninvasive cardiac testing, unless the patient is undergoing high-risk surgery; in that instance, patients with minor clinical risk and poor functional status should undergo noninvasive cardiac testing. High-risk surgical procedures do not require noninvasive cardiac testing in a patient with minor clinical risk and good functional status (therefore choice C is incorrect). A patient with high clinical risk should not undergo elective surgery; it should be postponed until risk has been lowered (therefore answer D is incorrect). Intermediate-risk surgical procedures require noninvasive cardiac testing only if clinical risk is intermediate and functional status is poor.

**Q.4.** A 64-year-old woman with diabetes, hypertension, and depression presents for preoperative evaluation. She is to undergo excision of a lung mass. Current medications are glyburide 10 mg daily, lisinopril 30 mg daily, hydrochlorothiazide 25 mg daily, and sertraline 100 mg daily. When instructing the patient about what to do with these medications on the morning of surgery, she should be told the following:

A. Hold all medications on the morning of surgery
B. Take only the hydrochlorothiazide on the morning of surgery
C. Take all of your medications, but take only half of the glyburide dose
D. Take all of your medications except the hydrochlorothiazide, which should be held
E. Take only the lisinopril on the morning of surgery

**Answer: E.** There are general principles used in managing medications perioperatively. All antihypertensives are given on the morning of surgery, with the exception of diuretics (which are held on the morning of surgery). Oral hypoglycemics are held on the morning of surgery (and metformin is held two days preoperatively). CNS active medications, including antidepressants, are typically held on the day of surgery. For this patient, the only medication she should take on the morning of surgery is lisinopril.

**Q.5.** Which of the following types of valvular heart disease is associated with the highest intraoperative risk?

A. Mitral stenosis
B. Mitral regurgitation
C. Aortic stenosis
D. Aortic regurgitation
E. Tricuspid stenosis

**Answer: C.** Aortic stenosis is poorly tolerated during surgery, due to pressure changes and volume shifts. Moderate and severe mitral stenosis is also poorly tolerated during surgery, albeit slightly better than aortic stenosis.

**CHAPTER 74: IMMUNIZATION AND PREVENTION**

**Q.1.** Which of the following is *not* an indication for the pneumococcal vaccine?
   A. Asplenia
   B. Native American heritage
   C. Age 50 years and older
   D. Diabetes
   E. Congestive heart failure

**Answer: C.** Currently, the influenza vaccine is recommended for all adults 50 years and older. The pneumococcal vaccine is recommended for adults 65 and older. All other items listed are indications for the pneumococcal vaccine.

**Q.2.** Which of the following is true regarding live attenuated vaccines?
   A. They confer lifelong immunity
   B. They can be safely given to immunocompromised hosts
   C. Tetanus, hepatitis B, and influenza are all examples
   D. They should not be given concurrently with other vaccines

**Answer: A.** Live attenuated vaccines are felt to confer lifelong immunity. They should not be given to immunocompromised hosts, and they can be given with other vaccines, just at different sites. Tetanus and hepatitis B are fractional protein-based vaccines, and the influenza vaccine is a killed whole pathogen.

**Q.3.** For which one of the following diseases can passive immunization with an immunoglobulin infusion not be given simultaneously with the vaccine for the disease?
   A. Varicella
   B. Hepatitis A
   C. Hepatitis B
D. Tetanus

Answer: A. The immunoglobulin preparation can be given with the vaccine for most diseases except when the vaccine is a live attenuated preparation. Of those listed, only varicella is a live attenuated vaccine.

Q.4. A 53-year-old man of Native-American heritage is seeing you for a routine physical. He is in good health and has no concerns. His family history is significant for his mother developing adult onset diabetes at age 47 years. He does not smoke or drink. His physical examination is normal. Which of the following should be used to screen for diabetes in this patient, based on screening guidelines?
A. Glucose tolerance test
B. Random glucose
C. Fasting glucose
D. Hemoglobin A1C
E. No diabetes screening should be performed

Answer: C. Although screening for diabetes is controversial, most current guidelines recommend serious consideration in high-risk patients such as this one. A random glucose may be helpful if markedly elevated (i.e., over 200), but a fasting glucose is more useful based on current ADA guidelines for diagnosing diabetes. Hemoglobin A1C testing has too much lab-to-lab variability to be a good screening test.

Q.5. A 38-year-old recent immigrant from Vietnam comes into the emergency room after cutting his foot on a nail. He does not recall receiving any vaccines as a child. Which regimen does he need?
A. Tetanus toxoid alone
B. One tetanus (dT) vaccine now
C. Two-shot dT vaccine series plus tetanus toxoid now, with first dT shot now
D. Three-shot dT vaccine series plus tetanus toxoid now, with first dT shot now

Answer: D. This patient has no history of prior immunization. He needs to be vaccinated with the primary three-shot series. However, at the time of this exposure he has no immunity and needs passive immunization with tetanus toxoid as well.

