

Continuing Education Questions

WINTER 2011

To receive 1.5 contact hours of intermediate level P.A.C.E.[®] credit for the Focus: *Pseudomonas aeruginosa* questions, insert your answers in the appropriate spots on the answer sheet that follows; then complete and mail the form as directed.

1. Possession of the MexAB gene confers resistance to which drug?
 - a. Amikacin
 - b. Polymyxin B
 - c. Cefepime
 - d. Tobramycin
2. Patients suffering from pneumonia due to *Pseudomonas aeruginosa*, are at risk for which of the following?
 - a. Increased hospital length of stay
 - b. Increased rate of mortality
 - c. Greater necessity for mechanical ventilation
 - d. All of the above
3. Which class of antibiotic with activity against *P. aeruginosa* has seen a dramatic rise in resistance rates?
 - a. Penicillins
 - b. Fluoroquinolones
 - c. Aminoglycosides
 - d. Carbapenems
4. Patients with cystic fibrosis often become colonized with *P. aeruginosa* due to what component?
 - a. Biofilm produced due to alginate
 - b. Biofilm produced due to polysaccharides
 - c. Expression of *Pseudomonas* Exotoxin A
 - d. Expression of *Pseudomonas* Toxin ExoS
5. *Pseudomonas aeruginosa* has been implicated in which of the following infections?
 - a. Soft tissue infections
 - b. Urinary tract infections
 - c. Respiratory illnesses
 - d. Bacteremia
 - e. All of the above
6. The NNIS study conducted by the CDC was useful for epidemiology purposes in that it:
 - a. Required all hospitals to report infectious disease data
 - b. Required hospitals to report outbreaks of infectious disease on all in-patients
 - c. Contained infectious disease surveillance data from volunteer hospitals with intensive care units
 - d. Contained infectious disease surveillance data from all hospitals in the U.S. with intensive care units
7. Which of the following virulence factors acts as a cytotoxin?
 - a. ExoS
 - b. ExoT
 - c. ExoU
 - d. ExoY
8. Which factor for deciding empiric therapy is not commonly used in the ICU to cover all possible infectious organisms?
 - a. Patient population
 - b. Cost of antimicrobial therapy
 - c. Suspicion of a community or nosocomial source
 - d. Commonly encountered organisms in your location

FOCUS: PSEUDOMONAS AERUGINOSA

9. The following drugs all act by inhibiting cell wall synthesis in *P. aeruginosa* except:
- Piperacillin/Tazobactam
 - Gentamicin
 - Imipenem-Cilistatin
 - Cefepime
10. Which of the following drugs should not be used in combination with one another when treating infections caused by *P. aeruginosa*?
- Imipenem with Tobramycin
 - Piperacillin/Tazobactam with Amikacin
 - Gentamicin with Ciprofloxacin
 - Meropenem with Cefepime
11. Serum concentrations of which drug must be monitored during therapy due to its narrow therapeutic window and risk of toxicity?
- Ceftazidime
 - Vancomycin
 - Imipenem
 - Gentamicin
12. Which resistance mechanism possessed by *P. aeruginosa* is not acquired by mutation?
- ampC* depression
 - Loss of OprD
 - Modification of *gyrA*
 - Possession of ANT(2')-I
13. Loss of which outer membrane porin has been shown to lead to increased resistance drug Imipenem?
- OprD
 - OprF
 - OprO
 - OprP
14. How does *P. aeruginosa* inherently resist the inhibitory activity of fluoroquinolones?
- Production of beta-lactamase
 - Change in target structure
 - Active efflux out of the cell
 - Expression of OprH
15. Which of the following virulence factors produced by *P. aeruginosa* help the organism adhere to host cells?
- Pyocyanin
 - Fimbriae
 - Alginate
 - Elastase

Continuing Education Registration Form

To earn continuing education (PACE) credit, (1) complete the form below, (2) record your answers, and (3) mail a photocopy with a check or money order (\$18 for ASCLS members, \$28 for non-members) to:

American Society for Clinical Laboratory Science
P.O. Box 79154, Baltimore MD 21279-0154

A certificate of completion will be awarded to participants who achieve a passing grade of 70% or better. Participants should allow eight weeks for notification of scores and receipt of certificates.

