1. A previously healthy 16 year old Vietnamese woman presents with a 2 day history of acute onset fever, diarrhea, and confusion. She denies shortness of breath, cough, or sore throat. In talking to her family members, you find out that the patient had traveled with her family to visit a relative’s farm, and had had contact with chickens, some of which were known to be sick. The patient’s younger sister is now developing similar symptoms.

The treatment with the most efficacy for this patient would be:

a. Oseltamivir  
b. Rimantidine  
c. Amoxicillin-clavulanate  
d. Azithromycin

2. An 18 year old college freshman presents to your clinic with 1 week of fatigue, lymph node swelling, fever, and sore throat. On exam, you detect splenomegaly. You perform a heterophile antibody (Monospot) test; it is negative. He is not sexually active, but last month, began dating a new partner.

Which would be the most likely set of test results in this patient?

a. VCA IgM +, VCA IgG –, EBNA IgG –  
b. VCA IgM +, VCA IgG +, EBNA IgG –  
c. VCA IgM +, VCA IgG +, EBNA IgG +  
d. VCA IgM –, VCA IgG –, EBNA IgG –

3. An HIV patient with a CD4 count of 50 is admitted to the general medicine ward with a dermatomal vesicular rash on the right chest. Which infection control measures should be recommended to decrease the risk of hospital transmission of the likely pathogen?

a. Keep the rash covered. No further precautions.  
b. Gloves only for healthcare workers the room.  
c. Gloves and gown only for healthcare workers entering the room.  
d. Gloves, gown, and a respirator (e.g., N95) for healthcare workers entering the room, along with a negative pressure room.

4. Resistance of influenza virus to oseltamivir occurs primarily through which mechanism?

a. Changes in the hemagglutinin protein  
b. Changes in the neuraminidase protein  
c. Changes in the M2 protein  
d. Changes in the viral capsid
5. A group of young adults returns from a vacation from the Caribbean. Twelve of 24 develop signs of meningitis (neck pain, neck stiffness, and photophobia). Cerebrospinal fluid from lumbar puncture show the following median counts: 333 white blood cells, differential 73% lymphocytes, 13% eosinophils, 0% polymorphonuclear leukocytes, with slightly elevated CSF protein and normal CSF glucose.

The most likely cause of this outbreak is:

   a. *Neisseria meningitidis*
   b. *Listeria monocytogenes*
   c. *Angiostrongylus cantonensis*
   d. Dengue
   e. Malaria

6. You are seeing a patient in the United States with severe encephalitis of unclear origin during the winter months. The cerebrospinal fluid shows a lymphocytic predominance, with mildly elevated protein and normal glucose. PCR for herpes simplex 1/2 was negative. The symptoms started about 1 week after the patient, who is a laboratory worker, was bitten by a macaque monkey on the finger.

   The most likely cause of this patient’s encephalitis is:

   a. Lymphocytic choriomeningitis virus
   b. Nipah virus
   c. Human herpes virus-6
   d. Herpes B virus
   e. West Nile Virus

7. You are seeing a 55 year old patient in the emergency room with symptoms of fever, headache, nuchal rigidity, photophobia, and mild confusion for 2 days. The patient has a history of a liver transplantation 2 years ago, and is on stable low-dose immunosuppression. He has a history of a serious allergy to penicillin (type I hypersensitivity), but has tolerated cephalosporins in the past year.

   After obtaining cerebrospinal fluid for analysis and cultures, which of the following is the most appropriate therapy for this patient?

   a. Vancomycin and ceftriaxone
   b. Vancomycin and chloramphenicol
   c. Vancomycin, ceftriaxone, and trimethoprim-sulfamethoxazole
   d. Vancomycin, ceftriaxone, and liposomal amphotericin B
8. A 61 year old man living in Denver presents to the hospital in the late summer with fever, confusion, and headache. On exam, in addition to altered mental status, the patient is noted to have a course tremor, myoclonus, and parkinsonian features (including rigidity). After a CT head is performed demonstrating no focal central nervous system lesions, a lumbar puncture is obtained with the following results: 455 cells/µL with 50% lymphocytes/40% neutrophils, elevated protein (105 mg/dL), and normal glucose (90 mg/dL).

Which of the following is the test on CSF most likely to yield the correct diagnosis?

a. Herpes simplex virus-1 PCR
b. Varicella zoster virus PCR
c. West Nile Virus antibody
d. Anti-N-methyl D-aspartate (NMDA) receptor antibody assay
e. Enterovirus PCR assay

9. A nursing home is experiencing a diarrheal outbreak, with 15 residents and 2 nursing staff involved over the course of 1 week. About half of the symptomatic cases have bloody diarrhea and fever. The residents do not share common meals with the nursing staff.

The most likely cause of this outbreak is:

a. Campylobacter
b. Salmonella
c. Shigella
d. Norovirus
e. Giardia

10. You are evaluating fifteen sailors on a cargo ship docked in New York City who had fallen ill with gastrointestinal and neurologic symptoms. Two weeks earlier, the sailors had been docked in the Caribbean, where the sailors fished (catching reef fish, including red grouper) and then participated in a fish barbeque. The sailors report that about 6 to 24 hours after the barbeque, they began experiencing abdominal cramps, nausea/vomiting, and watery diarrhea. Around the same time, the sailors also began noticing fatigue, mood changes, circumoral and extremity paresthesias, and hot/cold perception reversal. By the time the ship was docked at New York City (2 weeks after exposure), all the sailors still had residual neurologic symptoms.

The most likely cause of the sailors’ symptoms is:

a. Vibrio parahaemolyticus
b. Vibrio vulnificus
c. Scombroid
d. Ciguatera
e. Aeromonas

11. You are evaluating an outbreak of diarrhea associated with a water park in the Midwest United States. Children swimming at the park have experienced various amounts of watery diarrhea persisting 7–14 days, and subsequently, their caregivers as well as other children in associated daycare centers have also experienced diarrhea. The water at the water park is chlorinated at routine levels, and there is no additional disinfection (ultraviolet or ozone treatment) used.

The most likely etiologic agent of this outbreak is:

a. *Escherichia coli*
b. Salmonella spp.
c. Norovirus
d. *Cryptosporidium parvum*
e. *Vibrio cholerae*

12. You are investigating a large foodborne outbreak in Japan. One typical patient was an elderly woman who complained of 10 episodes of vomiting and 3 episodes of watery diarrhea within 7 hours of attending a large banquet. Upon further investigation, 94 of 358 people at the banquet developed similar symptoms of vomiting and diarrhea within 1-9 hours of the meal. Sushi was served at the banquet, including raw flounder sushi.

The most likely etiologic agent of this outbreak is:

a. Norovirus
b. *Escherichia coli*
c. Anisakiasis
d. Scombroid
e. *Kudoa septempunctata*

13. A new bacteria is discovered. It is a gram negative rod and when culture aerobically, the bacteria does not grow. Which antimicrobial agent would be expected to be effective against this bacteria?

a. gentamicin
b. trimethoprim-sulfa
c. metronidazole
d. aztreonam

14. Which of the following antibiotics is a monocyclic beta-lactam?

a. Imipenem
b. Ampicillin
c. Ceftazidime
d. Clavulanic Acid  
e. Aztreonam

15. Which of the following antibiotics has a thiazolidine ring?

a. cephalosporins  
b. carbapenems  
c. penicillins

16. The past antibiotic effect is:

a. an allergic reaction  
b. seen in treatment of endocarditis  
c. seen in treatment of meningitis  
d. related to bactericidal activity  
e. maintains efficacy when the antibiotic serum level is less than the MIC

17. What is the mechanism by which staphylococci are resistant to methicillin?

a. Production of an enzyme which hydrolyzes methicillin  
b. Alteration in the permeability of the external cell wall  
c. Production of an altered penicillin binding protein  
d. Deletion of the gene responsible for the production of autolysins

18. Which of the following is not an example of resistance related to altered penicillin binding proteins:

a. penicillin-resistant *S. mitis*  
b. penicillin-resistant pneumococci  
c. intrinsic resistance of Enterococci  
d. penicillin-resistant Haemophilus

19. Which of the following is not necessary for the bactericidal activity of penicillin?

a. Transpeptidase  
b. Penicillin-Binding Proteins  
c. Autolysins  
d. Bacterial  
e. Beta-Lactamase

20. The major determinant of efficacy for quinolone antibiotics is:

a. The duration of time the level of the antibiotic is above the MIC  
b. The peak concentration/MIC ratio  
c. The total daily dose of quinolone antibiotic  
d. The post-antibiotic effect of the drug
21. Ivermectin’s lack of toxicity in humans is due to:
   a. high degree of protein binding
   b. lack of oral absorption
   c. the Mazzoti reaction
   d. exclusion from the CNS
   e. short plasma half-life

22. Which of the following agents are concentrated at the site of the infection?
   a. Rifampin
   b. Oxacillin
   c. Chloroquine
   d. Acyclovir
   e. Fluconazole

23. Isoniazid (INH), a derivative of isonicotinic acid hydrazine:
   a. is active only against mycobacteria through selective inhibition of mycolic acid synthesis
   b. is metabolized via alcohol dehydrogenase in the liver
   c. is bacteriostatic against actively replicating mycobacteria
   d. is associated with development of resistance through a single-step mutation
   e. can be used effectively as a single agent for treatment of mycobacterial infections

24. Which of the following agents is not nephrotoxic?
   a. Foscarnet
   b. Pentamidine
   c. Trimethoprim
   d. Amikacin

25. Which of the following antimicrobial should not be given orally at the same time as calcium carbonate?
   a. ketoconazole
   b. tetracycline
   c. levoquin
   d. all of the above

26. Neurotoxicity of acyclovir occurs most commonly in patients who:
   a. are receiving bone marrow suppressive drugs
b. are receiving rapid intravenous acyclovir infusions  
c. have underlying cirrhosis  
d. have renal dysfunction