Q.6. A 67-year-old man presents for a routine physical. He has no complaints. He has no family history of heart disease. He is physically active and exercises extensively every day. He smoked briefly in college over 40 years ago. His physical exam is completely normal with a blood pressure of 108/70 and a normal
cardiac examination. Which of the following cardiac screening tests are indicated by USPSTF recommendations?
A. Total cholesterol and HDL measurement
B. Exercise stress testing
C. Ultrasound for abdominal aortic aneurysm
D. A and C
E. All of the above

Answer: D. This patient has no significant cardiac risk factors and at this time there is no indication for exercise stress testing. The USPSTF does recommend routine cholesterol measurement in men over 35. This patient smoked, and current USPSTF recommendations are to screen men between 65 and 70 who have ever smoked for abdominal aortic aneurysm.

Q.7. A 76-year-old woman presents to your office in October for a routine physical. She is a recent immigrant from Russia and is unsure about vaccines she has had, but believes that she has never been vaccinated for anything, not even in childhood. She is in good health. Which of the following would be the most appropriate vaccine regimen to give her?
A. MMR, tetanus series, pneumococcus, influenza
B. Varicella, Hepatitis B, oral polio, MMR
C. Enhanced inactivated polio vaccine (eIPV), tetanus series, pneumococcus, influenza
D. MMR, eIPV, pneumococcus, influenza
E. MMR, oral polio, pneumococcus, influenza

Answer: C. This patient has to receive routine primary vaccination series. She does not need MMR because she was born prior to 1957. Oral polio is not used, although she does need the eIPV vaccine. No risk factors for hepatitis B were given, so this is not indicated based on the information. She is over 65 so she should receive the pneumovax. She is over 50 and it is October so she should receive the flu vaccine. She should receive the tetanus primary series.

Q.8. A 19-year-old man presents to your office for a routine physical. He is a junior in college getting excellent grades. He admits to occasional alcohol use, but denies drug use or cigarette smoking. He is sexually active with a single partner for the last year and reports using condoms. His physical examination is normal. Which of the following interventions is statistically the most likely to yield benefit in terms of morbidity and mortality in this patient’s near future?
A. Counseling regarding safe sex
B. Counseling regarding alcohol abuse
C. Counseling regarding injury prevention
D. Meningococcal vaccine
E. Cholesterol and HDL measurement

**Answer: C.** In this age group, the intervention that is most likely to have an impact on the patient’s morbidity and mortality in the near future is the prevention of injury (seatbelts, firearm use, smoke detectors, etc.). The meningococcal vaccine can be considered, but will not be likely to impact the patient as much as injury prevention. Cholesterol measurement may be important for the future, but in the patient’s near future, it is not as important as injury prevention. Safe sex and alcohol counseling are important, but no red flags are listed for risky behavior with respect to these. Injury prevention is not mentioned in the information given (and is often neglected in encounters in this age group), but is statistically the most likely event to cause harm to the patient.

**Q.9.** A 45-year-old man presents to your office in July of this year for a routine physical. He is currently drinking two six-packs of beer a day, but has no other medical problems. He believes he received all of his routine childhood vaccinations, but doesn’t recall getting any other shots since then. Which vaccine combination makes the most sense for him?
A. Hepatitis A, hepatitis B
B. Pneumococcus, meningococcus, hemophilus influenzae
C. Pneumoccus, tetanus
D. Tetanus, influenza
E. Hepatitis A, hepatitis B, tetanus

**Answer: C.** This patient is likely alcohol dependent which is an indication for the pneumococcal vaccine. In addition, he should receive the tetanus vaccine because he hasn’t had it since childhood. July is not the appropriate time of year to give the influenza vaccine. There are no indications for the meningococcal or H. flu vaccines. If he has significant hepatic impairment it may be reasonable to give him the hepatitis A and B vaccines, but there is nothing in the case history that would suggest that other than his alcohol consumption.

**Q.10.** Which of the following is true of the MMR vaccine?
A. It should not be given if a patient has a prior history of measles as a child
B. Egg allergy is a contraindication
C. It should not be given during pregnancy, or within three months of the anticipated start of a pregnancy
D. Patients born prior to 1968 do not need to be vaccinated as they are considered immune
**Answer: C.** Because it is a live attenuated vaccine there is potential risk of vertical transmission to a fetus during pregnancy. A prior history of one disease does not contraindicate vaccination with MMR to confer protection against the other two organisms in the vaccine. Egg allergy is currently not felt to be a contraindication. Patients born prior to 1957 are considered immune. Patients born between 1957 and 1968 who received the first (ineffective) vaccine are not considered immune and need to be revaccinated.

**Q.11.** Which of the following is true regarding cervical cancer screening?
A. It is acceptable to perform Pap smears every three years if a woman is not at high risk
B. It is not necessary to screen women over the age of 65 by Pap smear
C. HIV-infected patients have the same screening recommendations for Pap smears as the general population
D. All women should begin having Pap smears at age 16

**Answer: A.** While not all guidelines agree, the USPSTF and ACP-ASIM agree that low-risk women can be screened every three years via a Pap smear. If a woman over 65 has no risk factors and has been regularly screened up to that point with no abnormal Pap smears then screening can stop. However, it is important to remember to perform Pap smears in women over 65 who have not had previous Pap smears done. HIV-infected patients need Pap smears every six months. Current recommendations are to start performing Pap smears at age 18 in sexually active women with a cervix.

