Board Review Practice
Infectious Diseases
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I have no conflicts of interest

Case 1
42 year old woman comes to the emergency room reporting awakening last night to find a bat in her bedroom. She was able to force the bat out the window with a tennis racket without touching the bat or awakening her husband. In the morning, she noticed two teeth marks surrounded by a large bruise on her upper arm. They have three children who were asleep in other rooms in the house, all the bedroom doors were closed.
Who should receive rabies post-exposure prophylaxis?
A. Only the woman, she has a bite that could be from the bat
B. The woman and the man because they were both asleep with a bat in the room
C. The woman, the man and their children who were sleeping in other rooms
D. No one, there is no proof of anyone being bitten

Case 2
64 year old man is brought in unresponsive after complaining of earache for 3 days and headache for 1 day. He has no medical history and takes no medications. On exam he was obtunded with a stiff neck. Temperature was 102°F (39°C), blood pressure 90/50, heart rate 115 and respirations 28 per minute. He has a peripheral white blood cell (WBC) count of 18,000 with 20% band forms. Two sets of blood cultures were drawn.
Meningitis is suspected. Before a lumbar puncture (LP) is performed, this man should have computed tomography (CT) of his head:
A. True
B. False

Case 2 Continued
Non-contrast head CT was unremarkable. Cerebral spinal fluid (CSF) analysis revealed cloudy fluid, leukocyte count of 4,200 cells/mm³ (80% neutrophils), red blood cell count of 5 cells/mm³, protein 220 mg/dL and glucose 20 mg/dL. Gram stain and culture are pending. You also sent a tube to “hold (just in case).”
The correct medical treatment at this time for this 64 year old man is:
A. No antibiotics until after the CSF gram stain is available
B. Acyclovir for Herpes Simplex Virus (HSV)
C. Ceftriaxone and vancomycin
D. Dexamethasone, vancomycin and ceftriaxone
E. Dexamethasone, vancomycin, ceftriaxone and ampicillin

Case 3
A 68 year old woman status post renal transplant 2 years ago presents with 4 days of increasing fever and confusion. She had no focal complaints. She had traveled to China, Nigeria and the UK for work in the past. She was recently visiting a friend in Arizona. At home she has a cockatoo. She was on cyclosporin 150 mg BD, prednisone 10 mg QD, azathioprine 100 mg QD and trimethoprim-sulfamethoxazole SS QD.
Non-contrast head CT was unremarkable. CSF exam showed normal opening pressure, leukocyte count 220 cells/mm³ (25% neutrophils, 60% lymphocytes and 15% monocytes), protein level 310 mg/dL, glucose 45 mg/dL, gram stain was negative but India ink stain was positive.
The most appropriate treatment at this time is:
A. INH, rifampin, ethambutol and pyrazinamide for M. tuberculosis
B. Caspofungin for Cryptococcus and reduction of her immune suppression
C. Amphotericin B and flucytosine for Cryptococcus
D. Fluconazole 800 mg QD for Coccidioidomycosis
Case 3 Continued

The previous patient with cryptococcal meningitis would most likely have had a positive serum assay for:

A. Galactomannan
B. Beta-D-glucan
C. Cryptococcal serum antigen
D. A and C
E. B and C
F. A, B and C

Case 4

A 26 year old woman complains of dysuria and urgency. She reports a new male sexual partner. She has no medical history, is not pregnant and has no known drug allergies. Office urine dipstick shows positive leukocyte esterase and negative nitrates.

In addition to counseling her about correct and consistent condom use for the prevention of sexually transmitted infections, (of the following choices) you:

A. Send a urinalysis and culture, await results
B. Prescribe empiric Levofoxacin x 1 day
C. Prescribe empiric Amoxicillin x 3 days
D. Prescribe empiric Nitrofurantoin x 5 days
E. Prescribe empiric Trimethoprim-sulfamethoxazole (TMP-SMZ) x 7 days

Case 5

88 year old female nursing home resident is brought in by caregivers reporting she has had low-grade fever and altered mental status. She has had at least 4 urinary tract infections in the past. Straight catheterization is performed and urine culture grows >100,000 colony forming units of Enterococcus faecium that is shown to be resistant to Ampicillin and Vancomycin. You treat her with Linezolid, knowing that it has all of the following except:

A. Good coverage of gram negative organisms
B. Excellent oral bioavailability
C. Potential for myelosuppression
D. Potential interaction with selective serotonin reuptake inhibitors (SSRIs)
E. High cost

Case 6

A 38 year old woman calls you on the third day of her Cape Cod vacation reporting she found a tick on her neck and that it was engorged. You instruct her in its correct removal, discuss strategies to avoid future tick bites and:

A. Reassure her as the tick was on her for less than 72 hours
B. Ask her to take the tick into a local clinic for identification and then please call you back
C. Phone in a prescription for doxycycline 200 mg x 1 and instruct her to take it today
D. Phone in a prescription for doxycycline 200 mg x 1 and instruct her to take it only if she develops fever or rash
E. Phone in a prescription for doxycycline 100 mg twice daily x 14 days

Case 6 Continued

About 3 days after returning from her week-long vacation, the same 38 year old woman calls you complaining of fever, slight headache and malaise. She has no other focal complaints. She reports she did not take the tick in to a local clinic for identification and didn't call you back since she felt well. Your own attempts to reach her for follow-up were unsuccessful. On exam she is febrile to 102.5°F (39.2°C) with tachycardia of 110 beats per minute and 28 respirations per minute. Blood pressure is normal. She has no skin findings.

Of the tick-borne illnesses on the differential diagnosis, which warrants the most urgent investigation and empiric treatment?

A. Late Lyme disease
B. Human granulocytic anaplasmosis (HGA), the disease previously known as human granulocytic ehrlichiosis
C. Babesiosis
D. Rocky Mountain Spotted Fever (RMSF)
E. Tularemia

Case 7

A 62 year old man with congenital bicuspid aortic valve is scheduled to undergo tooth extraction. You know that when indicated, the antibiotic regimen for prophylaxis of infective endocarditis is amoxicillin 2 grams orally 30-60 minutes prior to procedure (or for penicillin allergy azithromycin 500 mg or clindamycin 600 mg).

According to the 2007 American Heart Association Guidelines, this patient should take prophylaxis prior to this procedure.

A. True
B. False
Case 8
A 62 year old man with a native bicuspid aortic valve replaced with a porcine valve 3 years ago presents with fever, night sweats, dyspnea and weight loss. He has no other medical history. He lives on a horse ranch in Maine. Echocardiogram shows new peri-aortic regurgitation and a vegetation on the aortic valve. Blood cultures x 3 drawn prior to antibiotics are no growth at 5 days. The organism most likely responsible is:
A. Candida albicans
B. Coxiella burnetii
C. Enterococcus faecalis
D. Mycobacterium abscessus
E. Tropheryma whippellii

Case 9
60 year old Vietnam veteran presents with worsening dyspnea. He has a diagnosis of COPD and is periodically on systemic steroids. He has no travel since Vietnam. Further work-up reveals anemia and a positive stool guaiac. Colon biopsy shows Strongyloides stercoralis. Complications from this parasite can include all of the following except:
A. Gram negative rod sepsis/meningitis
B. Cough, dyspnea and wheezing
C. Nausea, vomiting, GI bleed
D. Liver cirrhosis
E. Dermatitis

Case 10
A 42 year old man with extensive travel is found on blood test for life insurance to have eosinophilia: 1000 cells/mm3. All of the following should be considered except:
A. Allergic Bronchopulmonary Aspergillosis
B. Reaction to a new medication
C. Hematologic malignancy
D. Glucocorticoid excess
E. Strongyloidiasis
F. HIV infection

Case 11
A 19 year old woman complains of sudden onset of sore throat and fever. She also has a slight headache. On exam she has a fever of 101.5°F (38.6°C), inflammation of the pharynx and tonsils without exudates. She has diffuse shotty cervical lymphadenopathy. The most appropriate management of this patient at this time is:
A. Based on history and clinical exam, treat empirically for “strep throat” with Penicillin
B. Based on history and clinical exam, treat empirically for “strep throat” with Azithromycin
C. Perform a rapid antigen detection test (RADT) for Group A Streptococcus and base treatment decisions on the result
D. Send a throat swab for culture and base treatment decisions on that result
E. Perform a RADT; if negative, send a throat swab for culture

Case 11 Continued
In addition to GAS pharyngitis, acute infection with all of the following should be considered in those with “mononucleosis” (sore throat, fever and lymphadenopathy) except:
A. Epstein Barr Virus (EBV) infection
B. Toxoplasmosis infection
C. Cytomegalovirus (CMV) infection
D. Parvovirus B-19
E. HIV infection

Case 12
A 31 year old man with well controlled HIV infection (CD4 450 cells/mm3 and undetectable viral load) complains of fever, chills, drenching sweats, tenesmus and blood in his stool beginning 3 days ago. He has never had any similar prior episode. Today he has noticed some difficulty voiding his urine. He has no diarrhea. He denies new sexual partners although cannot say the same for his male partner. He is CMV and toxoplasmosis IgG positive. On exam he is currently afebrile with a normal blood pressure but tachycardia to 96 beats per minute. Rectal exam reveals no external lesions. There is severe tenderness and suggestion of ulceration on digital rectal exam with bright red blood on the exam glove. There is minimal inguinal lymphadenopathy. The most likely diagnosis in this patient is:
A. Lymphogranuloma venereum (LGV)
B. Primary genital herpes simplex (HSV-2)
C. Alefsera gonorrhoeae
D. Cytomegalovirus (CMV) reactivation colitis
E. Syphilis
F. Crohn’s Disease
Case 13

A 28 year old physician believes he should take antibiotic prophylaxis for endocarditis prior to dental visits because he was told as a child he had a heart murmur. He took a single dose of clindamycin. Three days later he developed watery diarrhea with up to 15 bowel movements daily, and lower abdominal pain. He took his stool to the microbiology lab and it is positive for *Clostridium difficile* (C. diff) toxin.