27. Which antifungal agent(s) acts by inhibiting the synthesis of ergosterol?

   a. fluconazole  
   b. nystatin  
   c. flucytosine

28. Benzathine penicillin G:

   a. allows the slow release of penicillin G over hours  
   b. is prescribed in terms of mg  
   c. contains procaine  
   d. is used to treat syphilis

29. Which of the following have good cerebrospinal fluid penetration in non-inflamed meninges:

   a. penicillin  
   b. vancomycin  
   c. ceftriaxone  
   d. ampicillin

30. Which of the following antibiotics is most likely to be associated with seizures:

   a. vancomycin  
   b. bacitracin  
   c. imipenem  
   d. aztreonam

31. Which of the following antibiotics are not concentrated in the urine?

   a. penicillin  
   b. piperacillin  
   c. cefepime  
   d. gentamicin  
   e. clindamycin

32. Porin proteins are:

   a. beta-lactamases  
   b. autolysins  
   c. penicillin-binding proteins  
   d. channels in the outer membranes
33. Cilastin:
   a. is combined with meropenem
   b. is active against acinetobacter
   c. inhibits dihydropeptidase in the proximal renal tubule

34. Daptomycin:
   a. is hydrolyzed by lung surfactant
   b. is bactericidal against enterococcus
   c. is a lipopeptide
   d. disrupts the cell membrane
   e. all of the above are correct

35. Linezolid:
   a. is bactericidal
   b. has been associated with serotonin syndrome
   c. should be given with pyridoxine to prevent optic neuritis
   d. inhibits nucleic acid synthesis

36. Which of the following is not true regarding vancomycin?
   a. is a glycopeptide
   b. inhibits cell wall synthesis
   c. may cause release of histamine
   d. is active against leukonostoc

37. Which of the following agents does not have a toxicity which correlates with an elevated antimicrobial serum level?
   a. Clindamycin
   b. Gentamicin
   c. Imipenem
   d. Flucytosine
   e. Ceftazidime

38. Which of the following antibiotics is not semi-synthetic?
   a. ampicillin
   b. aztreonam
   c. amikacin
   d. trimethoprim
   e. imipenem
39. Deficiency for glucose-6-phosphate dehydrogenase should be excluded before using which of the following drugs?
   a. melfoquine
   b. pyrimethamine
   c. proguanil-atovaquone
   d. dapsone

40. The following affect folate metabolism except for:
   a. dapsone
   b. proguanil
   c. primaquine
   d. pyrimethamine

41. After a laparotomy for a perforated diverticuli, a patient with myasthenia gravis is unable to be weaned from the respirator in the PAR. The most likely explanation is?
   a. aspiration pneumonia
   b. botulism
   c. septic shock from C. perfinges
   d. neomycin irrigation

42. Aminoglycoside induced eight nerve toxicity is:
   a. allergic in nature
   b. dose and duration related
   c. always reversible
   d. more common with streptomycin
   e. never seen in courses of therapy shorter than 2 weeks

43. For which of the following agents is the primary route of excretion non-renal?
   a. TMP/SMX
   b. Gentamicin
   c. Doxycycline
   d. Minocycline
   e. Minocycline and doxycycline

44. The mechanism of action of capofungin is:
   a. Inhibits the fungal enzyme responsible for the synthesis of ergosterol
   b. Binds to ergosterol in the fungal cell membrane rendering the cell leaky
   c. Inhibits the synthesis of glucan, an important cell wall polysaccharide
45. Which of the following drugs does NOT have activity against Influenza B?

   a. Oseltamivir  
   b. Zanamivir  
   c. Amantadine  
   d. Ribavirin

46. Ribavirin has activity against all of the viruses listed below EXCEPT for which one?

   a. hepatitis C  
   b. respiratory syncytial virus  
   c. Lassa fever  
   d. SARS

47. A 20-year old man presents with a 3 week history of bloating and watery diarrhea. A stool exam reveals the presence of flagellated protozoa. He starts taking metronidazole 250-mg orally every eight hours. Two days later he feels better and leaves for Fort Lauderdale for Spring break. After one day of sunbathing and parties, he presents to a local physician complaining of nausea, vomiting, lightheadedness, and flushing. The most likely explanation for his symptoms is:

   a. drug interaction  
   b. disseminated infection with Giardia lamblia  
   c. Metronidazole overdose  
   d. reaction to dying parasites

48. 30 y/o male presents with thigh pain, fever, increased CPK, WBC 23K, MRI showed pyomyositis. Pt is treated with I&D, vancomycin and meropenem. Cultures grew MRSA. Vancomycin continued. On eight hospital day he developed:

   The most likely diagnosis is:
49. A 64 year-old man presents to your office with a history of intermittent draining sinus from his left tibia for the past 35 years. He tells you that he suffered an open fracture of his left tibia at age 27 when he fell off his motorcycle. He had external fixation and the fracture appeared to heal, but a year later he noted drainage from his left anterior shin. It never bothered him, so he did not seek medical attention. Over the past 3 months however, he has noticed a growing, friable mass at the site of the sinus tract. The most likely diagnosis is:

a. Fungal chronic osteomyelitis
b. Osteosarcoma
c. Amyloidosis
d. Squamous cell carcinoma

50. A 72 year-old woman is sent to you by her internist because of pain and swelling in her right knee for the past 6 months. She had a right total knee arthroplasty 18 months ago that was complicated by poor wound healing. The best diagnostic test to determine if the prosthesis is infected is:

a. Aspiration of the knee and send fluid for cell count
b. MRI
c. Bone scan
d. WBC scan

51. A 46 year-old male automobile mechanic comes to the emergency department with worsening back pain for the past 3 weeks. He “sprained” his back at work 3 weeks ago, but the pain is not improving despite analgesics and muscle relaxants. On examination, he has tenderness to palpation over the L3 and L4 vertebrae. He denies fever and chills. Radiographs of his lumbar spine reveal evidence of osteoarthritis and CBC shows normal WBC and differential. What studies would you recommend?

a. None, continue rest and analgesics
b. MRI of lumbar spine
c. Bone scan
d. Gallium scan

52. An 83 year-old woman is brought in by her family from home because of increasing confusion and fever over the past 2 days. She is normally active, but she refuses to walk. On exam her left knee is moderately swollen, warm and tender. An arthrocentesis is performed and reveals 84,000 WBCs with 95% PMNs. Gram stain of the fluid is negative. The most appropriate initial therapy is:

a. Intra-articular steroids
b. Cefazolin 2 gm IV every 8 hours  
c. Vancomycin 15 mg/kg every 12 hours  
d. Vancomycin 15 mg/kg every 12 hours and ceftriaxone 1 gm every 24 hours

53. A 35 year-old man comes in to the emergency department because of fever and chills for the past 10 days. He denies travel, sick contacts and animal exposure. He works in sales in an office setting. He denies use of illicit drugs. His physical exam is normal. CBC and CXR are normal. Blood cultures are drawn and he is send home with a diagnosis of viral syndrome. The following day you are called because 2 of 2 blood cultures are now growing coagulase-negative staphylococci. What should you suggest to the ED physician?

   a. Blood cultures are likely contaminated.  
   b. Patient should be evaluated for *Staphylococcus lugdunensis* infection and may have infective endocarditis.  
   c. The lab likely made a mistake and it is likely *Staphylococcus aureus*.  
   d. Re-evaluate the patient in one week.

54. A 62 year-old woman is admitted from the emergency department with a history of fever, chills and weight loss over the past month. She is homeless and has a history of alcohol use. She frequently stays in homeless shelters. She is on no medications. She denies travel outside of the US and she has no known animal exposures. She has a murmur on physical examination and a TEE shows a 10 mm vegetation on her aortic valve. Multiple blood cultures are negative. What would be the most appropriate recommendation at this time?

   a. Repeat TEE in one week  
   b. Colonoscopy to look for an occult cancer  
   c. ELISA for Bartonella  
   d. ELISA for Brucella

55. You are asked to consult on a 56 year-old man admitted with fever and chills. TEE reveals a 6 mm vegetation on the mitral valve. There is no other valve abnormality and no abscess. Four/four blood cultures have grown *Enterococcus faecalis* which is ampicillin and vancomycin susceptible. However, it has high-level resistance to gentamicin and streptomycin. What is the most appropriate treatment for this patient?

   a. Immediate mitral valve replacement  
   b. Vancomycin and high-level gentamicin  
   c. Ampicillin and high level streptomycin  
   d. Ceftriaxone and ampicillin
56. Which of the following is not usually considered an indication for valve replacement in a patient with infective endocarditis?

a. Acute aortic valve insufficiency with early closure of mitral valve  
b. Q fever endocarditis  
c. Valvular obstruction  
d. Evidence of annular abscess formation

57. Which of the following is not true about norovirus?

a. Norovirus is the leading cause of acute gastroenteritis and foodborne disease in the United States  
b. Norovirus is an enveloped virus  
c. As few as 18 viral particles constitute an infectious dose of norovirus  
d. Norovirus remains infectious at freezing temperatures  
e. Infected patients shed norovirus in their stool before, during, and after manifestation of symptomatic illness

58. Of the following healthcare-associated pathogens, the most prevalent in United States acute care hospitals is:

a. Methicillin-susceptible *Staphylococcus aureus*  
b. Methicillin-resistant *Staphylococcus aureus*  
c. *Klebsiella* spp.  
d. *Clostridium difficile*  
e. *Escherichia coli*

59. All of the following pathogens or diseases have been transmitted by organ transplantation except:

a. *Borrelia burgdorferi*  
b. *Balamuthia*  
c. Rabies  
d. *Lymphocytic choriomeningitis* virus  
e. West Nile Virus

60. Which of the following statements is true of Hepatitis E virus (HEV)?

a. HEV is a DNA virus  
b. HEV has 4 serotypes  
c. HEV has an incubation period similar to Hepatitis B  
d. HEV has not been acquired in New Zealand  
e. HEV has a chronic carrier state
61. Of the following which is/are the most appropriate isolation precautions for a patient with ventilator-associated pneumonia and suctioned sputum cultures positive for carbapenem-resistant *Klebsiella pneumoniae* (KPC)?

a. Droplet Precautions  
b. Contact Precautions  
c. Airborne Isolation  
d. Protective Isolation  
e. Contact Precautions & Airborne Isolation

62. A previously healthy 30 yo man has a 4 cm diameter soft-tissue abscess on his thigh, with several cm of surrounding cellulitis. The area has been painful for 5 days and the patient has a temperature of 101ºF. The abscess is treated with incision and drainage which yields about 5 ml of purulent material, and the patient is sent home with an antibiotic prescription for trimethoprim-sulfamethoxazole.