**Q.12.** A 29-year-old man presents for a routine physical examination. He has no complaints and no significant past medical history. His family history is significant for his father having had a myocardial infarction at age 54. His mother developed lung cancer at age 52. He has a sister with hypothyroidism. The patient has been a smoker for the last seven years. His physical exam is completely normal. Which of the following screening tests would be supported by most guidelines and evidence?
A. Chest x-ray
B. Total cholesterol and HDL measurement
C. EKG
D. Exercise stress test
E. Thyroid stimulating hormone (TSH) measurement

**Answer: B.** Current recommendations are to begin screening for cholesterol in patients who have multiple risk factors at age 20. Screening chest x-rays are not recommended even in smokers. Screening EKGs and stress tests in
asymptomatic patients are not recommended. Routine TSH measurement in men is not recommended by any guideline.

CHAPTER 75: CLINICAL EPIDEMIOLOGY

Q.1. Match the following study description with the study design employed:

“To assess the benefits of sigmoidoscopy, we assessed the prior history of sigmoidoscopy in 352 adults with biopsy-confirmed colon cancer and in 704 individuals without cancer, all of whom were enrolled in our HMO from 1990 to 1995.”

A. Cross-sectional study
B. Case-control study
C. Prospective cohort study
D. Randomized clinical trial
E. Case series

Answer: B: This is a description of a case-control study. Cases of patients with biopsy-confirmed colon cancer were compared with controls (704 individuals without cancer); the history of prior sigmoidoscopy was compared in both.

Q.2. A study examines the relationship between self-report of a history of hypertension compared with a medical record review (the gold standard). The following data are collected:

What is the sensitivity of self-report in identifying a history of hypertension?

A. 37/43
B. 37/73
C. 36/73
D. 36/181
E. Cannot be ascertained from the data provided
F. None of the above

Answer: A. The first step is to identify the table’s yes/no structure. The gold standard “positive” is the top row, indicating all true positives. Sensitivity is “positive in disease.” To calculate sensitivity, one would ask, “Of all those with the disease identified by medical record review (n = 43), how many were called ‘positive’ by self-report (n = 37)?” The sensitivity is 37/43.

Q.3. In a randomized, controlled trial of intravenous IgG to treat chronic fatigue syndrome, 200 adults are assigned to IV IgG and 198 are assigned to IV saline.
The preparations appear similar, but the IgG causes a sensation of “arm burning” in 75% of recipients. A physician-conducted interview within 48 hours of the intervention reveals a 15% improvement in self-perceived fatigue in the IgG group compared with 7% in the placebo group (p = 0.02). The results are reported as a “significant and clinically important benefit of IgG in treating chronic fatigue syndrome.” In this study, which source of error represents the greatest threat to internal validity?

A. Bias
B. Chance
C. Decreased precision
D. Confounding
E. None of the above
F. Cannot be determined from the information given

**Answer: A.** The outcome is a subjective sense of decreased fatigue. The participants who received IgG felt a burning sensation and may be more likely to report a beneficial effect, thus biasing the observed outcome.

Q.4. A study investigates the performance of a new dipstick in diagnosing microalbuminuria (determined by the gold standard of timed overnight albumin excretion rate). The following data were obtained (trace is considered negative; more than a trace is considered positive)

Based on this study, what is true about the positive predictive value (PPV) of the dipstick in diagnosing microalbuminuria?

A. It is greater than the negative predictive value (NPV) of the dipstick
B. It is greater than the specificity of the dipstick
C. It decreases with increasing prevalence
D. It is equal to 250/700 = 0.36
E. It cannot be calculated because the gold standard of overnight albumin excretion rate is not a perfect test
F. None of the above

**Answer: A.** The first step is to identify the table’s positive/negative structure. The PPV is true positives/(true positives + false positives) = 320/470 = 68%. The NPV is true negatives/(true negatives + false negatives) = 450/700 = 64%. The specificity is 450/600 = 75%. Therefore choice A is correct. The PPV of a test always increases with increasing prevalence. Regarding the gold standard not being a perfect test: Any new test needs to be compared to a gold standard (which is usually more invasive or expensive and as accurate as possible) but all tests, including gold standard tests, have some rate of false positives and false negatives, even if those errors cannot be measured.
Q.5. A new urine dipstick test can be used to detect microalbuminuria in the office for patients with diabetes. This test has a sensitivity of 95% and a specificity of 95%. Your nurse mistakenly has performed this test on one of your first patients of the day, a 30-year-old woman. The test reads positive. This patient has no diabetes, but she has hypertension and a family history of type 2 diabetes. You estimate the prevalence of microalbuminuria in a group of persons like her would be approximately 5%. What is the negative predictive value of the test for this patient?