Alternately the Focus exam can be completed online. To register as a participant and receive a username and password to access the online quiz, go to the ASCLS Online Store at <http://www.ascls.org/publications/edconn.asp>; follow the links to the member or non-member store. Once in the store, click on the Online Quizzes category, and select the title of the FOCUS series to receive access to the correct quiz. Allow 1-2 business days to receive username, password and instructions.

Focus: Pseudomonas Aeruginosa carries 1.5 hours of **intermediate** level P.A.C.E.[®] credit. This form can be submitted for credit for up to one year from the date of issue.

Print or type carefully.

(01) NAME _____
Last First M.I.

ASCLS membership number _____ Licensure number _____

(02) ADDRESS _____

(03) CITY _____ (04) STATE/COUNTRY _____ (05) ZIP/POSTAL CODE _____

(06) DAYTIME PHONE (_____) _____ (07) E-MAIL: _____

(08) CREDIT CARD # _____ TYPE (CIRCLE) AE MC VIS EXP. DATE _____

Check all that apply

- Send my certificate of completion via email
- I would like to receive ASCLS membership information
- I would like information on other continuing education sources

Answers

Circle correct answer.

- | | |
|-------------|-------------|
| 1. a b c d | 12. a b c d |
| 2. a b c d | 13. a b c d |
| 3. a b c d | 14. a b c d |
| 4. a b c d | 15. a b c d |
| 5. a b c d | |
| 6. a b c d | |
| 7. a b c d | |
| 8. a b c d | |
| 9. a b c d | |
| 10. a b c d | |
| 11. a b c d | |

Participant Information

Please circle the most appropriate answers.

1. Is this program used to meet your CE requirements for:
(a) state license (b) NCA (c) employment (d) other
2. Did these articles achieve their stated objectives?
(a) yes (b) no
3. How long did it take you to complete both the reading and the quiz? _____ minutes
4. What subjects would you like to see addressed in future Focus articles?

Answers to 2008 FOCUS Continuing Education Questions

21(1) Winter 2008

INFORMATION LITERACY

SEARCHING MEDLINE VIA PUBMED

1. Which feature reveals how PubMed translated a search query?
 - d. Details
2. What are “MeSH terms”?
 - b. Subject headings used to describe an article’s content
3. What important group of articles would be missed by a search using exclusively MeSH terms?
 - d. Newly submitted articles that have not yet had MeSH terms assigned
4. How are PubMed results sorted in the default display?
 - c. Reverse chronological order
5. Suppose you ran a basic search in PubMed, and the system brought up only two records. What would be a good strategy to increase the number of hits?
 - a. Search on a related MeSH term
6. Suppose you ran a basic search in PubMed, and the system brought up over 1900 records. What would be a good strategy to reduce the number of hits and simultaneously increase the focus of the resulting set?
 - c. Add limits for publication type and age group
7. Suppose you want to find all the articles in the database about mass screening for gestational diabetes. Which of the following search statements would likely produce the best results?
 - b. Diabetes, gestational AND mass screening
8. Suppose you want to find articles about any aspect of prenatal screening for gestational diabetes.

Which of the following search statements would likely produce the best results?

- a. Diabetes, gestational AND (prenatal diagnosis OR mass screening OR early diagnosis)

SEARCHING THE BIOMEDICAL LITERATURE: RESEARCH STUDY DESIGNS AND CRITICAL APPRAISAL

9. Which of the following study designs has the highest strength of evidence?
 - c. Randomized controlled trial
10. Which of the following is true for case-control studies?
 - b. Outcome is known initially, then look for possible exposures to explain outcome
11. Suppose you gather a group of healthy subjects, and follow them for the next twenty years for the occurrence of Alzheimer disease. What type of study is this?
 - d. Prospective cohort study
12. All patients visiting an ophthalmology clinic during a specified period of time are given a visual acuity test, followed by a questionnaire about carrots in their diet. What type of study is this?
 - d. Cross-sectional study
13. Which of the following is a limitation to retrospective cohort studies?
 - b. Dependent upon accurate records being available
14. Which of the following is a strength of the randomized controlled trial?
 - a. Randomization results in minimal selection bias