The patient returns 2 days later with worsening cellulitis and tells you that he did not fill the antibiotic prescription because he remembered that he had developed a severe skin rash and fever 3 years ago after taking "some kind of sulfa drug" and was told "never take a sulfa antibiotic again".

You call the lab and are told that the abscess fluid has grown a pure culture of methicillin-resistant *Staphylococcus aureus*, with the following preliminary susceptibilities by disk diffusion: S to clindamycin, R to erythromycin, S to trimethoprim-sulfamethoxazole, S to tetracycline. Results of a D-test are not yet available.

You should prescribe the following for the patient:

a. Further incision and drainage and no antibiotic  
b. Further incision and drainage and topical mupirocin  
c. Oral doxycycline  
d. Oral clindamycin  
e. Oral trimethoprim-sulfamethoxazole

63. A 24 yo woman is admitted with suspected bacterial meningitis. She is treated empirically on admission with intravenous ceftriaxone and vancomycin. Cerebrospinal fluid culture obtained in the Emergency Department grows *Neisseria meningitidis* on hospital day 2. The patient's doctor calls you. The patient has received antibiotics for 48 hours and is improving but has not been on any isolation precautions.

The doctor asks which of the following options would be most appropriate at this point:

a. Continue Standard Precautions  
b. Place the patient on Airborne Isolation  
c. Place the patient on Droplet Precautions  
d. Place the patient on Contact Precautions  
e. Place the patient on Contact Precautions & Airborne Isolation
64. A 50 yo surgical resident has spent the past 2 decades doing lab research and occasionally moonlighting as a night call physician for a chain of nursing homes. She is returning now to patient care. At her hospital orientation, she is found to have 12 mm of induration around her PPD (purified protein derivative) intradermal skin test at 48 hours after placement of the test. Her chest X-ray is negative; she has no co-morbidities or prior PPD results, is American-born, has never received BCG vaccine, and feels well.

You should advise her to:

a. Repeat the PPD skin test in 1 to 3 weeks
b. Take a 6 month self-directed course of isoniazid
c. Take a 9 month self-directed course of isoniazid
d. Take a 12-week self-directed course of weekly isoniazid and rifapentine
e. Have a serologic test (e.g., an interferon-γ release assay)

65. A 22 year old female with cystic fibrosis undergoes lung transplantation in November. She received thymoglobulin induction therapy and is on prednisone, tacrolimus and mycophenolate mofetil for maintenance immunosuppression. She is on trimethoprim-sulfamethoxazole, valganciclovir and voriconazole for infection prophylaxis.

She presents to transplant clinic on POD # 15 with fever, dyspnea and a nonproductive cough. CXR reveals bilateral interstitial infiltrates. Bedside spirometry reveals decreased FEV1.

Which of the following is most likely?

a. Acute cell-mediated rejection
b. CMV pneumonitis
c. Hospital-acquired influenza A
d. *Scedosporium* pneumonia
e. *Legionella* pneumonia

66. A 67 year-old male with recurrent focal segmental glomerulosclerosis (FSGS) presents for evaluation for a second kidney transplant. He grew up in Kentucky and his medical records reveal two previous episodes of *Ecoli* bacteremia post transplant. You find no evidence of concurrent UTI. What additional testing do you perform to try to decrease his risk of infection with a second transplant?

a. CMV resistance testing
b. Colonoscopy with biopsies
c. *Strongyloides* antibodies
d. Stool cultures
e. No testing is necessary – he should remain on ciprofloxacin suppression after transplant.
67. A 42 year-old pancreas after kidney transplant recipient develops chills, drenching sweats and right lower quadrant pain two weeks post transplant. He is on tacrolimus, mycophenolate and prednisone with trimethoprim-sulfamethoxazole and valganciclovir for infection prophylaxis. He received thymoglobulin induction therapy. His pancreas is enterically drained.

On physical exam he has a temperature of 99° (baseline 96.8°) and has tenderness in the RLQ, overlying the pancreas allograft. The wound is intact, without erythema or drainage.

Pertinent laboratory findings include:
- Glucose 90 mg/dl
- Creatinine 1.3 mg/dl (baseline)
- Amylase 190 U/l
- Lipase 250 IU/l
- WBC’s 16.2 with 90% segs, 0% bands
- Urinalysis: 0 wbc’s

A CT scan is ordered.

Which of the following is most likely?

a. Acute pancreas allograft cell-mediated rejection  
b. Peripancreatic abscess from an anastomotic leak  
c. Diverticulitis  
d. CMV infection of the allograft  

68. A 63 year old male presents to the ED with nausea, tremors, and pruritus. Ten years ago he underwent heart transplantation and has been maintained on cyclosporine, prednisone and azathioprine. His baseline creatinine is 1.2 mg/dl.

In the ED, he is found to have a blood pressure of 180/90, no crackles, but 1+ edema, fine tremors in his hands, and a creatinine of 6.2 mg/dl. He admits to recently completing three drug therapy for an ulcer diagnosed by his gastroenterologist.

What is the most likely diagnosis?

a. Azathioprine toxicity  
b. Cardiorenal syndrome  
c. Cyclosporine toxicity  
d. CMV infection with interstitial nephritis  

69. A 64 year-old female with AML undergoes matched unrelated allogeneic HSCT; she engrafts on day +58. On day +70 she presents with fever and cough and is diagnosed with Aspergillus fumigatus pneumonia by bronchoscopy and CT findings. She is started on voriconazole and improves. On day +124 she presents to oncology clinic with
jaundice, nausea and vomiting. She is afebrile. She is noted to have a pruritic maculopapular rash with areas of hypopigmentation, concentrated on the trunk and face.

Pertinent lab findings include:
Wbc count 4.5 – 70% lymphocytes, 26% segs, 0% bands, 10% monos, 4% Eosinophils
Platelets 110,000
AST/SGOT = 76 IU/ml
ALT/SGPT = 46 IU/ml
Alkaline phosphatase 421 IU/ml
Total bilirubin 4.3 mg/dl, direct 3.1 mg/dl
Creatinine 1.2 mg/dl

What is the most likely diagnosis?

a. Voriconazole toxicity
b. Graft versus host disease
c. CMV hepatitis
d. Hepatosplenic candidiasis

70. A 21 year-old male with a history of renal transplant from his father at the age of 10 and a second, deceased donor transplant 2 years ago presents with nausea and vomiting for three days. He has been maintained on tacrolimus, prednisone and mycophenolate mofetil and has excellent allograft function. On examination, he has a temperature of 100.1 and a firm abdomen. KUB confirms the presence of small bowel obstruction. An NG tube is placed; a CT scan is obtained and confirms the presence of SBO. After 48 hours, his symptoms are not improved and he undergoes exploratory laparotomy. There he is found to have a submucosal mass in the jejunum, which is resected and confirmed to be diffuse large B cell lymphoma.

Which of the following factors increased this patient’s risk for post transplant lymphoproliferative disease (PTLD)?

a. CMV mismatch (donor+/recipient-)
b. EBV mismatch (donor+/recipient-)
c. Long term prednisone therapy
d. Use of thymoglobulin induction with his second transplant
e. Use of a deceased donor for his second transplant
f. 1,2 and 3
g. 2 and 4
h. All of the above

71. A 47 year old female with a history of kidney transplantation four years ago presents with dyspnea and dry cough for four weeks. Her post-transplant course is notable for a biopsy diagnosis of thrombotic microangiopathy two months ago, attributed to her tacrolimus;
she was switched to sirolimus at that time and her creatinine is stable at 1.9 mg/dl. She is maintained on sirolimus, mycophenolate mofetil and prednisone (5 mg daily).

On presentation, she has a temperature of 100.4, a pulse of 110 bpm, Blood pressure of 120/70, and oxygen saturations of 88% on room air. CT of the chest reveals diffuse interstitial infiltrates and ground glass opacities with no effusions or adenopathy. Bronchoalveolar lavage specimens are sent: viral and fungal cultures are negative, cytology reveals acute inflammation, PCRs for CMV and EBV are negative, and DFA testing for Pneumocystis and Legionella is negative. On cefepime, vancomycin, trimethoprim-sulfamethoxazole and ganciclovir, she remains hypoxic and febrile.

What do you recommend next?

- Add voriconazole
- Perform a CT pulmonary angiogram
- Send her BAL fluid and plasma for HHV-6 PCR testing
- Discontinue the sirolimus
- Increase her prednisone dose to 60 mg daily.

72. A 54 year-old female with polycystic kidney disease presents 4 years post renal transplant with fatigue. She reports compliance with all of her medications, which include tacrolimus, mycophenolate mofetil and prednisone; she is on no prophylactic antimicrobials. She has been afebrile, and denies the presence of chills, sweats, dysuria, cough and diarrhea. Labs reveal a stable wbc count (4.8 x 10^9/L) with normal differential; urinalysis demonstrates no pyuria or bacteriuria; her creatinine, however, is up from her baseline of 1.2 mg/dl to 1.6 mg/dl.

In order to investigate the potential infectious causes of her increasing creatinine, you order the following:

- CMV quantitative PCR on plasma
- CMV quantitative PCR on urine
- BK virus quantitative PCR on plasma
- CT to rule out an infected cyst in her allograft
- Nothing – she is not infected and should have a biopsy performed to rule out acute rejection.