A. 5%
B. 35%
C. 50%
D. 95%
E. 99%
F. Cannot be calculated from the information above

**Answer: E.** The first step is to identify the table’s $2 \times 2$ structure. You estimate the prevalence of disease in this population to be 5%. By setting up the population prevalence first, you can determine the contents of the remainder of the cells.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>4.75</td>
<td>4.75</td>
</tr>
<tr>
<td>Negative</td>
<td>0.25</td>
<td>90.25</td>
</tr>
<tr>
<td>Totals</td>
<td>5</td>
<td>95</td>
</tr>
</tbody>
</table>

Prevalence: $5/(5+95) = 5\%$
Sensitivity: $4.75/(4.75+0.25) = 95\%$
Specificity: $90.25/(90.25+5.75) = 95\%$
Positive predictive value: $4.75/(4.75+4.75) = 50\%$
Negative predictive value: $90.25/(90.25+0.25) = 99\%$

Q.6. In a randomized controlled trial of patients with hypertension and coronary artery disease, 500 patients are treated with a beta-blocker to prevent recurrent myocardial infarction (treatment A), and 500 are treated with a new combination beta-blocker and diuretic antihypertensive agent (treatment B). All patients are followed for five years to assess their rates of recurrent myocardial infarction. Of patients receiving treatment A, 50 develop recurrent myocardial infarction over the five-year follow-up, compared with 40 patients receiving treatment B. What are the absolute and relative risk reductions for treatment B compared to treatment A?
A. 5% and 25%
B. 2% and 50%
C. 50% and 2%
D. 2% and 20%
E. 10% and 80%
F. None of the above

Answer: D. The absolute risk reduction is \((50/500)-(40/500)=2\%\). The relative risk reduction is: \(\frac{([50/500]−[40/500])}{50/500} = 20\%\).

Q.7. The ability of a negative test to correctly identify persons without the disease is a measure of
A. Sensitivity
B. Specificity
C. Positive predictive value
D. Negative predictive value
E. None of the above

Answer: B. Specificity is a measure of how well a test correctly identifies persons without disease. Sensitivity is the ability of a test to correctly identify persons with disease. Positive predictive value is the likelihood that a positive test result in a person signifies disease, while negative predictive value is the likelihood that a negative test result in a person signifies health (or the absence of disease).

Q.8. To determine the effect of a new over-the-counter analgesic on the incidence of proteinuria in pregnant women, a group of researchers recruited 100 women from 5 local OB-GYN practices. The researchers asked all study participants to complete a questionnaire, which asked participants whether they were taking the new analgesic. Researchers then collected urine from study participants monthly for eight months. Of 20 women reporting they took the analgesic, the incidence of proteinuria was 20%. Of 480 women reporting they did not take the analgesic, the incidence of proteinuria during study follow-up was 5%. What is the study design of the preceding study?
A. Randomized controlled trial
B. Case-control study
C. Nonrandomized controlled trial
D. Longitudinal cohort study
E. Ecological study
F. None of the above
The participants were not randomized to receive (vs. not receive) the analgesic. Therefore, this study is not a randomized controlled trial. Because researchers observed (via questionnaire) whether patients reported taking the analgesic (exposure), this is an observational study. Because the researchers collected information about study participants’ exposures to the analgesic at the beginning of the study and then followed them over time for the incidence of proteinuria, this is a longitudinal cohort study. In a case-control study, researchers would have identified persons with proteinuria versus no proteinuria first, and then looked to see if participants were exposed to the analgesic in the past (e.g., using chart review).

Q.8. You are evaluating a new screening test. Two hundred individuals undergo the test. After comparing the new screening test with the gold standard test it is to replace, the following results are gathered:

- Patients with disease and positive test result: 60
- Patients with disease and negative test result: 40
- Patients without disease and positive test result: 30
- Patients without disease and negative test result: 70

Which of the following is true?

A. The sensitivity of this test is the sum of those with a positive test result (60 + 30) divided by all patients tested (200), or 45%

B. The specificity of this test is those without disease who have a negative test result (70) divided by all patients tested without disease (70 + 30), or 70%

C. The positive predictive value of this test is those with disease who have a positive test result (60) divided by all those with disease (60 + 40), or 60%

D. The negative predictive value of this test cannot be determined without knowing the prevalence of disease in the population

Answer: B. Test sensitivity refers to the ability of a test to detect those with disease (sensitivity = PID, or positive in disease). Sensitivity is calculated by looking at the entire tested population who have disease, and seeing how many have a positive test result. In the sample above, the total with disease and a positive test result is 60, but the entire population of diseased individuals is 100 (60 + 40). Therefore, sensitivity is 60%, not 45% as mentioned in choice A.

Specificity refers to the ability of a test to be negative in those without disease (specificity = NIH, or negative in health). In the population tested, it is the proportion of those without disease who have a negative test result. There are 100 individuals without disease (70 + 30), of which 70 have a negative test result. Specificity is therefore 70/100, or 70% (as shown correctly in choice B). Positive predictive value refers to the likelihood that a positive test result represents a true positive (i.e., those with disease). It is the proportion of positive test results in
those with disease out of all positive test results. Above, there are 60 individuals with a positive test result and real disease, but 90 individuals (60 + 30) with a positive test result. The positive predictive value is therefore 60/90, or 66.7%. The negative predictive value refers to the likelihood that a negative test result represents a true negative (i.e., those without disease). It is the proportion of negative test results in those without disease out of all negative test results. There are 70 individuals with a negative test result who do not have disease, but a total of 110 individuals (70+40) with negative test results. The negative predictive value is therefore 70/110, or 64%.