CONTINUING EDUCATION

15. In which of the following instances would it be appropriate to consider doing a randomized controlled trial?
- c. It is hopeful, but not proven, that a new therapy is more effective than the traditional therapy.
16. What is it called when an unrepresentative control group leads to incorrect study findings?
- b. Selection bias
17. Which of the following should be considered when evaluating the validity of a study's findings?
- d. The methodology employed

A SURVEY OF SCHOLARLY LITERATURE DATABASES FOR CLINICAL LABORATORY SCIENCE

18. What is an advantage of reading the primary literature?
- c. You can make your own conclusions regarding the validity of the findings.
19. Which of the following databases indexes the primary journal literature?
- a. Web of Science
20. Which of the following is considered a summarizing database?
- d. UpToDate
21. Which of the following describes the Cochrane systematic review?
- b. It summarizes results of high-quality studies, especially randomized controlled trials.
22. What is an advantage of an online textbook over its print counterpart?
- a. Easily and quickly updated
23. Which of the following is true for Google?
- d. It may contain publications not included in journal literature databases.
24. What determines the order in which Google displays results?
- c. Relevancy and Page Rank

21(2) Spring 2008

BIOETHICS

1. Question withdrawn
2. When viewing a situation through Kant's ethical principles, using people only as a means to an end:
- c. could be possible if they were used as both the means and the end.
3. Question withdrawn
4. According to Kant, lying in order to protect a person from hearing some unwanted news would be:
- d. unacceptable.
5. The determinant element for people who believe in utilitarian ethics is the:
- d. outcomes for all involved.
6. In the assessment of a utilitarian decision, the most important aspect is the:
- c. seriousness of consequences.
7. The use of scientific information gathered from unwilling participants in scientific experiments such as that gathered from concentration camp prisoners could be:
- b. acceptable by utilitarians.
8. Question withdrawn
9. As a system of thought, beneficence is simply a method to:
- c. have the most able person make a beneficial decision.
10. Question withdrawn
11. Question withdrawn
12. Recent discussions in the US suggest that paying for organ donations will increase supply. Which of the following would be considered an example of free and informed consent?
- a. A forty-five-year-old attorney who wishes to donate a kidney for a friend

CONTINUING EDUCATION

13. Which of the following statements could be considered coercive?
 - a. "If you don't participate in this action, it could be construed that you are against its principles."
14. It could be argued that most patients have no real autonomy over the choice of treatment because they:
 - c. do not understand the entirety of the process they will be experiencing.
15. One socially accepted example of patient autonomy is:
 - b. making a choice to forego treatment and enter hospice.
16. The form that is signed by all patients prior to admission into a hospital allows for:
 - c. the right of the patient to refuse the treatments that the physicians choose.
17. An example of an informed consent would be one in which the decision maker is:
 - b. has some familiarity with most of the aspects and can learn of the others through "full disclosure" of risks, etc.
18. Physicians are often unwilling to abide by the decisions of patients because they believe:
 - d. patients do not have adequate scientific/medical knowledge to make such decisions.
19. In general, medical decisions for patients under legal age of adulthood are:
 - c. the physician's right in cases of emergency treatment when no parent/guardian is available.
20. The Vulcan axiom "the needs of the many outweigh the needs of the few" is an example of:
 - b. utilitarianism
21. The most commonly used screening methods for bladder cancer are:
 - c. cystoscopy and cytology.
22. Which of the following are not FDA approved bladder tumor marker assays?
 - a. Quanticyst®
23. The BTA STAT® test detects:
 - a. complement factor H.
24. Which protein is present in greater quantities in cancerous cells than normal cells?
 - d. All of the above
25. Which of the following statements most accurately describes the enzyme telomerase?
 - d. All of the above
26. Which of the following statements best describes Okazaki fragments?
 - a. Short sections of DNA produced from the replication of the lagging strand of DNA.
27. Which of the following is NOT a disadvantage to the use of NMP22 for detecting bladder cancer?
 - d. None of the above
28. Which of the following qualities of telomerase expression are important in its use as a bladder tumor marker?
 - d. All of the above
29. Which of the following methods is currently used to recover telomerase in human urine?
 - b. Polymerase Chain Reaction (PCR)
30. In which of the following tissues can telomerase be found in an adult?
 - c. Hematopoietic stem cells
31. Approximately how many base pairs of DNA are lost during one cycle of cell replication and division?
 - b. 50-100 bp