73. A 44 year-old heart transplant recipient presents to transplant clinic with a history of fevers to 101.1°F for the past 2 weeks. He denies cough, dyspnea or diarrhea. He is 8 months post transplant and received 6 months of valganciclovir prophylaxis for CMV (D+/R-). He has had one episode of moderate acute rejection treated with pulsed corticosteroids and thymoglobulin in the third month post transplant. He is on tacrolimus, prednisone (5 mg daily) and azathioprine for immunosuppression. Tacrolimus levels have been running in the 8 to 10 ng/ml range. Exam is remarkable only for fever of 100.8°F orally; no rhonchi, rash, lymphadenopathy or abdominal
tenderness is present. Chest X-ray demonstrates no infiltrates. Urinalysis demonstrates no pyuria. Other labs include:

Wbc count 2.3 x 10^9/L with 50% segs, 0% bands, 20% lymphs, 20% monos  
Hemoglobin 10.4 g/dl  
Platelets 55,000 x 10^9/L  
Creatinine 1.2 mg/dl

Which of the following tests is most likely to make the diagnosis?  
   a. Endomyocardial biopsy to rule out rejection  
   b. CMV IgM on serum  
   c. Quantitative CMV PCR on plasma or whole blood  
   d. CT of the chest to rule out mediastinal adenopathy from post-transplant lymphoma  
   e. Bone marrow biopsy to rule out myelodysplasia

74. Which of the following is FALSE about transplantation of the HIV and/or HCV infected patient?  
   a. Patients with hepatitis C have a higher rate of post transplant diabetes mellitus than HCV negative recipients of kidney and liver transplants  
   b. HIV infected patients have higher rates of rejection than age-matched HIV uninfected patients  
   c. HIV-HCV coinfected patients have liver transplant outcomes (allograft and patient survival) similar to patients with cryptogenic cirrhosis  
   d. Drug interactions between antiretroviral agents and calcineurin inhibitors are significant, but do not preclude transplantation of HIV- infected patients.

75. A 45 year old type I diabetic female who is 11 months post pancreas transplantation and six years post living donor kidney transplantation presents to transplant clinic with dyspnea. She received thymoglobulin induction with both allografts and is maintained on tacrolimus, mycophenolate sodium, and prednisone (5 mg daily) for immunosuppression. She is on trimethoprim-sulfamethoxazole for *Pneumocystis* prophylaxis and received three months of valganciclovir after her pancreas transplant for CMV prophylaxis (D+/R+ status). She reports shortness of breath for the past 2 weeks, with no cough, no fever and no chest pain.

On presentation she has a temperature of 98.7°F with oxygen saturations of 92% on room air. Her lung exam is notable for diminished breath sounds in the right upper lobe area, with no rhonchi or wheezing. She has a wbc count of 4.0 x 10^9/L, with 50% segs, 4% bands, 25% lymphs; creatinine is at baseline and blood glucose is 86 mg/dl with a hemoglobin A1C of 5.4%. CXR reveals RUL infiltrates which appear nodular on CT scan; induced sputum is contaminated with epithelial cells and unable to be cultured.
Bronchoscopy is performed, and the microbiology lab reports seeing acute angle branching hyphae on BAL fluid smears. The transplant team stops the patient’s mycophenolate and requests your opinion on further management.

Which of the following do you recommend?

a. Discontinue tacrolimus and prednisone and start liposomal amphotericin B
b. Start meropenem and linezolid
c. Start voriconazole and triple the dose of tacrolimus
d. Start voriconazole and decrease the dose of tacrolimus to 1/3 of the current dose
e. Await culture results to make any additional changes

76. Match the following immunosuppressive agent with its toxicity (some may be used more than once)

<table>
<thead>
<tr>
<th>Thymoglobulin</th>
<th>a. Bone marrow toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tacrolimus</td>
<td>b. Pneumonitis</td>
</tr>
<tr>
<td>Prednisone</td>
<td>c. Nephrotoxicity</td>
</tr>
<tr>
<td>Sirolimus</td>
<td>d. Poor wound healing</td>
</tr>
<tr>
<td>Mycophenolate</td>
<td>e. Diabetes mellitus</td>
</tr>
<tr>
<td>Azathioprine</td>
<td>f. Proteinuria</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>g. Cataracts</td>
</tr>
<tr>
<td></td>
<td>h. Lymphoma</td>
</tr>
<tr>
<td></td>
<td>i. Tremor</td>
</tr>
</tbody>
</table>

77. A 25 y/o male presents with fever and sore throat X 1 week. He thought he had the flu, but now is noticing ulcerations in his throat, and is concerned. Exam is notable for enlarged cervical lymphadenopathy, aphthous ulceration, diffuse maculopapular rash. He reports being diagnosed with syphilis a month ago, has had unprotected sex with 2 sexual partners since that time.

Labs show Hg 12.5, WBC 2500, 50% PMN, 40% lymphs (few atypicals), 10% monos, plts 120,000

What test would you order to confirm this diagnosis?

a. Repeat HIV ELISA
b. HIV quantitative PCR
c. HIV viral culture
d. HIV Western blot
e. None of the above

78. Which of the following antiretroviral agents is NOT active against HIV-2?

a. Zidovudine
b. Nelfinavir  
c. Lamivudine  
d. Efavirenz  
e. Didanosine

79. Which of the following decreases blood levels of atazanavir?

   a. Raltegravir  
b. Nevirapine  
c. Ritonavir  
d. Lamivudine  
e. Ketoconazole

80. A 52 yo woman with a history of Rheumatoid arthritis donated blood prior to elective surgery for a breast mass. The blood bank reports that the unit is repeatedly reactive in an HIV enzyme immunoassay (EIA), with an indeterminate Western blot (+band gp41) and negative HIV-2 EIA. The patient was born in Chicago, has no history of blood transfusion or IVDU. She has been sexually monogamous for 10 yrs with a female partner who has no known HIV risk factors.  

Your advice is:
   a. Defer surgery until repeat HIV test is 3 months  
b. Advise patient she has early HIV disease and should start treatment.  
c. Perform HIV test on sexual partner  
d. Test patient for HTLV-1 and HTLV-2  
e. Inform patient that HIV infection is unlikely and repeat test in 3 months.  

81. History: A 25 y/o HIV infected male presents to your office with a complaint of fever, cough, diarrhea and crampy abdominal pain for 2 days.  

His last CD4 cell count was 150/mm3 and viral load 54,000.  
His antiretroviral therapy was changed from zidovudine/lamivudine/efavirenz to abacavir/lamivudine/ritonavir/atazanavir 4 weeks ago. TMP/SMZ was started due to low CD4. He reports good adherence with new medications.  
Chest Xray- no infiltrates  
Lab: WBC-3.2 (80 PMNs, 15 Lymphs, 2 Mono, 3 Eos) Cr:1.1, HCO3: 23, LFTs normal

You Advise:

   a. Admit for IV Bactrim and R/O Pneumocystis  
b. Stop Bactrim, continue other meds, follow-up in clinic in am  
c. Hold antiretrovirals admit for observation
d. Hold antiretrovirals and bactrim until symptoms resolve, then restart antiretrovirals with dapsone.
e. None of the above

82. A 42 y/o female with history of HIV infection presents to your office with complaint of nausea and vomiting for 3 days. She denies diarrhea, headache, or fevers but complains of mild shortness of breath. She has been on current antiretroviral therapy for 10 months. Her most recent CD4 cell count is 340 and viral load is <50. Her pre-ART CD4 cell count was 150.

She is married with 2 children and denies ill contacts. She underwent a ventral hernia repair 2 months ago without complication.
Meds: stavudine, lamivudine, efavirenz, Bactrim
Labs: Na:140; Cl 102; K 4.0; HCO3 14; BUN 20; Cr 1.0; AST 100; ALT 110; Tbil 1.5; Alk phos 140; WBC: 5.0; Hb 12; plt 150

What would you do next?

a. Order serum lactate level, hold antiretrovirals, admit for further evaluation
b. Change efavirenz to nevirapine
c. Order acute hepatitis panel
d. None of the above

83. A 41 y/o male with newly diagnosed HIV disease is referred to your office for management. His last negative HIV test was two years ago. His current CD4 cell count is 355 and his viral load is 100K. He reports mild fatigue and 10 lb weight loss but denies other symptoms.

His exam is notable for generalized lymphadenopathy but is otherwise within normal limits. CBC and CMP are normal. RPR, Hep B and C screens are negative. His only medication is omeprazole OTC.

What should you do next?

a. HIV genotype
b. HIV phenotype
c. Initiate antiretroviral therapy
d. Recommend adherence counseling

84. HIV resistance test reveals the following mutations:
K103N
M184V

Which treatment is recommended?

a. tenofovir+emtricitabine+efavirenz
b. zidovudine+lamivudine+nevirapine
c. tenofovir+zidovudine+atazanavir
d. tenofovir+ zidovudine+ lopinavir/r

85. History: A 25 yo HIV infected male presents to your office with a complaint of fever, cough, diarrhea and crampy abdominal pain for 14 days. He has 10-15 stools per day; denies BRBPR or melena. His last CD4 cell count was 15/mm3 and viral load 54,000. His antiretroviral regimen includes lopinavir/r, lamivudine, tenofovir however reports intermittent non-adherence. He is also currently on tmp/smx, azithromycin once weekly.