Q.9. You are evaluating a new imaging test to screen for a fatal neurologic disease. The gold standard test for this disease is brain biopsy, an invasive and expensive procedure. The new imaging test is less expensive and noninvasive, and you are on the committee asked to evaluate it. Two hundred patients were evaluated with the new imaging test and also with brain biopsy. The following results were obtained:

- Seventy patients with disease had a positive imaging test
- Thirty patients with disease had a negative imaging test
- Ten patients without disease had a positive imaging test
- Ninety patients without disease had a negative imaging test

Which one of the following statements is true?
A. The sensitivity of this test is 30%
B. The specificity of this test is 70%
C. The positive predictive value of this test is 87.5%
D. The negative predictive value of this test is 90%

Answer: C. Test sensitivity refers to the ability of a test to detect those with disease (sensitivity = PID, or positive in disease). Sensitivity is calculated by looking at the entire tested population who have disease, and seeing how many have a positive test result. In the sample above, the total with disease and a positive imaging result is 70, but the entire population of diseased individuals is 100 (70 + 30). Therefore, sensitivity is 70%, not 30% as mentioned in choice A. Specificity refers to the ability of a test to be negative in those without disease (specificity = NIH, or negative in health). In the population tested, it is the proportion of those without disease who have a negative test result. Above, there are 100 individuals without disease (10 + 90), of which 90 have a negative imaging result. Specificity is therefore 90/100, or 90% (not the 70% shown in choice B). Positive predictive value refers to the likelihood that a positive test result represents a true positive (i.e., those with disease). It is the proportion of positive test results in those with disease out of all positive test results. Above, there are 70 individuals with a positive test result and real disease, but 80
individuals (70 + 10) with a positive test result. The positive predictive value is therefore 70/80, or 87.5%, as shown correctly in answer choice C. The negative predictive value refers to the likelihood that a negative test result represents a true negative (i.e., those without disease). It is the proportion of negative test results in those without disease out of all negative test results. Above, there are 90 individuals with a negative test result who do not have disease, but a total of 120 individuals (90 + 30) with negative test results. The negative predictive value is therefore 90/120, or 75%.

Q.10. You are performing a study of 1000 students who attend Baltimore College, and follow them over one year. On your initial evaluation 10 students have disease X. Over the year of study five more students contract disease X. Which of the following statements about the study population is true?
A. The prevalence of disease X at the beginning of the study is 10%
B. The prevalence of disease X cannot be determined without knowing the prevalence of disease X in Baltimore City
C. The incidence of disease X is 5/1000, or 0.5%
D. The incidence of disease X is 15/1000, or 1.5%

Answer: C. When investigating the impact of a disease on a community, common measures of assessment include prevalence and incidence. Prevalence is the number of existing cases of a disease at a specific point in time, divided by the number in the population studied. In the case above, 10 individuals at Baltimore College have disease X at the beginning of the study. We know there are 1000 individuals at Baltimore College, thus the prevalence of disease X at the beginning of the study is 10/1000, or 0.1%. At the completion of the study, the prevalence has increased to 15/1000, or 0.15%. Incidence looks at the number of new cases over a defined time period in a specific population studied. Baltimore College was studied over one year, during which time five new cases of disease X were noted. The incidence is thus 5/1000, or 0.5%. Recall that incidence refers only to new cases; choice D includes preexisting cases of disease X, and is therefore incorrect.

Q.11. You are beginning a study of the impact of a new drug on disease X. You start with 100 patients with disease X, and randomize 50 patients to get treatment and 50 patients to get placebo. Four patients in the treatment group decide against completing the study, and two patients in the placebo group decide against completing the study. The analysis of the data when the study is completed, including the six patients who did not complete the study, is referred to as
A. Intention-to-treat analysis
B. Validity analysis
C. Crossover-bias analysis
D. On-treatment analysis

Answer: A. When performing research, researchers attempt to minimize bias (bias is defined as systematic error, resulting in decreased accuracy of results). Proper randomization, avoidance of confounding factors, and inclusion of a placebo control are often used to minimize bias. Intention to treat analysis refers to the inclusion of all individuals initially randomized in a clinical trial, regardless of whether that individual actually received treatment. Intention to treat will tend to minimize the impact of an intervention, since not all individuals included in the analysis will have received treatment. Intention to treat therefore presents a conservative assessment of the impact of an intervention, avoiding overstatement of results.

Q.12. While studying a small community in Oklahoma you note that as the number of churches increase, the number of bingo parlors increase. The conclusion that churches cause bingo parlors to increase is likely to be limited by
A. Internal validity
B. External validity
C. Generalizability
D. Confounding

Answer: D. Confounding describes the impact of a different cause of a result rather than the one studied. In the example above, it is likely that increasing population led to both the increase in churches and bingo parlors, and that the increase in bingo parlors was not a result of the impact of churches. Internal validity refers to whether the results accurately reflect the connection between a proposed cause and its result. External validity, also known as generalizability, refers to whether the results from a studied population can be applied to another target population.

