CONTINUING EDUCATION TEST
FINDING THE TRUTH IN LABORATORY TESTING: COMMUTABILITY, TRACEABILITY, AND UNCERTAINTY OF MEASUREMENT
March 2018

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

1. According to the author, truth in laboratory testing results depends on
   a. commutability and traceability.
   b. traceability and measurement uncertainty.
   c. commutability, measurement uncertainty, and traceability.
   d. none of the above

2. The matrix effect must be addressed when there is a change in control material performance of a new reagent lot, but patient sample performance remains the same.
   a. True
   b. False

3. What type of material is not affected by the matrix effect?
   a. a frozen material
   b. a raw material
   c. a material with added stabilizers
   d. a lyophilized material

4. Commutability in lab testing is generally referring to
   a. traceability
   b. precision
   c. accuracy
   d. equivalence

5. When is a material considered non-commutable?
   a. when a matrix effect is not observed, but a high variance of non-commutability is observed in patient samples
   b. when a matrix effect is observed of a magnitude that is not observed in patient samples
   c. when both a matrix effect and a variance of non-commutability are observed in patient samples
   d. none of the above

6. Patient samples must be used for reagent lot changes when
   a. non-commutability is identified.
   b. commutability is identified.
   c. traceability is identified.
   d. measurement uncertainty is identified.

7. Control materials are intended to verify the "trueness" of patient test results.
   a. True
   b. False

8. What two approaches were originally created by the International Organization for Standardization (ISO) that require calibrations to trace back to a recognized international reference measurement procedure, called a calibration cascade?
   a. ISO 15194 and 17511
   b. ISO 15189 and 18153
   c. ISO 17511 and 15189
   d. ISO 17511 and 18153

9. What type of material is exempt from the two ISO standards developed for traceability?
   a. controls used for daily use
   b. enzyme calibrators
   c. proficiency testing samples
   d. all of the above

10. The introduction of analytical variables contributes to error along the calibration cascade, which is produced as the measurement uncertainty of the calibrator
    a. decreases.
    b. increases.
    c. stays constant.
    d. all of the above

11. In what instance should laboratories be concerned when it comes to assessing traceability?
    a. when calibrating a new lot of analyte
    b. when performing testing on proficiency material
    c. when selecting a new commercial test or test method
    d. when performing daily QC

12. Which test of trueness gained attention with the publication of ISO 15189?
    a. accuracy
    b. commutability
    c. measurement uncertainty
    d. traceability

13. ISO 15189 has created a specific formula to calculate measurement uncertainty characteristics for laboratorians.
    a. True
    b. False

14. The measurement uncertainty statistic is helpful in making decisions about
    a. health status.
    b. physiology.
    c. comparison of two results.
    d. all of the above

15. This organization has published this guidance, which uses a modified GUM procedure to help laboratorians calculate uncertainty:
    a. ISO, Technical Committee 21
    b. ISO, Technical Committee 12
    c. GUM: ISO 15189
    d. CLSI: C51

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