Modified acid fast stain of stool

What is your diagnosis?

a. Cryptosporidia
b. Isospora
c. Microspora
d. Giardia
86. 45 yo HIV+ homeless male presents to office with complain of new skin lesions on arms and legs. Exam reveals few diffusely scattered raised red papules and diffuse excoriations on skin of arms legs and trunk

Last CD4 one year ago was 100. Current pending

What is the treatment of choice?

a. daunorubicin  
   b. fluconazole  
   c. doxycycline  
   d. clindamycin

87. 31 y/o man presents with 2 wk h/o fever, malaise, sore throat, headache

Pt has a h/o crystal meth use  
PE shows pharyngeal erythema with multiple aphthous ulcers, diffuse lymphadenopathy, maculopapular rash on the chest  
Labs show Hg 12.5, WBC 2500, 50% PMN, 40% lymphs( few atypicals), 10% monos, plts 120,000

What laboratory test(s) do you order?

a. Monospot  
   b. CMV IgG and IgM  
   c. RPR and MHA-TP  
   d. HIV antibody  
   e. RNA viral load  
   f. All of the above

88. 50 y/o male with h/o HIV infection since 1999 with c/o recent urinary frequency

Medical history: Anal warts, BPH, hypogonadism/ED, ADHD, lipodystrophy, HTN, depression, neuropathy

Current labs  
HIV RNA VL <75, CD4 600 (28%)  
U/A WNL, glucose 112, CrCl >60 ml/min

Medications  
ABC/3TC/DRV/r  
Lisinopril, HCTZ, gabapentin,  
Alfuzosin* (Uroxtatral) recently started by Urologist  
* CYP 450 3A4 metabolism

Which of the following drugs is most likely causing this patient’s urinary frequency?
a. HCTZ  
b. Lisinopril  
c. gabapentin  
d. Alfuzosin

89. A 45y/o m presents with nausea, myalgias for 2 weeks and jaundice for 3 days. 4 yrs ago, told he was a hepatitis B carrier. He has a Past h/o IDU. Labs- TB 6.4, TB 5.2 ALT 300/AST 269, HAVIgM neg, HBsAg+, HBeAg-, HCV RNA neg, HBVDNA <100 IU/ml.

Which of the ff tests would you order?

a. Anti-Hbe  
b. B- HCV genotype  
c. C- Anti-HDV  
d. D- Anti HAV (total)

90. A 42 y/o M with refractory lymphoma is being evaluated for cytoablative chemotherapy in preparation for bone marrow transplantation. As part of his baseline labs he gets quantiferon testing (negative) and his hepatitis panel is negative except for HBcAb+. His HBsAg is negative and sAb is negative.

Which of the following is/are incorrect regarding his case?

a. He is unlikely to have active viremia with normal LFTs  
b. He should have serum HBVDNA run regardless of LFTs  
c. He should be treated with an oral agent against hepatitis B for at least 6 months after completion of immunosuppression  
d. He needs a liver biopsy to assess for inflammation to decide if he needs HBV antiviral therapy

91. A 62 y/o AAM with DM, HTN, chronic HCV is treated for HCV with pegIFN/ribavirin and sofosbuvir for 12 weeks and achieves a sustained virologic response SVR (cure). He had a liver biopsy 3 years before his rx which showed Metavir stage 4 fibrosis and a baseline transient elastography score 3 weeks before Rx was 16.

Which of the following is/are true?

a. There is a large discrepancy between his biopsy and TE score suggesting disease progression
b. With SVR his risk of Hepatocellular cancer is negligible and he does not require Hepatocellular cancer (HCC) screening
c. His age, and diabetes and additional risk factors for HCC in cirrhotic patients with SVR
d. Triple phase CT has the best sensitivity for detecting HCC and is the recommended screening modality

92. A 38 y/o HIV+/HCV+ woman with genotyle 1a HCV is being evaluated for HCV treatment. She has a past history of suicidal ideation and thyroid disease. Her first and current HIV regimen is Atazanavir/Norvir +Truvada and her CD4 count is 740 with undetectable HIVRNA.

Which of the following is false:

a. Sofosbuvir+ Simepravir regimen can be used in a patient on HIV protease inhibitors.
b. The Q80K mutation is more common in genotype 1a compared with 1b
c. An IFN free regimen is advisable in this patient

93. A 28 year old white male is treated for urethritis with ceftriaxone and azithromycin and he fails to improve in the days immediately following treatment. The causes of persistent urethritis include:

a. Chlamydia resistant to macrolides
b. Trichomonas vaginalis
c. Cytomegalovirus
d. Candida albicans
e. Neisseria gonorrhoeae

94. Moxifloxacin is indicated for which of the following infections:

a. Gonorrhea
b. Syphilis
c. Bacterial vaginosis
d. M. genitalium

95. A 28 year old white male with no past history of STDs presents for an HIV test and a syphilis test is done concomitantly. A commercial lab reports a positive screening treponemal EIA test. The most appropriate follow up includes:

a. Treatment of the patient and their partner with benaathine penicillin
b. FTAS-ABS
c. Rapid plasma regain (RPR) and further history
d. All of the above

96. A 28 year old man has a negative HIV test but is found to have a positive treponemal EIA test and RPR 1/32. The physical exam is normal. The patient is bisexual and has been sexually active since he was eighteen. He has not had prior STD testing. He complains of occasional headaches.

a. The patient has tertiary syphilis
b. The patient has neurosyphilis
c. The patient has late latent syphilis
d. The patient has secondary syphilis

97. Which of the following is true of TB therapy in HIV:
   a. Most of the protease inhibitors have significant drug interactions with rifampin
   b. Rifapentine based therapy is not recommended for TB disease in HIV
   c. Twice weekly therapy is not recommended for persons with CD4<100
   d. The risk of rifabutin-induced uveitis is increased with the concurrent use of fluconazole
   e. All of the above

98. Which of the following is true regarding MAC clinical syndromes in non-HIV infected persons:
   a. MAC cultured from sputum in a patient with cystic fibrosis is invariably a pathogen
   b. MAC-induced “hot tub lung” requires 18 months of antimycobacterial therapy
   c. MAC lymphadenitis is usually curable with excision alone
   d. Macrolide susceptibilities are not clinically useful

99. Which of the following is (are) acceptable treatment for latent TB infection?
   a. INH for 9 months
   b. INH and rifapentine q week for 12 weeks by directly observed therapy
   c. Rifampin/PZA for 2 months
   d. Rifampin for 4 months
   e. A, B, and D

100. A 48 yo Russian gentleman begins treatment for MDR pulmonary TB with amikacin, ethionamide, bedaquiline and levofloxacin based on susceptibility results. After 3 weeks of therapy, he experiences syncope and is found to have torsades de
pointes on presentation to the Emergency Department. What likely led to his cardiac event:

a. ethionamide cardiac toxicity
   b. QT prolongation from bedaquiline, exacerbated by levofloxacin
   c. renal disease caused by kanamycin
   d. undiagnosed TB pericarditis

101. A 50 yo woman with rheumatoid arthritis on infliximab for 3 years presents with fever, malaise, cough, diarrhea and weight loss for 2 weeks. She lives on a farm in northern Indiana where she raises horses and chickens with her husband and son, who are well. Her temperature is 101.2. Lung exam reveals coarse breath sounds in the right upper lung field. She has a palpable spleen tip. Her CBC is remarkable for a wbc count of 2.5, Hgb 7.2 and platelets of 94,000. Her AST (SGOT) is 122, ALT (SGPT) 86, and alkaline phosphatase 450. Chest x-ray shows right upper lobe consolidation with right hilar adenopathy. Blood cultures are sent.

What is the likeliest diagnosis?

a. Rhodococcus pneumonia
   b. Disseminated histoplasmosis
   c. Disseminated tuberculosis
   d. Legionella pneumonia

102. A 28 year old man was diagnosed with Blastomyces pneumonia and was discharged from the hospital 3 weeks ago on itraconazole capsules. The patient returns to see you in clinic and is concerned because he has had no improvement in fever or cough. He also states the itraconazole causes stomach upset and so he has been taking over the counter ranitidine twice a day with his antibiotic. Repeat chest x-ray is unchanged. What is the most likely reason for this patient’s apparent lack of response?

   a. Ranitidine is inducing the P450 metabolism of itraconazole
   b. The patient is noncompliant with itraconazole
   c. He has itraconazole resistant Blastomyces infection
   d. Ranitidine increases gastric pH and reduces absorption of itraconazole capsules

103. This drug acts on the fungal cell wall, inhibiting glucan synthesis:

   a. Micafungin
   b. Posaconazole
   c. Amphotericin B
   d. Flucytosine
104. There is increased risk for photodermatitis and skin cancer with which azole?
   a. Posaconazole
   b. Voriconazole
   c. Itraconazole
   d. Fluconazole

105. Voriconazole is metabolized primarily by which hepatic cytochrome P450 isoenzyme?
   a. CYP 2C9
   b. CYP3A4
   c. CYP2C19
   d. CYP123

106. In the U.S., posaconazole has an FDA approved indication for:
   a. Prevention of invasive fungal infections in patients with hematologic malignancies, such as AML and MDS, and chemotherapy induced neutropenia
   b. Treatment of infections due to Mucorales moulds (formerly zygomycetes)
   c. Prevention of invasive fungal infections in patients who have undergone allogeneic stem cell transplant prior to engraftment
   d. Treatment of invasive aspergillosis

107. A 52 yo man with type 2 DM and CKD (creatinine 2.5) is admitted to the SICU in septic shock; he is hypotensive requiring pressors. Three days ago he underwent elective ventral hernia repair. He has been started on vancomycin plus piperacillin-tazobactam and a stat CT abdomen/pelvis is ordered. Later that day you are consulted when a blood culture is reported positive for yeast by the microbiology lab. The SICU team asks for treatment recommendations. What would you do next?
   a. Tell them to start fluconazole 100 mg IV Q 24 hours
   b. Ask that 2 more blood cultures be drawn to ensure the yeast is not a contaminant
   c. Prescribe liposomal amphotericin B 5 mg/kg/day
   d. Order caspofungin 70 mg IV load then 50 mg IV Q 24 hours maintenance dose

108. You are asked to see a 39 year old woman with refractory AML and chronic neutropenia (ANC 0). She has had fever to 102 for 3 days despite empiric treatment with cefepime. She has been receiving prophylactic acyclovir and fluconazole. On questioning, she reports a mild headache and some clear nasal drainage that is new. Her exam is normal. Sinus CT shows opacification of bilateral maxillary sinuses and ethmoid sinuses. Blood cultures are negative. ENT has been called to evaluate the patient.
What do you recommend?

a. Begin oral posaconazole  
b. Begin liposomal amphotericin B  
c. Add vancomycin and continue cefepime  
d. Begin IV voriconazole

109. A 22 year old male presents with acute onset of fever, headache, and neck stiffness. There is a purpuric skin rash. CSF examination reveals a neutrophilic pleocytosis, high protein, and low glucose. CSF Gram stain shows intracellular Gram-negative diplococcic.