Q.13. You are studying cancer X. There is no screening test for cancer X, and you are evaluating a new test that can screen for cancer X. Previously, once cancer X was diagnosed, death resulted six months later. With the new screening test, the average individual diagnosed with cancer X died nine months later. The inventors of the screening test therefore claimed that their test increased life expectancy by three months, or 50%. A more likely explanation of the increased length of survival would be
A. Length-time bias
B. Lead-time bias
C. Over-diagnosis bias
D. Selection bias
**Answer: B.** The above screening test appears to identify disease at an earlier stage, rather than improving prognosis. The bias introduced by a screening test that identifies disease at an earlier stage and seemingly increasing survival time while not actually impacting prognosis is referred to as lead-time bias. Length-time bias (or simply length bias) refers to screening tests that are more likely to detect individuals with longer survival and less severe disease, than those individuals with shorter survival due to more severe disease. In the screened population, survival will appear to be longer than in an unscreened population, when the reality is the screen is detecting mostly those with less severe disease. Selection bias refers to a situation in which those chosen for a study systematically differ from those not chosen (with respect to characteristics important to the study question). Over-diagnosis bias is not a descriptive term used in medical literature on bias.

**Q.14.** You are studying the impact of a new screening test on mortality. You are screening for cancer X, which has an indolent version (survival is usually 10 years or more), and an aggressive version (survival is usually less than 1 year following diagnosis). Two populations are studied, one that is screened with the new test every three years, and one that is not screened at all. Average survival of those patients in the screened group who have cancer X is 7.8 years; while in the unscreened group average survival is 2.1 years. The most likely explanation for the improved survival in the screened group is

A. The screening test detects cancer X at an early, treatable stage

B. The screening test introduces length-time bias into the screened population

C. The screening test is likely to be followed by better medical care in the screened group

D. The unscreened group was subject to selection bias

**Answer: B.** Length-time bias refers to the impact of a screening test program that preferentially detects more indolent disease than in the comparison group. It is likely that patients with cancer X are dying between screening intervals, and that more patients with indolent disease are detected in the screened group as compared to the unscreened group. This will give the appearance that survival is longer in the screened group rather than the unscreened group (where most patients diagnosed with cancer X have the aggressive version). The other types of bias mentioned are legitimate concerns, but the scenario described is most suggestive of length-time bias.
CHAPTER 76: ETHICS

Q.1. A 70-year-old Chinese-speaking woman originally from China is brought by her family to the emergency department with hemoptysis, shortness of breath, weakness, and weight loss. Initial workup suggests the possibility of advanced lung cancer. Wanting to be culturally competent, how should the physician initially handle the news of a tumor seen on chest x-ray?

A. Out of respect for autonomy, the physician should disclose the results directly to the patient with the aid of an interpreter
B. Wanting to show respect for the family unit, the physician should disclose the results only to the patient’s family, not wanting to burden her with the news
C. The physician should inquire of the patient whether results should be disclosed to her or to her family or to both
D. The physician should call an ethics consult to make a decision about disclosure

Answer: C. Ethical issues: Respect for persons, respect for autonomy, cultural competence, informed consent, surrogate decision-making. While autonomy is highly valued in American culture, it may not be the guiding paradigm in other cultures. Involvement by the family in medical decisions may be more of the norm in certain cultures, such as those from Asian descent. Because the patient is receiving care in a setting that values respect for autonomy, it is still important to inquire of the patient how she wants decisions to be made. This includes how information should be shared. It is within the rights of the patient as an autonomous agent to decline to receive information about her diagnosis, and thus insisting the information be “forced” on her, as in option A, is incorrect. It is also incorrect to assume that because the patient comes from a certain cultural background that she favors one form of information-sharing over another. Answer B is incorrect, because it unnecessarily assumes that the patient agrees that the family unit is the arbiter of decisions for her. As a matter of preventive ethics, it would be prudent for the physician when ordering the chest x-ray to ask the patient how test results should be handled (i.e., whether she should be told or whether her family should be told). It would also be prudent to involve a medically trained interpreter to discuss the situation with the patient, as family members who serve as interpreters may filter information in both directions, thus hindering the acquisition of a complete picture. At the early stage of preliminary findings, it would be premature to involve an ethics consultant, since the clinician should be able to navigate the situation alone and only involve an ethics committee if a dispute or dilemma arose.

Q.2. You have been caring for a 54-year-old unemployed male for the past year. He complains of joint pains and objective evidence suggests mild arthritis. He has been on welfare for several years, but because of a change in federal programs,
he has been told he has to find work. You know that he has three young children at home, he is widowed, and he cares for his elderly mother. He asks you to complete a medical disability form, citing his arthritis as making him permanently disabled for any employment. What is your most appropriate next step?

