

AACC and the Management Sciences and Patient Safety Division Present

STATISTICAL METHODS FOR CLINICAL LABORATORIANS CERTIFICATE PROGRAM

An online learning program for laboratory professionals seeking to expand their knowledge and competence in statistical methods



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INTRODUCTION

The use of statistical methods is fundamental to good laboratory practice. In the clinical laboratory, statistics are used to validate and monitor the performance of analytical methods and to guide the clinical interpretation of laboratory data. This program will enable clinical laboratorians to broaden their knowledge of statistics and refine their skills in the application of statistical methods.

After completing this program, participants will be able to:

- Calculate commonly used statistical parameters
- Apply statistical tests of significance to laboratory data
- Evaluate and monitor the performance of analytical methods
- Use statistical techniques to validate reference ranges
- Interpret the clinical meaning of laboratory results through statistical methods

PROGRAM OVERVIEW

For laboratory professionals who wish to engage in an educational activity that recognizes their expanded knowledge and competence in statistical methods, this program provides a convenient and cost-effective means for doing so.

This is an intermediate-level program for professionals who already have knowledge of the basic theories applicable to laboratory statistics and some prior training and experience in this subject. The intended audience includes laboratory directors, managers, supervisors, and clinical laboratory scientists.

By completing this certificate program, participants will:

- Expand their knowledge and competence in regards to the laboratory's role in statistical methods for the laboratory
- Become part of a network of colleagues in the field
- Gain leverage towards professional advancement
- Receive a certificate of recognition and continuing education credits

PROGRAM FORMAT

The Statistical Methods for Clinical Laboratorians Certificate Program is composed of five courses which can be completed online in 1-4 hours each. Each course contains a lecture, problem-solving exercises, a quiz, and may also include required reading and resource materials.

To receive the certificate of recognition for this program, you must successfully complete all of the courses and a comprehensive final exam before the program end date.

You will also be eligible to receive ACCENT® continuing education credits. Certificates are awarded monthly and graduates are recognized at the AACC Annual Meeting. In addition, graduates of the program are listed on a register located on the Management Sciences and Patient Safety Division web site.

TECHNICAL REQUIREMENTS

To access this certificate program, you will need a computer with Internet access and speakers, a compatible Internet browser (eg, Internet Explorer), and a compatible version of the Flash plug-in. To see if your browser, flash plug-in and system meet the minimum requirements please visit the Adobe System Requirements page: <http://www.adobe.com/products/flashplayer/systemreqs/index.html>

PROGRAM SCHEDULE

Statistical Methods for Clinical Laboratorians Certificate

Available for sale: January 1, 2012

Sold Until: December 31, 2012

Program Access Available: January 1, 2012 - July 15, 2013

Fee: \$200.00 AACC Member; \$400.00 Non-member

PID: 6823

COURSE DESCRIPTIONS

The courses have been developed by a recognized expert in laboratory statistical methods, thereby ensuring that the contents are of high quality and representative of the current practices.

Faculty Chair:

Roger Bertholf, PhD, FACB, DABCC

Associate Professor, Pathology

University of Florida Health Sciences Center

Director, Clinical Chemistry, Toxicology, and Point of Care Testing

Shands Jacksonville Hospital

Jacksonville, Florida

This program consists of the following five courses, which are listed with their learning objectives:

Descriptive statistics and measures of variation

- Explain the difference between sample and population statistics
- Define the terms median, variance, standard deviation, coefficient of variation
- Derive the standard deviation of the mean
- Calculate the geometric mean for an appropriate set of data

- Comment on applications of the root mean square and harmonic mean

Statistical distributions and tests of significance

- Define a statistical distribution
- Describe the types of data that fit a Gaussian distribution
- Apply the Poisson distribution to radioimmunoassay data
- Explain the difference between the Gaussian and Student's t distributions
- Describe how a Chi Square distribution is used

Correlation and tests for linearity

- Define the terms covariance, correlation coefficient, standard error of the estimate
- Identify two weaknesses of the linear regression method
- List three methods for evaluating the linearity of an analytical method
- Describe a lack-of-fit protocol for evaluating linearity
- Explain a method for determining whether data are outliers

Method validation and reference ranges

- Explain the difference between parametric and non-parametric statistics
- Describe the CLSI protocol for establishing the precision of an analytical method
- Define the terms sensitivity, limit of detection, limit of quantitation
- List three methods for validation of reference ranges
- Explain how the Mann-Whitney statistical test is used

Statistical methods for quality control and clinical performance of laboratory tests

- Explain the statistical basis for Westgard's Rules
- Express Westgard's Rules in terms of Six Sigma metrics
- Define clinical sensitivity, specificity, likelihood ratio
- Describe receiver operating characteristic graphs and how they are used
- Differentiate between sensitivity and positive predictive value

ACCREDITATION

ACCENT® credit will be offered for this program. See course outline for specific number of credit hours. AACC is an approved provider of continuing education for clinical laboratory scientists in the states of California, Florida, Louisiana, Montana, Nevada, North Dakota, Rhode Island, and West Virginia.

CANCELLATION POLICY

Cancellations and refunds are not available for e-learning courses.

Presented by **AACC** and

Management Sciences and Patient Safety