Now worried about doctoring himself, he calls you for advice on treatment. You tell him:

A. Oral metronidazole is the initial treatment of choice for mild or moderate C. diff
B. Intravenous (IV) metronidazole is less efficacious for C. diff than oral metronidazole because the achievable intestinal lumen concentration is lower than with oral administration
C. IV Vancomycin is more effective than oral Vancomycin for the treatment of C. diff because of higher systemic levels
D. He should start with Vancomycin enemas to avoid systemic toxicity

Case 14

All of the following measures should be employed to prevent the spread of *C. diff* infection to others except:

A. All those with suspected or proven C. diff infection should be placed on contact precautions
B. Staff and patients should be instructed in the copious use of alcohol-based hand sanitizers
C. The environment should be thoroughly and regularly cleaned with products known to eliminate C. diff spores
D. Not using antibiotics unless they are needed

Case 15

You have been informed that urine sample sent from your nursing home patient is an Extended-spectrum β-lactamase (ESBL)–producing pseudomonas. Before checking the final susceptibility report, which antibiotic do you think would be most likely to provide effective therapy?

A. Aztreonam
B. Imipenem
C. Linezolid
D. Tigecycline

Case 16

A 19 year old college student presents to the emergency department with purulent drainage from her leg from a lesion she reports started as a "spider bite." She is otherwise well and does not appear to be systemically ill. She has no known drug allergies.

The most appropriate antibiotic for treatment of this lesion is:

A. Cephalexin
B. Cefazolin
C. Levofloxacin
D. Rifampin
E. Trimethoprim/Sulfamethoxazole

Case 16 Continued

In the next bay is a 19 year old woman complaining of severe lower extremity pain but there is very little visible inflammation at the site and no break in the skin. It could be said that pain is out of proportion to exam. She has no medical history.

She is febrile to 103.5°F (39.7°C), tachycardic to 130 beats per minute and her blood pressure is 85/55. Necrotizing fasciitis is suspected. The immediate management steps should include all except:

A. Surgical consultation
B. MRI of the extremity
C. IV Clindamycin and high dose IV Penicillin
D. IV Vancomycin
E. Blood cultures

Case 16 Continued

This *Staphylococcus Aureus* Susceptibilities

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<th>Antibiotic</th>
<th>Sensitivity</th>
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<td>Gentamicin</td>
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<td>Levofloxacin</td>
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<tr>
<td>Linezolid</td>
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<td>Oxacillin/Nafcillin/Methicillin</td>
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<td>Penicillin</td>
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Case 17
Your 48 year old patient with HIV started emtricitabine / tenofovir / efavirenz (Aptripla, one pill once a day) but he has been feeling sleepy, a not uncommon side effect of efavirenz. He would like to try something else but wants it to be once daily.
You think emtricitabine / tenofovir (Truvada) with ritonavir-boosted atazanavir (Reyataz) would be the next best regimen. Which of his current medications might interact with protease inhibitors?
A. Atorvastatin (Lipitor)
B. Fluticasone nasal spray (Flonase)
C. Sildenafil (Viagra)
D. Lorazepam (Ativan)
E. Amlodipine (Norvasc)
F. St. Johns Wort
G. All of the above

Selected Ritonavir Drug Interactions
Analgesics (including codeine, methadone, oxycodone, tramadol), Antacids, Antiarrhythmics (including amiodarone, digoxin), Anticonvulsants, Antidepressants (including SSRIs, tricyclics), Antifungals, Antipsychotics, Benzodiazepines, Beta-blockers, Calcium channel blockers, Cimetidine, Clarithromycin, Disulfiram, Ergot alkaloids, Estrogen (oral contraceptives), HMG-CoA reductase inhibitors (atorvastatin, lovastatin, rosuvastatin, simvastatin), Inhaled corticosteroids (e.g., budesonide, fluticasone): Serum concentrations may be increased by ritonavir, resulting in decreased serum cortisol, HPA axis suppression; concurrent use is not recommended, Paclitaxel, Rifampin, Rosiglitazone, Sildenafil and others (do not exceed 25 mg in a 48-hour period), Zolpidem, etc…