A. Complete the forms as he requests
B. Complete the forms but state on them that he is not disabled
C. Suggest he see another physician who is known to put everyone on disability
D. Suggest that he consult with a social worker to look into other options, such as the Family Medical Leave Act

**Answer: D.** Ethical issue: Professionalism. After obtaining a license to practice medicine, a physician obtains certain authority in society—such things as writing prescriptions and determining disability. The society that grants this authority expects that certain standards will be maintained, so that the process is fair. It expects that the physician will practice medicine honestly and forthrightly. In this case, the physician does not have objective evidence that the patient would qualify for medical disability, so options A and C would be inappropriate. Since the physician has an ongoing relationship with this patient and wants to look after the patient’s best interests, the physician should pursue options that will benefit the patient while still fulfilling his obligations to society. Social work referral would be helpful to see if there are means to help the patient with financial problems. If these avenues are exhausted and the patient still insists on applying for disability, then the physician may have no choice but to state that objective medical evidence does not support the determination of disability (choice B); however, this would not be the immediate next step after the initial evaluation.

Q.3. A new patient on a fixed income comes to your practice on a statin that she has been on for many years. She was just assigned to a Medicare D prescription drug plan and discovers that all of her medications except her statin are on the formulary list. The statin on formulary is less expensive and presumed as effective at a higher dose as the patient’s, but it has not been studied as extensively. The patient is aware of the study data on her medication and is concerned that other statins at higher doses may increase her risks of myositis. She wants to stay on her medication. What should you do next?

A. Write a prescription for the drug on formulary without any explanation
B. Petition the administrator or medical director of the Medicare D prescription drug plan to make an exception in this case
C. Write a prescription for the patient’s statin and tell her to buy it out of pocket
D. Lobby the drug formulary committee to expand the number of statins on its list

**Answer: B.** Ethical issues: Professionalism, medical economics, dual obligations, beneficence. The physician has a professional duty to society to keep
health care costs down, but not at the expense of the patient’s best interests, which should be the physician’s primary obligation. In this case, there is justification for use of one statin over another, and it therefore may be in the patient’s best interest to stay on the same medication. Since she is on a fixed income, it is unreasonable to expect her to pay for the medication on her own. The physician should attempt to get authorization from the prescription plan for her to receive her medication off formulary as the first step. It could turn out that the request is denied and the physician will have to go back to the patient to discuss options, such as going on the formulary statin with closer monitoring of beneficial action and side effects; but the first step should be to try to serve her best interests. Because the physician practices in a health care world of cost-containment, it is not necessarily his or her obligation to advocate for expanded drug formularies if they ultimately prove counter to society’s expressed desire to allocate scarce resources. Nevertheless, the physician does have the option of presenting evidence to the formulary of why certain medications should be on the formulary instead of others.

Q.4. Dr. X is an infectious disease specialist who serves on her hospital’s drug formulary committee. She did some pilot studies on a new antibiotic that has since proven to be more effective than standard therapy but is more expensive. A pharmaceutical representative with whom she is friendly encourages her to get it on the formulary. He also reminds her that he was instrumental in getting her funding for the pilot study, that he sponsored her presentation at a national meeting, and that he’s been able to provide free samples of other drugs for indigent patients in her practice. What should she do at the upcoming drug formulary meeting, which is open to the public since it is a city hospital?
A. Do not suggest the new drug, even though it is more beneficial
B. Suggest the drug based on its merits, without mentioning her relationship with the drug rep because it is not germane
C. Suggest the drug but abstain from the voting, citing the conflict
D. Suggest the drug, mentioning the conflict, but vote for the drug

Answer: C. Ethical issues: Conflict of interests, dual obligations. Often as important as actual conflicts of interest is the appearance of a conflict of interest. One step in avoiding the appearance of a conflict of interest is public disclosure of a potential conflict, which then allows others to judge whether personal interests factor into what is said. Dr. X is under obligation to the hospital as a member of the drug formulary committee to report potentially advantageous new drugs to the committee for review. It would be up to the hospital to decide if the medication were cost-effective and served the interests of the patient population. Because the vote by Dr. X could be challenged as being biased by her relationship with the pharmaceutical representative and company, disclosure of the relationship may
not be sufficient in this case. Option C allows Dr. X to fulfill her obligation of reporting new drugs to the committee, allows others to hear about the potential conflict of interest, and permits the voting to be based upon the merits of the drug by members of the committee who do not have a financial interest in the outcome.

**Q.5.** A 78-year-old male with metastatic lung cancer is transported by ambulance to the hospital obtunded and in respiratory distress. He has a health care proxy who is unavailable. He has not completed a living will or a DNR order. The emergency room physician determines that he needs to be placed on mechanical ventilation. Which statement is true?

A. The patient should not be intubated because he is not capable of giving informed consent
B. The patient should not be intubated because his surrogate is unavailable to give informed consent on his behalf
C. The patient should not be intubated because he has metastatic lung cancer and his prognosis is poor
D. The patient should not be intubated because once he is on a ventilator he cannot be extubated until he recovers
E. None of the above

**Answer: E.** Ethical issues: Decision-making capacity, surrogate decision-making, withholding and withdrawal of treatment, emergency situations. In emergency situations that require life or death decisions, the physician should act to preserve the life of an incompetent patient if a surrogate is not available. Thus, without compelling evidence against mechanical ventilation (e.g., an outpatient DNR order), the patient should be intubated. His poor prognosis may factor into his or his surrogate’s decision about limitations in care, but the emergency room physician does not have knowledge of whether he may want to live for a while longer to help resolve “unfinished business.” Ethicists maintain that there is no moral distinction between withholding and withdrawal of life-sustaining treatment, because the patient can refuse treatment at any time. There may be emotional factors that create a feeling about not starting and stopping a treatment, but these do not change the moral permissibility of withdrawing the ventilator later if it is judged to be extraordinary care by either the patient or his surrogate.