The test most likely to identify a primary immune defect is:

a. Quantitative IgG  
b. Response to vaccination with dT  
c. HIV  
d. CH50

110. A nineteen year old male presents with fever, neck pain, and a large, fluctuant L cervical lymph node. He has been treated for multiple episodes of pneumonia with abscess formation and a Staph. aureus liver abscess. His brother died of Staph. aureus liver abscess at age 4 years.

The test most likely to diagnose his immune deficiency is:

a. IgG, IgA, IgM  
b. Nitroblue tetrazolium test  
c. CH$\_{50}$  
d. Anti-neutrophil antibody titers
111. A 50 year old male received a renal transplant 6 months ago. He is still on prograf and azathioprine. He has developed fever, abdominal pain, and diarrhea over the past 2 weeks.

At this point you would send off:

a. AFB BCs for MAI
b. Serum Aspergillus antigen
c. Plasma CMV PCR
d. Send off stool for ova and parasites

112. A 35 year old female S/P allogeneic SCT for AML 5 months ago has been on prednisone for GVHD with cutaneous and GI tract involvement. Her neutrophil counts are normal, but she develops fever. CXR shows a nodular lesion and CT demonstrates this lesion is surrounded by a “halo” of ground glass opacification.

The most likely diagnosis is:

a. TB
b. Streptococcus pneumonia
c. Aspergillus fumigatus
d. Penicillium marneffei

113. A five-day course of oral azithromycin is appropriate first-line therapy for which of the following infections?

a. Cough caused by *Bordetella pertussis*
b. Acute bronchitis
c. Cough caused by *Mycoplasma pneumoniae*
d. Community-acquired pneumonia in an adult not requiring hospitalization

e. Streptococcal tonsillitis in a patient with severe penicillin allergy

114. In which of the following patient-care settings are intracranial complications of acute sinusitis most likely to be seen?

a. A dialysis clinic
b. A geriatrics clinic
c. A college health service
d. An HIV clinic

115. Infection of which of the following head or neck space compartments is most commonly complicated by mediastinitis?

a. The anterior compartment of the lateral pharyngeal space
b. The posterior compartment of the lateral pharyngeal space
c. The sub-myo hyoid space
d. The masseteric space

116. Which of the following inpatient pneumonia treatment practices is most strongly supported by published clinical evidence?

a. Using an antibiotic regimen that provides activity against atypical pathogens
b. Adding an aminoglycoside or fluoroquinolone to broad-spectrum β-lactam antibiotic therapy for hospital-acquired pneumonia complicated by septic shock
c. Adding vancomycin to a broad-spectrum β-lactam antibiotic plus azithromycin for community-acquired pneumonia complicated by respiratory failure
d. Treating ventilator-associated pneumonia for 8 days

117. Which of the following types of antibiotic resistance is due most commonly to modification of the antibiotic target?

a. Gentamicin resistance in Enterococcus faecium
b. Vancomycin-intermediate resistance in coagulase-negative staphylococcus
c. Resistance due to a KPC gene in Klebsiella pneumoniae
d. ESBL resistance in Escherichia coli
e. Inducible clindamycin resistance in Staphylococcus aureus

118. Which of the following mycobacterial species would be most likely to grow in vitro from a blood specimen inoculated onto Middlebrook-Cohn 7H10 agar and incubated for 7 days at 30°C in a 5% CO₂ environment?
a. *Mycobacterium xenopi*
b. *Mycobacterium genavense*
c. *Mycobacterium tuberculosis*
d. *Mycobacterium chelonei*

119. The beta-lactam susceptibility pattern shown below is **most likely** due to which of the following mechanisms?

   **Enterobacter cloacae**
   Ampicillin : Resistant
   Ampicillin-sulbactam : Resistant
   Piperacillin : Resistant
   Piperacillin-tazobactam: Resistant
   Cefoxitin: Resistant
   Cefotaxime: Resistant
   Cefepime: Susceptible
   Ertapenem: Susceptible

b. Outer membrane porin deletions that prevent beta-lactam antibiotics from reaching their intracellular target.
c. A synergistic interaction between a plasmid-encoded beta-lactamase and outer membrane porin deletions.
d. Derepression and hyperproduction of a chromosomal beta-lactamase.

120. Which is the test of choice to diagnose West Nile Virus (WNV) neuroinvasive disease?

   a. WNV PCR on CSF
   b. WNV IgM on CSF
   c. WNV PCR on serum
   d. WNV IgM on serum

121. Which of the following microorganisms stains with a modified acid fast stain?

   a. *Actinomyces israelii*
b. *Nocardia farcinica*
c. *Streptomyces spp.*
d. *Aeromonas hydrophila*

122. Which of the tests listed below is most sensitive for diagnosing *Legionella pneumophila* type 1 pneumonia?
a. Examination of sputum Gram stain.
b. Commercial Legionella urinary antigen test
c. Direct examination of sputum stained with a fluorescent antibody against *L. pneumophila*
d. Acute and convalescent antibody test

123. All of the following are true regarding Ebola transmission, **EXCEPT**:

a. Human-to-human infection is the primary mode of transmission in the setting of an Ebola epidemic
b. Persons infected with Ebola may transmit the virus to others only after they develop symptoms.
c. Bats are believed to be the primary reservoir for ebola viruses
d. Ebola is spread through direct contact with infected blood, vomitus, urine, feces, semen, and sweat as well as via infected droplets.
e. Personal protective equipment, including masks, gowns, gloves, and eye protection, should be utilized by all healthcare workers treating patients with presumed or confirmed Ebola.

124. A 20 year old man presents to the ED for evaluation of a black, necrotic lesion on the lateral aspect of his fifth finger. There is significant surrounding erythema and edema. He first noted the lesion 4 days ago. For the past 2 days, he has also experienced fevers, malaise and headache. He is febrile to 101.9°F, heart rate is 118, and blood pressure is 88/60. His lab work reveals a hemoglobin of 10.4 G/dL, a white blood cell count of 13,000 TH/uL, a platelet count of 90,000 TH/uL and a creatinine of 1.8 (mg/dL). LP is recommended evaluate for possible meningitis, however, patient declines. Patient is admitted for further evaluation and treatment. His blood cultures ultimately grow a Gram positive rod.

Additional history obtained from the family later reveals that the patient is a college student. He has not travelled outside of the US. He and his college roommates have a fish take with several goldfish. His brother is a physician for Doctors without Borders and just returned from two years in West Africa. The brother brought the patient a small drum as a souvenir of his time in Africa.

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

a. IV gentamycin
b. IV clindamycin and IV ciprofloxacin
c. IV meropenem, IV ciprofloxacin, IV linezolid, and Raxibacumab
d. IV imipenem
e. IV gentamycin and PO doxycycline
125. A 30 year old man who resides in the United Kingdom is being evaluated for a progressive neurocognitive disorder. He undergoes a lumbar puncture as well as a brain biopsy. Which of the following statements is true regarding appropriate infection control practices?

   a. The heat-resistant, reusable surgical instruments used to perform the brain biopsy should be soaked in a NaOH solution then autoclaved at 121°C.
   b. The heat-resistant, reusable surgical instruments used to perform the brain biopsy should be soaked in a 2% Glutaraldehyde solution then autoclaved at 121°C.
   c. The heat-resistant, reusable surgical instruments used to perform the brain biopsy should be washed using an alkaline detergent.
   d. Standard disinfection and sterilization methods are sufficient for both the spinal needle and surgical instruments.
   e. The spinal needle and surgical instruments all must be discarded (including those instruments generally considered to be heat-resistant and re-useable).

126. A 56 year old woman returned from a month long tour of Southeast Asia 3 weeks ago. She presents with fevers, chills, and headache for the past 2 days. During her travels she visited Vietnam, Thailand, and Cambodia. Prior to the trip, she underwent evaluation in a travel medicine clinic. She was prescribed malaria prophylaxis which she took as prescribed. In addition, she received typhoid, Tdap and hepatitis A vaccination and a prescription for azithromycin in case of travelers’ diarrhea. While travelling, she spent most of her time in high-end resorts. She ate primarily in nice restaurants, but occasionally enjoyed food from street vendors. She was in central Vietnam during monsoon season. She reports that on multiple occasions she needed to wade through several inches of standing flood water. She visited an elephant sanctuary in Thailand and saw several monkeys throughout her stay. She does not recall any animal bites or scratches.

On exam, she is febrile to 102°F and tachycardic. Mild scleral icterus is noted. Her neck is supple. No rash is noted. Her labs reveal elevated AST and ALT (81 and 69 U/L), elevated bilirubin (4.5 mg/dL), and elevated creatinine (2.1 mg/dL). She also has hyponatremia (129 mmol/L). Blood cultures are negative at 48 hours.

What is the most likely diagnosis?

   a. Yellow Fever
   b. Leptospirosis
   c. Dengue Fever
   d. Scrub Typhus
   e. Hepatitis A

127. 40 year male traveled to Minnesota where he went camping and hiking for 1 week in early July. 7 days after his return, he presented to the ER with fevers of 102.0,
headaches, diffuse myalgias, malaise, and vomiting. In the ER, he was noted to have a rash. He does not recall getting a tick bite.

Labs were remarkable for WBC of 2,500, with ANC of 1000, with platelets of 90,000, hemoglobin of 14. His BMP was unremarkable. LFT’s were remarkable for AST and ALT three times the upper limit of normal, with alk phos and LDH elevated at two times normal. Haptoglobin was normal, total bilirubin was normal.

LP: 5 wbc, nl protein, nl glucose; gram stain negative

On exam, T102.0, BP 130/70, HR 110, RR 12, 98% RA; uncomfortable but not in severe distress.

