

PathMD™: Board Review Letter

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Volume 2, Number 6

1. You receive plates from a respiratory specimen that exhibit no growth on a blood agar plate and growth of small gray colonies on a chocolate plate. You perform a gram stain, which reveals small, pleomorphic gram-negative rods. Based on these results you conclude that this organism is a *Haemophilus* species. To further subtype the organism, you test for factor requirements and hemolysis. The next day, you examine the plate and based on the growth, you determine the organism is *H. influenzae*. What growth pattern most closely resembles the expected findings for this organism?
 - a. Growth and hemolysis, does not require factor X, does not require factor V
 - b. Growth and hemolysis, requires both factors X and V
 - c. Growth and hemolysis, does not require factor X, requires factor V
 - d. Growth but no hemolysis, requires both factors X and V
 - e. Growth but no hemolysis, does not require factor X, requires factor V

2. You receive a proficiency test unknown in your microbiology lab. You are told the specimen is from a wound, so you plate the specimen onto your four standard agars. Pictured are the colonies on MacConkey agar. Based on these findings, you perform an indole test and find that it is positive. What is the MOST LIKELY organism?
 - a. *Citrobacter freundii*
 - b. *Klebsiella pneumoniae*
 - c. *Pseudomonas aeruginosa*
 - d. *Klebsiella oxytoca*
 - e. *Proteus*

3. In preparation for an upcoming laboratory inspection, you are reviewing your quality control procedures in the microbiology department. You have a list of atypical bacteria-antibiotic resistance profiles that are posted and should alert the technicians to perform confirmatory testing. Which of the following bacteria-antibiotic resistance combinations is INCORRECT and should prompt retesting by another method to confirm resistance?
 - a. *Proteus* resistant to cefazolin
 - b. *Klebsiella* resistant to ampicillin
 - c. *Enterobacter* resistant to ampicillin and cefazolin
 - d. *E. coli* resistant to no antibiotics
 - e. *Serratia* resistant to ampicillin, cefazolin and cefuroxime

4. Which spiral bacterium has hooks at both ends?
 - a. *Leptospira*
 - b. *Borrelia*
 - c. *Treponema*
 - d. *Brachyspira*
 - e. *Helicobacter*

5. You finalize a report from a skin wound as no growth after 5 days. The clinician calls and he is concerned that the specimen was not cultured correctly, as he was certain there was adequate material upon collection. He states that the patient had an abscess on the thigh and upon drainage, there was 25ml of purulent fluid expressed from the lesion. Following the drainage, a swab culture was taken for microbiology. The clinician sent the swab for gram stain, aerobic and anaerobic cultures. Your BEST response to address the clinician's concern is:
 - a. Occasionally organisms just do not grow and we cannot explain why. Ask the clinician to send another swab and the lab will repeat the cultures.
 - b. A swab should only be used if no other type of specimen can be submitted and in that case, one swab should be submitted for each type of culture
 - c. Swabs never contain adequate material and should not be used for culturing specimens in the microbiology laboratory
 - d. Occasionally organisms just do not culture and we cannot explain why. Tell the clinician you will re-culture the specimen from the original swab
 - e. Tell the clinician you will allow the plates to incubate for another 3 days to see if there will be delayed growth and then issue an amended report at that time

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6. You receive a respiratory specimen in the laboratory that is labeled bronchial washing and has been obtained by bronchoscopy. As standard procedure in your lab, you culture the specimen to a blood and buffered charcoal yeast extract plate. On the third day, you examine the plates and notice colonies growing that you would describe as having a ground-glass appearance. You perform a Gram stain and see tiny gram-negative rods. There is no growth on the blood plate. What is the MOST LIKELY organism growing on the BCYE plate?
 - a. *Neisseria gonorrhoeae*
 - b. *Mycoplasma pneumoniae*
 - c. *Moraxella catarrhalis*
 - d. *Burkholderia cepacia*
 - e. *Legionella pneumophila*

7. You isolate a *Staphylococcus aureus* on a specimen from a wound. You test for Erythromycin susceptibility and find that the organism is resistant. You perform a D-test disk diffusion test to evaluate clindamycin inducible resistance. Based on the results pictured, can you treat this patient's infection with clindamycin?
 - a. No. The discs are too close together and therefore the test is not valid
 - b. No. The zone of resistance around the clindamycin disc indicates that the bacteria is resistant to clindamycin
 - c. No. Because there is no zone of inhibition around the erythromycin disc, the test is not applicable
 - d. No. The flattening of the clindimycin zone of inhibition near the erythromycin disc indicates the organism is resistant to clindamycin
 - e. Yes. The size of the zone of inhibition surrounding the clindamycin disc indicates that the bacteria is susceptible to clindamycin

8. You isolate an *Enterococcus faecium* from a urine specimen. Standard susceptibility testing is performed. What is the MOST IMPORTANT antibiotic pattern to look for initially?
 - a. Vancomycin resistance
 - b. Clindamycin inducible susceptibility
 - c. Aztreonam susceptibility
 - d. Trimethoprim-sulfamethoxazole susceptibility
 - e. Methacillin resistance

9. You receive a cultured specimen on a MacConkey plate. Based on the growth pictured, you perform an oxidase test, which is positive. What is the BEST organism identification for this specimen?
 - a. *Proteus mirabilis*
 - b. *Enterobacter cloacae*
 - c. *Pseudomonas aeruginosa*
 - d. *Klebsiella pneumoniae*
 - e. *Escherichia coli*

10. A urine specimen from a middle aged female is received in the lab and grows small white colonies on sheep blood agar that are coagulase negative and positive for catalase. The Gram stain reveals Gram-positive cocci in clusters. The organism is plated onto a Mueller-Hinton agar and a Novobiocin disc is placed onto the plate. The next morning, the plate is examined and shows no zone of inhibition. What is the MOST LIKELY organism growing on this plate?
 - a. *Staphylococcus epidermidis*
 - b. *Staphylococcus aureus*
 - c. *Staphylococcus saprophyticus*
 - d. *Staphylococcus lugdunensis*
 - e. *Staphylococcus haemolyticus*