21(3) Summer 2008

MOLECULAR DIAGNOSTICS: TELOMERASE

1. The overall incidence rate for bladder cancer is:
 - a. 44 per 100,000 people.

CONTINUING EDUCATION

13. What is the Hayflick limit?
 - d. The finite number of cellular replications before apoptosis
14. Which methodology is used to determine the amount of BLCA-4 in bladder tumors?
 - a. ELISA
15. Hyaluronidase in cancerous tissue is increased _____ fold compared to normal tissue.
 - c. 3.0 to 7.0
16. Which of the following blood group antigens are associated with bladder cancer detection?
 - c. Lewis X Antigens
17. Which of the following chromosomes often display loss of heterogeneity in microsatellite sections?
 - b. 4p, 8p, 9p, 11p, and 17p
18. What is karyometric analysis?
 - a. Evaluation of nuclear shape and DNA content of cellular material
19. Which of the following statements is true concerning Quanticyst?
 - a. Quanticyst has demonstrated a higher sensitivity than cytology in detection of low-grade tumors.
20. Which of the following is an apoptotic inhibitor not normally found in healthy adult tissue?
 - b. Survivin
3. The recommended daily iron intake for a child three years old is:
 - c. 10 mg.
4. In an infant or one-year-old child, what hemoglobin level (in g/L) is suggestive of iron deficiency anemia?
 - d. <110
5. Which laboratory test of those below has the best specificity and sensitivity for iron deficiency?
 - d. Bone marrow iron
6. Of the laboratory tests below, which one is the earliest indicator of iron deficiency?
 - c. CHr
7. Which of the following is a limitation of the CHr laboratory test?
 - b. Available as a test on only a few hematology analyzers

ANEMIA IN AN AGING POPULATION

8. What are the World Health Organization criteria for defining anemia?
 - b. Hemoglobin less than 130 g/L for men and less than 120 g/L for women
 9. Which statement best describes the use of WHO reference intervals for defining anemia in the elderly?
 - c. The WHO criteria are controversial and there is evidence to both support and reject their use.
 10. Which statement best characterizes the prevalence of anemia in the elderly?
 - a. Anemia is more common in elderly blacks than in elderly whites.
 11. What was the prevalence of anemia in persons ≥ 65 found to be in the NHANES III study?
 - a. 11% in men and 10% in women
 12. What percentage of nursing home patients were found to be anemic in one study?
 - d. 44%
- 21(4) Fall 2008
- ### ANEMIA IN SELECTED POPULATIONS OCCURANCE AND DETECTION OF IRON- DEFICIENCY ANEMIA IN INFANTS AND TODDLERS
1. Which of the following populations of infants and toddlers is most vulnerable to developing iron deficiency?
 - c. Infants born at 30 weeks gestation
 2. Which feature below is a typical laboratory finding in a full-term newborn?
 - b. Relative reticulocyte count of five percent

CONTINUING EDUCATION

13. Which condition has **not** been shown to be associated with anemia in elderly persons?
 - d. Increased risk of developing cancer
14. Which statement best summarizes the impact of anemia on the elderly?
 - a. Anemia is associated with increased morbidity and mortality for all persons ≥ 65 .
15. What causes of anemia in the elderly were identified in an analysis of data from the NHANES III study?
 - b. One-third of cases were attributed to anemia of chronic inflammation or renal disease, one-third of cases were attributed to nutritional deficiencies such as iron or cobalamin, and one-third of cases were unexplained.
16. What is the most common cause of cobalamin (vitamin B12) deficiency in the elderly?
 - d. Inability to split cobalamin from food
17. The following laboratory results were obtained for a 79-year-old male patient.

