The times they are a-changin’ in clinical microbiology

December 2018  (This form may be photocopied. It is no longer valid for CEUs after June 30, 2020.)

TEST QUESTIONS  Circles must be filled in, or test will not be graded. Shade circles like this: ○ Not like this: ☒

1. The microbiology laboratory is currently seeing an increased workload due to all but:
   a. diagnosing hospital-acquired infections.
   b. the adoption of molecular diagnostic methods.
   c. diagnosing multiple drug resistant organisms.
   d. the production of producing faster results.

2. What percentage of microbiologists will retire in the next five years?
   a. 5
   b. 10
   c. 20
   d. 25

3. What factor has made automating microbiology tests more difficult than other laboratory disciplines?
   a. it requires highly specialized training
   b. the inability of analyzers to produce quality results
   c. the use of many different specimen types that have varying consistencies
   d. none of the above

4. The introduction of using flocked swabs for many sites of culture collections has tremendously increased the recovery of the specimen into a liquid medium.
   a. True
   b. False

5. Flocked swabs can be used for the recovery of:
   a. bacteria.
   b. yeasts and molds.
   c. molecular assays.
   d. all of the above

6. What is the liquid media that is used with flocked swabs?
   a. Amies liquid media
   b. Tryptic soy broth
   c. Stuarts medium
   d. Viral transport medium

7. The advantage(s) to using liquid medium for many specimen types is/are that:
   a. it can be used for multiple methods of testing.
   b. it helps to reduce cost and eases confusion in device selection.
   c. it increases patient satisfaction and savings of workload on laboratory staff.
   d. all of the above

8. Studies in automated specimen processing are concluding that these methods show a decrease in bacterial recovery compared to manual methods.
   a. True
   b. False

9. Currently in full microbiology automation, pictures are first taken of the cultures, then:
   a. results are automatically reported.
   b. a microbiologist reviews the images for possible further workup.
   c. the analyzer performs rapid antigen screening on the colonies.
   d. none of the above

10. _____ is a promising technology that will soon have the ability to automatically report culture results through algorithms.
   a. ML
   b. UAV
   c. SDx
   d. AI

11. Which categories of algorithms can the new technology be grouped into for automatic reading of cultures?
   a. chromogenic detection, growth/no growth discrimination, phenotypic colony recognition, and application of user-defined expert rules.
   b. chromogenic detection, phenotypic colony recognition, and application of user-defined expert rules.
   c. chromogenic detection, growth/no growth discrimination, and application of user-defined expert rules.
   d. none of the above

12. Studies performed on chromogenic algorithms have reported to work with ___% sensitivity.
   a. 81
   b. 92
   c. 97
   d. 100

13. In a study on the use of chromogenic algorithms and automated VRE screening, it was concluded that using this method could save approximately $_____ in labor costs.
   a. 100,000
   b. 250,000
   c. 450,000
   d. 700,000

14. Studies performed on algorithms that are used to determine growth/no growth in urine cultures have shown that the software can categorize over 70% of the cultures for result release or additional testing.
   a. True
   b. False

15. Based on preliminary studies, what are the identified benefits of using growth/no growth software algorithms?
   a. cost savings
   b. decrease turnaround time
   c. improvement of workflow and quality
   d. all of the above

16. When investigating the ability of AI software to identify mixed cultures, preliminary studies have shown over ___% agreement between software and manual reading.
   a. 50
   b. 75
   c. 90
   d. 100

17. The use of full automation and AI technology has been shown to produce a reduction in labor time by _____%.
   a. 50
   b. 60
   c. 70
   d. 80

18. A reduction in labor time with the use of automation and AI technology has been studied using all but the following tasks.
   a. urine screening/reading
   b. picking of urine culture colonies for further analysis
   c. screening/reading of sputum cultures
   d. screening of MRSA cultures

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