**Q.6.** Your 39-year-old patient who is known to use injection drugs is admitted to the hospital with fulminant hepatitis. He has been trying to turn his life around—he married in the last six months and his wife just found out she is pregnant. He subsequently goes into a coma and dies on the transplant waiting list. Lab work reveals that he had hepatitis B. His wife asks what he died of. What do you do?

A. Inform her that you cannot disclose the diagnosis because it is confidential information
B. Inform her that he died of liver failure and leave it at that
C. Inform her that he had hepatitis B and recommend that she be tested for this
D. Contact the local health department of the newly diagnosed case of hepatitis B and leave the responsibility of contact tracing to them
E. Anonymously send a copy of the death certificate to his wife

**Answer: C.**

Ethical issue: Confidentiality, ethic of care. The physician has an obligation to protect a patient’s confidentiality; information learned in confidence can only be disclosed with the patient’s permission or when an identifiable third party is at risk of a significant harm and the harm is likely to occur without the intervention. In this case, the patient’s wife was placed at risk of contracting hepatitis B; while this potential harm cannot be avoided now, she might be a candidate for treatment if she has developed chronic, active hepatitis. In addition, her fetus is at risk of contracting hepatitis, and measures can be taken to reduce the chances of peripartum transmission if the patient’s wife has in fact been infected. Thus, an argument can be made for disclosure of the information. There may also be the need to disclose the information to the health department for public health reasons, depending on the diseases that the health department tracks. Finally, once a patient dies, the information about cause of death becomes public knowledge, freeing the physician somewhat from the bounds of confidentiality.

**Q.7.** A patient is intubated and determined to have a lobar pneumonia for which he is placed on IV cefuroxime. His daughter and his lady friend arrive. His friend has been named his durable power of attorney for health care (DPAHC). She requests that the antibiotics and ventilator be discontinued and the patient be given comfort measures only. Which statement is true?
A. The friend cannot make the decisions because the patient’s daughter has priority as a surrogate since she’s family
B. She can make the decision about the ventilator because it is extraordinary care, but not the antibiotic because it is ordinary care
C. The friend’s request to discontinue both the ventilator and the antibiotics is within her capacity to act as DPAHC
D. The friend cannot make the decisions because the patient did not spell out these wishes in a living will

**Answer: C.**

Ethical issue: Surrogate decision-making, standards for surrogate decision-making, advance directives, ordinary and extraordinary care. The legal hierarchy for surrogates starts with the durable power of attorney for health care. The designated health care agent can be anyone chosen by the patient and takes precedence over any family member who would be lower on the list of potential surrogates. The healthy care agent has authority to make decisions about all medical treatments, although some states require ”clear and convincing” evidence of the patient’s prior wishes for such things as artificial nutrition and hydration.
Mechanical ventilation and antibiotics would be within the scope of the health care agent’s decisional authority. The surrogate can use a “best interest” standard to make this decision, even if the patient has not spelled out the wishes previously. When there is some knowledge of the patient’s wishes and values, then “substituted judgment” can be used. Whether a treatment is ordinary or extraordinary does not have to do with its technological complexity, but rather a determination of the burden to benefit ratio. If the surrogate determines within the context of the whole clinical picture that the harms of antibiotic administration outweigh the benefits, then the antibiotics can be considered extraordinary care.

Q.8. A patient is just removed from the ventilator. He is dyspneic and in his obtunded state, he says, “Just put me out of my misery.” Which statement is ethically and legally justifiable?
A. You should not give him narcotics because that would be complying with his wish for active euthanasia
B. You should give him a large dose of a narcotic with the intention of ending his life and complying with his wish
C. You should give him a sufficient dose of a narcotic to ease his dyspnea even if it has the foreseen consequence of hastening his death
D. You should not give him anything potentially sedating or affecting his mental state because he may become more alert and be able to give a competent decision about being on the ventilator

Answer: C. Ethical issues: Rule of double effect, euthanasia, and palliative care. Administration of a narcotic such as morphine to ease respiratory distress in the setting of a terminal condition constitutes appropriate palliative care. Since the patient is currently obtunded, his utterance does not constitute an informed, competent decision. The physician does not need to follow the patient’s demand but he needs to respond to it, since the patient appears to be suffering. The patient may never regain decision-making capacity, so it would be inappropriate to withhold a palliative measure on the possibility that it might affect his mental state. The intentionality of the physician may determine whether the act is morally licit. The rule of double effect has four principal conditions: (1) The act itself must be good or morally neutral; (2) while a bad effect from the act may be foreseen, the agent intends only the good effect; (3) the bad effect must not be the means to achieve the good effect; and (4) the good effect must outweigh the bad effect. In option B, the intention of the physician is to end the patient’s life; this would entail active euthanasia and therefore the rule of double effect does not apply. Option C is the correct answer, because, even though the physician anticipates that the narcotic may speed the dying process, the reason for administering it is to ease the dyspnea.