Test/Analyte	Result	Reference interval, SI units
Hemoglobin	110 g/L	130-160 g/L
Mean cell volume	83 fL	80-100 fL
Serum iron	10.2 $\mu\text{mol/L}$	11.6-31.3 $\mu\text{mol/L}$
Total iron binding capacity	52 $\mu\text{mol/L}$	54-64 $\mu\text{mol/L}$
Serum ferritin	230 $\mu\text{g/L}$	20-300 $\mu\text{g/L}$
Transferrin saturation	20%	20%-50%

Based on these laboratory results, what is the most likely cause of anemia in this patient?

- c. Anemia of chronic disease
18. What additional test would you recommend be ordered to help determine the cause of anemia in the patient in the preceding case?
 - c. Transferrin receptor

PATHOPHYSIOLOGY OF COMPOUND HETEROZYGOTES INVOLVING HEMOGLOBINOPATHIES AND THALASSEMIAS

19. Which of the following statements is **FALSE** concerning a hemoglobinopathy?
 - b. Hemoglobinopathies usually result in a quantitative reduction in hemoglobin synthesis.
20. The most common mutation type found in α -thalassemia is:
 - d. deletion.
21. A compound heterozygote HbS/ β^0 -thalassemia will produce symptoms that are:
 - a. similar to HbSS in severity.
22. A compound heterozygote HbS/ α -thalassemia will have fewer symptoms than most HbS/ β^+ -thalassemia compound heterozygotes because the:
 - c. HbS/ α -thalassemia patient will produce less HbS.
23. Which of the following diagnoses can be confused with a compound heterozygote involving HbD^{Iran}/ β^0 -thalassemia using alkaline hemoglobin electrophoresis results?
 - a. HbSS
24. Anti-Lepore Hong Kong/ β^+ -thalassemia compound heterozygotes can be misdiagnosed with which diagnosis listed below?
 - c. HbE/ β^+ -thalassemia

Qatar

Qatar is a major Gulf-area gas and oil producing country. It is an exciting place to be these days, as the country is witnessing unprecedented prosperity and activity in the business, construction, health, and education sectors. With developments including the arrival of many respected US universities as competition, the Education sector in particular has drawn applause as a rapidly progressing field, and Qatar University now has the privilege of setting the standard against such names as Cornell, Texas A&M, and Carnegie-Mellon, among others.

The University

Qatar University (QU) is an established and dynamic institution dedicated to academic excellence, and a strong contributor to educational advancement in the country. Recently, the University has been actively engaged in self-evaluation, instituting significant changes in its policies and procedures, curricula, research support, facilities, use of technology, and faculty. QU remains the largest and only state-supported university in Qatar. For more information, please visit our web page at <http://www.qu.edu.qa/main/index.html>

The College

The College of Arts and Sciences (CAS) houses nine departments, covering a wide range of specializations in the Arts and Sciences including English and Arabic Languages, History, Geography and Urban Planning, Sociology, Social Work, International Affairs, Mass Communication, Information Science, Mathematics, Statistics, Physics, Chemistry, Biological Sciences, Environmental Sciences, Biomedical Sciences and Human Nutrition.

Position Summary

The College of Arts & Sciences of Qatar University (Doha, Qatar) invites applications and nominations for the position of Program Coordinator (NAACLS Program Director) of Biomedical Sciences at the rank of Associate Professor or Professor. A Master's or Ph.D. in one of the biomedical sciences or higher education with strong medical laboratory education background is required along with a comprehensive knowledge of laboratory medicine education. The Biomedical Sciences Program, a USA NAACLS accredited BS level Medical Laboratory Science program, is one of two programs within the Department of Health Sciences.

The College seeks a dynamic scholar with an outstanding academic and administrative background, strong research credentials, demonstrated leadership skills and experience in mentoring faculty, a strong commitment to education with a track record in innovative learning-centered teaching, and proven management skills. The candidate is required to have proficiency in English and Arabic (preferable) with strong reading, writing and teaching skills and proficient with multiple computer applications (eg. Word, Excel, Blackboard).