Exam unremarkable except for rash and tachycardia.

http://phil.cdc.gov

What drug(s) would you start this patient on?

a. Ceftriaxone
b. Doxycycline
c. Atovaquone + clindamycin
d. Atovaquone + clindamycin + doxycycline

128. What is the best way to confirm cause of the rash?

a. Send Lyme ELISA, with confirmatory western blot if positive or equivocal
b. Send Lyme PCR on whole blood
c. Obtain skin biopsy of leading edge for immunofluorescent staining
d. Diagnosis is made clinically
A 25yo previously healthy pregnant female (10 weeks gestation) presents with fevers. In August, she had spent one week in a rustic log cabin in the mountains of Colorado, went white-water rafting in the rivers and went swimming, and hiking. She was bitten by numerous insects. One week after returning, she had acute onset of high fevers, myalgias, rigors, cough, headaches. She took Tylenol, drank fluids as she thought she had the flu. 72 hours after start of fevers, she felt better. However, one week later, she again had high fevers to 103, headaches, chills, cough, with facial nerve palsy. She went to the ER, where she was noted to have AST/ALT 3times higher than normal, total bilirubin of 3.0, anemia of 10mg/dl, and platelets of 100,000. WBC 12K, with 80% neutrophils.

On exam in ER, she was febrile to 103, HR 110, rr 14, BP 120/60, 95% RA

Exam: no conjunctival suffusion, mild neck stiffness, + r. sided facial nerve palsy, tachycardia, splenomegaly

[Image]

http://phil.cdc.gov

Manual blood smear was obtained.

What treatment should be administered to this pregnant patient?

a. Doxycycline  
b. Ceftriaxone  
c. Erythromycin  
d. Atovaquone + clindamycin  
e. Supportive management
130. A 50 yo homeless male who has been living in an abandoned building in Baltimore, MD, presents to ER with fevers, chills, myalgias, and rash. He states that there were mice and rats in the abandoned building. Pt states that he gets multiple insect bites. However, he noted one of the bug bites got black and began to look like a cigarette burn. A few days later, he noted the fevers and chills, with a sore throat. Two days after the fever, he noticed this rash and became concerned. In ER, t101.0, HR 90, RR 12, 145/80, 100% RA

Exam remarkable for 50 papulovesicular lesions of similar appearance scattered on arms, legs, face, and chest; r. thigh lesion, with inguinal LAD. Otherwise, well appearing.

Emerging Infectious Diseases • Vol. 8, No. 7, July 2002

R. thigh lesion Papulovesicular lesion

What is the organism that caused this infection?

a. Leptospirosis  
b. S. moniliformis  
c. R. akari  
d. B. hermsii  
e. R. typhi

131. If the patient above acquired the infection from rodents, what is the most likely route of infection?

a. Inhalation of rat urine  
b. Bite of rat flea  
c. Bite of rodent mite  
d. Bite of rodent  
e. Bite of rodent soft bodied tick

132. 30 yo male patient comes to clinic with complaints of fevers, chills, muscle aches, and headaches. Pt had come back from South Africa one week prior to clinic visit. In South Africa, he was mainly in Johannesburg, but spent the last 5 days on a safari in South Africa. He used mosquito repellent, drank bottled water. He doesn’t recall getting bitten by any ticks.
Exam was notable for fever 101, otherwise well appearing; 3 eschars on neck, r. thigh and r. groin, with bilateral nontender inguinal LAD. No edema of his lower extremities or neck. He also had a faint diffuse maculopapular rash.

The most likely cause of infection is:

a. *O. tsutsugamushi*
b. *F. tularensis*
c. *B. anthracis*
d. *R. africae*
e. *R. prowazekii*

133. The following 8mm object was found in the cecum of a 50 yo man during a routine screening colonoscopy.

![Image of a 8mm object]

The likely diagnosis is:

a. Whipworm
b. Ascaris
c. Anisakis
d. Pinworm

134. The patient is subsequently referred to an ID doctor for evaluation. What further question would you ask the patient?

a. HIV risk factors
b. Recent travel to SE Asia
c. Are there young children at home
d. Any consumption of raw fish

135. What is the treatment of choice?
a. Albendazole  
b. Praziquantel  
c. Ivermectin  
d. Metronidazole

136. A 66 yo British lady previously healthy, who has been living in Phnom Penh Cambodia for past 3 months presents with abrupt onset of loss of appetite, fevers/chills, nausea, abdominal discomfort and bloating. On examination she has mild tender hepatomegaly. CT scan abdomen shows the following:

Aspiration of the liver abscess is most likely to show:

a. Mixed gram-positive and gram-negative organisms on G-stain  
b. Hydatid sand (hooklets and scolices)  
c. G-stain is negative for bacteria  
d. Tumor cells suggestive of hepatocellular carcinoma

137. What is the appropriate antibiotic of choice?

a. Albendazole for 6 months  
b. Tinidazole for 5 days  
c. Ceftazidime plus metronidazole  
d. Praziquantel

138. What is the most likely means of transmission of this infection?

a. Ingestion of watercress  
b. Ingestion of drunken crabs  
c. Ingestion of undercooked pork  
d. Ingestion of cysts in fecally contaminated food or water
139. The following structures measuring 25-30 microns in size were seen in the stool of a 30 yo male who developed diarrhea with mild eosinophilia after travel to Nepal.

![Image](image)

The most likely diagnosis is:

a. Cytoisospora  
b. Cryptosporidium  
c. Microsporidium  
d. Cyclospora

140. The treatment of choice for this infection is:

a. Albendazole  
b. Trimethoprim/Sulfamethoxazole  
c. Metronidazole  
d. Nitazoxanide

141. A 28 yo man with no history of travel, presents with intermittent cough and productive sputum that is blood tinged for approximately 6 months. His laboratory test results are only significant for a mild eosinophilia. A chest X-ray revealed multiple pulmonary nodules, some with cavitation. BAL performed revealed the following structures.
The patient most likely has infection with:

a. Dirofilaria immitis
b. Echinococcus granulosus
c. Paragonimus kellicotti
d. Wucheria bancrofti

142. What is the likely source of this infection?

a. Consumption of pickled crabs in Vietnam
b. Consumption of raw crayfish
c. Bite of an Aedes mosquito
d. Consumption of watercress

143. What is the treatment of choice for this infection?

a. Albendazole
b. Ivermectin
c. Diethylcarbamazepine (DEC)
d. Praziquantel
144. These cysts were found in the stool of a returning traveler from Mexico.

What is the treatment of choice?

a. Tinidazole
b. No treatment is necessary as these are non-pathogenic protozoa
c. Albendazole
d. Trimethoprim-Sulfamethoxazole

145. A 27 year-old receives rubella vaccination. 2 weeks later she learns she is pregnant and by dates was pregnant at the time of vaccination. What do you do?

a. Test the fetal cord blood for rubella antibodies
b. Perform aminocentesis at 12 weeks gestation to look for rubella virus
c. Administer immune globulin
d. Recommend aborting the fetus
e. Reassure the patient regarding the safety of the vaccine to her fetus

146. A 21 year–old stepped on a rusty nail. His last tetanus booster was 6 years ago and he received his primary series as a child. You recommend:

a. no vaccine as he received his last dose within 10 years
b. Tdap preferred over Td
c. Td preferred over Tdap
d. TIG plus vaccine

147. A resident presents to employee health with a vesiculo-papular rash consistent with varicella zoster. Her nephew had chickenpox 2 weeks ago. She has been working on the oncology unit. Which of the following should be done next regarding potential exposed staff?
a. perform varicella antibody testing on all exposed staff
b. administer varicella vaccine to all exposed staff who have no history of chickenpox
c. administer varicella zoster immune globulin to all exposed staff who have no history of chickenpox
d. perform varicella antibody testing on all exposed staff who have no history of chickenpox
e. remove all exposed staff from patient contact for 8-21 days.

148. 21 year-old college male seeks your advice regarding a recent measles outbreak at school. During the past month 20 students have been diagnosed with active measles. The patient received a single dose of measles vaccine 20 years ago (at age 15 months). Which of the following is most appropriate?

a. reassurance that he is unlikely to get infected
b. reassurance that his prior vaccine should protect him
c. immunization with measles (MMR) vaccine
d. prophylaxis with acyclovir until the outbreak is over
e. measure serum antibodies to measles

149. A college student infectious with measles returned to Iowa from India via a commercial airliner. As the infection control officer for the Iowa Department of Health you obtain the passenger list and interview the student to determine other contact. You:

a. born in 1961 and received 2 doses of measles vaccine at age 10 months and 4 years of age
b. sole receipt of killed measles vaccine
c. born in 1962 and received 2 doses of measles vaccine at age 13 months and 5 years of age
d. born in 1961 and received a single dose of measles vaccine at age 11 months

150. A 15 year-old boy is bitten on the thigh by a bat. You are asked to see him 2 days after the bite. The wound is clean and uninfected. The patient received his childhood immunizations and a Td booster at the age of 12. Which of the following do you recommend?

a. Rabies vaccine IM in the gluteal or deltoid region
b. No rabies vaccine
c. Rabies vaccine IM in the deltoid region with human rabies immune globulin (HRIG) IM in the gluteal area
d. Rabies vaccine IM in the gluteal area with HRIG around the wound e) Rabies vaccine IM in the deltoid region with HRIG around the wound

e. Rabies vaccine IM in the deltoid region with HRIG around the wound
151. A 70 year-old woman who has no chronic illnesses comes to your office in mid-November. She states she became ill shortly after last year’s flu vaccine. On close questioning she developed fever and a runny nose within 24 hours of the injection followed by a sore throat. You recommend which of the following?

a. Inform the patient that she is likely to become ill if revaccinated and offer amantadine prophylaxis throughout the flu season
b. Recommend immunization as last year’s symptoms were likely unrelated to the vaccine
c. Recommend the live-attenuated influenza vaccine
d. Do not immunize this year and provide prophylaxis with amantidine if close contacts develop symptoms of influenza