Application Deadline: **April 2011**

Position Category: **Academic**

Employment Type: **Full Time**

Position Term: **Three Years Renewable**

Duties and responsibilities:

Under the direction and in collaboration with the Department of Health Sciences Chair:

- Promote an overall climate of academic professionalism and discipline and build relations of collegiality among faculty, as well as set a high standard in ethical responsibility and academic quality to challenge faculty to aspire toward quality academic performance in teaching and research publication so that students may develop higher standards of learning.
- Establish course offerings by semester and assign teaching schedules to faculty in accordance with curricular needs, faculty teaching load, and efficient distribution of courses to meet student needs and faculty expertise.
- Call for and chair program meetings, manage and maintain all program records, and prepare reports and documents in accordance with College procedures.
- Oversee the program budget; establish and request in a timely manner needed equipment and office supplies; and project space requirements in accordance with program needs and officially make a request to the Department Head.
- Recommend faculty and staff appointments, re-appointments, and promotions; leaves of absence; travel authorizations; and other relevant program personnel matters.
- Evaluate job performance for all program employees as required by College policy; monitor attendance of all personnel according to university regulations; and supervise work assignments following established time schedule.
- Guide the faculty in developing a long-term plan for maintaining quality education commensurate with the departmental, college and university mission and goals.
- Lead the program in conducting a self-study and other assessments for the purpose of accreditation, benchmarking, or program review by external examiners.
- Establish good contacts with national and community organizations to link program goals with national goals and build bridges through collaborative initiatives.
- Fulfill responsibilities for program organization, administration, assessment, planning and development to satisfy NAACLS Program Director responsibilities and ensure continued accreditation of the program.

Competencies:

- Demonstrated excellence in teaching at established international universities or higher education institutions.
- Demonstrated competence in academic administration to include program organization, assessment, planning and development and curriculum knowledge
- Demonstrated leadership and team building skills.
- Proficiency with computer applications (eg. Word, Excel, Blackboard)

Qualifications:

- Masters or PhD in one of the biomedical sciences or higher education with qualifications as a Program Director by NAACLS
- MT(ASCP) certification.
- Proficiency in both English and Arabic (preferable) with strong reading, writing and teaching skills.
- Track record in innovative learning-centered teaching in the United States
- Distinguished record of scholarship/scholarly activities.
- Minimum of 5 years of educational administrative leadership

Required Documents:

- Letter of application indicating qualifications as above;
- Curriculum vitae;
- Statement describing a philosophy/vision for developing an academically strong program in accordance with the goals for excellence established by Qatar University;
- Names and email addresses of three references
- Copy of highest degree transcript (official upon employment).

Benefits:

- Competitive tax-free salary
- Housing in accordance with Qatar University HR policies
- Annual round trip airfare for candidate and dependent family members
- Public health care and health insurance for candidate and family members
- Educational allowance for up to three children in accordance with Qatar University HR policies
- Annual leave in accordance with Qatar University HR policies
- End of contract indemnity.

For full information on qualifications, competencies, required documents and benefits please go to <http://recruit.qu.edu.qa>

Apply electronically to <http://recruit.qu.edu.qa>

Position Number : 0100-10-030



Qatar University



Sample a better life.

FIND RESULTS AT BANNER HEALTH.

Analyzing your next career move? We give you all the resources you need to get results inside and outside the lab. Banner Health, an award-winning hospital system, integrates state-of-the-art facilities, leading-edge technology and comprehensive benefits to create an engaging environment where the lives and careers of our employees can thrive. We strongly believe in making a difference in the lives of our employees so they can make a difference in the lives of others.

Conduct your own research about full-time and per diem opportunities in Alaska, California, Colorado and Nevada at:

www.BannerHealth.com

Banner Health hospitals can be found in these locations:

ALASKA ARIZONA CALIFORNIA COLORADO
NEBRASKA NEVADA WYOMING

Become a fan of [Banner Health Careers on Facebook](#).

EOE/AA Banner Health supports a drug-free work environment.



Banner Health®