152. A 30 year-old man is planning an 8 week vacation trip to Thailand this coming summer. He will be visiting urban and rural areas. He received his childhood immunizations for diphtheria, tetanus, pertussis, poliovirus (oral), and measles/mumps/rubella at age 12 months. Last year he went to South America and received the oral typhoid vaccine. Which of the following vaccinations should he receive now?

a. Hepatitis A, measles (MMR), inactivated poliovirus, Japanese B encephalitis, Tdap vaccines
b. Yellow fever vaccine, inactivated poliovirus, Tdap vaccines
c. Hepatitis A, inactivated poliovirus, Tdap vaccines
d. Japanese B encephalitis, Tdap vaccines

153. A 26 year-old nurse comes in for a prenatal visit at 12 weeks gestation. You review her immunization history. She declined hepatitis B (HBV) vaccination in the past as she does not draw blood. Which of the following should you recommend?

a. Inform her that she is at low-risk and not a candidate for HBV vaccination
b. Test her for HBsAg to assess care of her infant and if negative proceed with HBV vaccination
c. Administer HBV vaccination and HBIG
d. Administer HBIG

154. It is December and you have determined there is an influenza outbreak occurring in your ICU. As head of infection control, you recommend which of the following?

a. Cohort infected patients, vaccine not indicated
b. Vaccinate all staff and patients for which there is no contraindication
c. Vaccinate all staff and patients for which there is no contraindication and administer antiviral prophylaxis for 2 weeks
d. Vaccinate all unvaccinated staff and patients for which there is no contraindication and
administer antiviral prophylaxis for a minimum of 2 weeks, but as long as 1 week after the last case occurred to all patients and staff who cannot be vaccinated. Consider antiviral prophylaxis to vaccinated staff if the outbreak strain is not well-matched to the vaccine.

155. Four cases of meningococcal meningitis have been diagnosed in your community. One case has been typed as serogroup C. All affected individuals attend the local university. Given the circumstances of an outbreak you make which of the following recommendations?

a. Recommend antibiotic prophylaxis for close contacts of diagnosed cases
b. Recommend antibiotic prophylaxis to close contacts of diagnosed cases and recommend meningococcal vaccine to members of the university community
c. Perform nasopharyngeal cultures and offer antibiotic prophylaxis to carriers of N. meningitides
d. Recommend antibiotic prophylaxis and administer meningococcal vaccine to close contacts of diagnosed cases

156. You see an Ukrainian immigrant in her 2nd trimester of pregnancy. She is asymptomatic but is found to be Hepatitis B surface antigen and e antigen positive. Her newborn should receive which of the following?

a. Hepatitis B vaccine
b. Lamivudine
c. Hepatitis B immune globulin
d. Hepatitis B vaccine and Hepatitis B immune globulin

157. A college student infectious with measles returned to Iowa from India via a commercial airliner. As the infection control officer for the Iowa Department of Health you obtain the passenger list and interview the student to determine other contacts. You decide to offer post exposure prophylaxis to exposed, susceptible contacts using which of the following strategies:

a. Measles-mumps-rubella (MMR) vaccination within 72 hours of exposure
b. Immune globulin within 6 days of exposure
c. MMR within 72 hours of exposure or IG within 6 days of exposure depending on the ability of recipients to receive MMR
d. MMR within 72 hours of exposure AND IG within 6 days of exposure

158. You are serving as infection control officer and have had several healthcare workers exposed to a patient with varicella. One female nurse is found to lack antibodies to varicella. It is now 2 days after exposure the nurse is healthy and has a negative pregnancy test. Which of the following should you recommend?
a. Valacyclovir for 14 days and continue working
b. Varicella zoster immune globulin and continue working
c. Initiate vaccinate series, work furlough from day 8-21 days post-exposure
d. No prophylaxis, remove the nurse from work if she develops a rash, vaccinate if it does not develop disease
e. Initiate the vaccine series and no work furlough

159. A measles outbreak is occurring in your community. You determine each of the following individuals is susceptible. Who would you recommend live measles vaccine to?

a. HIV-infected man with recent esophageal candidiasis
b. Woman with systemic lupus erythematosus on prednisone 30 mg po each day for 4 weeks
c. Pregnant woman at 24 weeks gestation
d. 25 year-old with sickle cell anemia and functional asplenia
e. Leukemic patient in remission and 1 month out from last chemotherapy

160. Which of the following statements about haemophilus influenzae b (Hib) is false?

a. A child <24 months of age who recovers from invasive Hib disease does not need further Hib vaccine
b. The 3 manufacturers Hib vaccines are interchangeable
c. Household contacts of an invasive Hib case should receive rifampin prophylaxis if the household contains children < 4 years of age

161. Your patient has anaphylaxis to diphtheria antigens. Which vaccine is safe to administer?

a. Tdap
b. Meningococcal conjugate vaccine
c. Pneumococcal conjugate vaccine
d. Varicella vaccine

162. Several HCWs have been exposed to a patient with varicella. One female nurse is found to lack protective Ab and has no documented h/o varicella. Six days post-exposure she is healthy with a negative pregnancy test. You recommend:

a. Valacyclovir for 14 days and keep working
b. VZIG and keep working
c. No prophylaxis, work furlough from day 8-21 post-exposure
d. No prophylaxis, remove nurse from work if rash develops
e. Immunize the nurse and no work furlough
163. Who should not receive meningococcal vaccine?
   a. Microbiology technician
   b. High school student
   c. Asplenic patient
   d. Person with chronic steroid use
   e. Terminal complement component deficiency

164. A patient in the intensive care unit is growing gram positive cocci in clusters in the bloodstream. Vancomycin is started empirically pending the final culture results. The pathogen is identified as methicillin-susceptible *Staphylococcus aureus* (MSSA). How would this result influence your treatment?
   a. Can continue vancomycin but only need to achieve a trough of 10-15 μg/mL since MRSA has not been isolated.
   b. Vancomycin should be stopped and daptomycin should be started.
   c. Vancomycin should be stopped and linezolid should be started.
   d. Vancomycin should be stopped and a penicillanse-resistant penicillin or cephalosporin should be started.

165. Side effects of daptomycin include myopathy with elevation of the CPK. In addition, what other side effect has been reported with daptomycin therapy?
   a. Resistance development with prior use of linezolid.
   b. Eosinophilic pneumonia
   c. Thrombocytopenia after approximately two weeks of therapy
   d. Ototoxicity

166. Which of the following has the greatest impact on improving survival in patients with septic shock?
   a. Having two antibiotics in the initial regimen rather than only one
   b. Goal-directed fluid resuscitation in the first 6 hours
   c. Adjunctive therapy with rhAPC
   d. Adjunctive therapy with stress-dose corticosteroids

167. Which is not true regarding initial anti-infective therapy in patients with severe sepsis?
   a. Having two effective antibiotics in the initial regimen rather than only one significantly improves survival
   b. Survival is highest if the first dose is given within 1 hour of presentation
   c. Initial therapy for gram-negative sepsis must have efficacy against *Pseudomonas aeruginosa*
   d. Vancomycin is superior to nafcillin for methicillin-susceptible *Staph aureus*
168. A 47 yo man presents with fever, chills and a mild headache for the past 8 days. He is not acutely ill and has no respiratory, GI or urinary tract symptoms. He had a VP shunt and a THA placed following multiple trauma in a severe MVA 12 years ago. On examination, he does not look acutely ill. 38.5 80 12 100/50 There are no skin lesions. He has no meningismus and is intact neurologically.

What should be your next step?

a. CT scan of the pelvis with IV contrast  
b. Aspiration of THA for culture in a blood culture bottle  
c. Blood cultures x2  
d. Aspiration of CSF from the VP shunt for analysis  
e. ESR and CRP

169. Which of the following is not a first-line recommendation for prevention of line sepsis?

a. Maximal barrier precautions at insertion  
b. Initial skin prep with tincture of 2% chlorhexidine gluconate  
c. Use of antimicrobial-coated CVCs  
d. Removal of unneeded catheters

170. Which of the following is not recommended for prevention of VAP?

a. Scheduled oral care with chlorhexidine gluconate  
b. Semi-recumbant positioning at 25°  
c. Avoidance of nasotrachael intubation  
d. Lighten sedation and daily assessment for weaning trials by RT protocol

171. Which is true regarding H1N1 influenza?

a. Oseltamivir is contraindicated in pregnancy  
b. H1N1 virus is uniformly susceptible to the amantanes, such as amantadine  
c. Oseltamivir resistance is spreading rapidly  
d. N95 masks provide healthcare workers superior protection to surgical masks

172. Which is true regarding the control of H1N1 swine influenza?

a. The new H1N1 vaccine has been made by new recombinant techniques  
b. The new H1N1 vaccine is contraindicated in elderly persons and in those with AIDS  
c. Pregnant woman should receive the H1N1 vaccine  
d. Immunizing pigs is essential to control of H1N1 influenza

173. Which is true regarding the epidemiology of CDAD?
a. The largest number of cases derive from exposure to clindamycin
b. Fluoroquinolones do not increase the risk of CDAD
c. Elderly patients have much greater risk than younger patients
d. Third-generation cephalosporins are rarely associated with CDAD

174. Which is true regarding treatment of CDAD?

a. Metronidazole is equivalent to vancomycin
b. Vancomycin is superior to metronidazole
c. Metronidazole combined with vancomycin is superior to either drug alone
d. It doesn’t matter, we’re all doomed anyway

175. A previously well 35 year-old man returns from a 2 week vacation at a gulf coast resort in Alabama. He has been ill for 3 days with fever to 40.4C, shaking chills, headache and profound myalgias. Examination is unremarkable. Laboratory testing shows: Hct 52, WBC 3.1, platelet count 78,000 and AST 60.

Which of the following diagnostic possibilities is least likely?

a. Dengue
b. Endemic typhus
c. Anaplasmosis
d. Lyme disease