



Preanalytical Phlebotomy

*Specialty Courses
for Phlebotomists*



National Center for
Competency Testing

7007 College Boulevard, Suite 385 | Overland Park, Kansas 66211
www.ncctinc.com | t: 800.875.4404 | f: 913.498.1243

Preanalytical Specialty Certificate Course For Phlebotomists

By Sheryl Whitlock, MA, MT(ASCP)BB
Laboratory Coordinator
Student Health Service
University of Delaware
Newark, Delaware 19716

Copyright 2009 by
National Center for Competency Testing
Overland Park, KS

NCCT is continually refining and creating professional development products for all certified allied health professionals. We are committed to your success. This mini course was designed to help healthcare professionals understand preanalytical variables in phlebotomy.

The course is divided into chapters. There is an open-book quiz at the end of every chapter to help you assess your understanding of that chapter's material. Upon completing all the chapters, you can access this mini course's final examination on-line at NCCT's website, www.ncctinc.com. Proceed to the *Testing* section, and choose the *CE Test Login* option, and log in. Choose the *Preanalytical Variables for Phlebotomy Final Exam*.

Seventy percent or better is considered a passing grade for this course. Upon passing the course's final exam you will receive a Specialty Certificate and a sticker from NCCT signifying that you have successfully completed this course. This sticker should be placed in your NCCT *Professional Development Log Book*. You will also receive five clock hours of continuing education credit, and the course title will be placed on your *NCCT Continuing Education Transcript*.

Acquiring new skills and pursuing additional knowledge in your career field has always been the hallmark of a true professional. Read, learn, and most importantly, enjoy your profession more. Your new knowledge will not only increase your competence and importance to your team, but will also increase your own self-assurance in your ability and work.

Learning Outcomes

Upon completion of the Competence Certificate Course, the professional will be able to:

1. Define preanalytical.
2. Differentiate the phases of testing: preanalytical, analytical, postanalytical.
3. Recognize synonyms for the phases of testing.
4. List and describe preanalytical factors that impact laboratory testing.
5. Relate preanalytical errors to patient safety.
6. List errors that occur prior to specimen collection.
7. Discuss specimen quality and the impact on test results.
8. Explain the details of timed collection requirements for specimens.
9. Relate blood to anticoagulant ratios to specimen collection.
10. Discuss specimen tube filling requirements.
11. Describe blood bank banding systems as they relate to sample collection.
12. Describe prevention of each preanalytical error as presented in a scenario.

Disclaimer

The writers for NCCT Competence Certificate Courses attempt to provide factual information based on literature review and current professional practice. However, NCCT does not guarantee that the information contained in these educational courses is free from all errors and omissions.

CHAPTER 1 INTRODUCTION TO LABORATORY PROCESS

Laboratory science is a complex specialty. Multiple departments comprise a Clinical Laboratory. Each department has a test menu. Each test has specific specimen requirements. Specimen sharing is a common practice in all laboratories. This practice allows for multiple tests to be performed on a single specimen. Specimen sharing compounds the requirement that all specimens for testing be the optimum quality. The quality of the specimen is directly proportional to the provision of accurate results for all tests performed on each sample.

A phlebotomist is the first step in the production of an accurate and quality test result. Test results are forwarded to the clinician. The clinician bases treatment and long term management on the test results received. The clinician depends on accurate test results for correct management of all patients. In each instance, the absence of a quality specimen may alter treatment steps and change the possibility of a positive outcome.

Correct patient and sample identification are included in patient safety goals. The safety of a patient is not only physical safety (such as fall prevention), but also the safe and timely delivery of proper patient care. If a patient or a sample is not correctly identified, this impacts on safe patient treatment and a safe, non life-threatening outcome.

As implied in this process, the phlebotomist is the strong base on which the testing process rests. Each phlebotomist should view himself/herself as Atlas, holding the world of Laboratory Medicine. It is this preanalytical phase that forms the basis of laboratory medicine.



A Phlebotomist Holding the World of Laboratory Medicine

Unit A Process Approach

In any industry, there is a process that produces an endpoint. All healthcare procedures are composed of a series of processes and hence fall under this umbrella. Phlebotomy and specimen collection are procedures composed of a series of steps. Each procedural step is a process with an endpoint. A successful endpoint to each step is required to proceed to the next procedural step. The entire testing process may also be labeled as the "total testing process" or TTP.

The process approach may be visualized below:

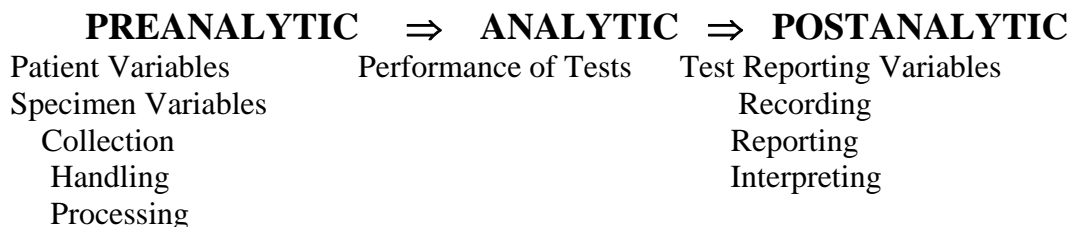
INPUT ⇒ PROCESS ⇒ OUTPUT

Laboratory testing utilizes the process approach with different labels. The process approach for a laboratory test is visualized below:

PREANALYTIC ⇒ ANALYTIC ⇒ POSTANALYTIC

Phlebotomy and phlebotomists are among the pillars of the preanalytic community. The preanalytic steps performed by the phlebotomist are under the control of the individual phlebotomist and the structure of the department that supports and guides the phlebotomist. The variables that are involved in the preanalytic phase, proper steps to avoid complications and some guidelines for completing all steps of the preanalytic phase will be provided in the text of this unit.

The analytic phase is the actual testing phase. The postanalytic phase is comprised of the steps that occur after the testing has been completed. With the exception of some Point of Care (POC) testing, the phlebotomist will not be involved in the testing or final reporting process. It is, however, important for a phlebotomist to understand the analytic and postanalytic steps of the testing process. A brief summary of the three phases is featured in the diagram below:



Alternate healthcare management and accreditation organizations have examined the process approach and developed corresponding terminology. The terminology provided by International Organization for Standardization (ISO) is outlined below the standard laboratory test process notations.

PREANALYTIC ⇒ ANALYTIC ⇒ POSTANALYTIC

(ISO) PREEXAMINATION ⇒ EXAMINATION ⇒ POSTEXAMINATION

While the standardization of terminology has not been obtained, the implied concepts are identical. Phlebotomy staff should be aware of variation in terminology.

Unit B Impact and Statistics Related to Preanalytic Error

The majority of inaccurate laboratory tests do not harm patients. For this reason, these inaccuracies are often undetected or when they are detected they are unreported or not judged to be clinically significant. In addition, staff members who are offering treatment often choose to ignore the inaccurate results and disregard them when considering diagnosis and treatment. Hence, the safety of patients is not compromised. Statistically it has been reported, "25-30 percent of these errors may affect clinical diagnosis and management and result in an increased cost of care or unnecessary invasive testing."⁵



National Center for Competency Testing

Building a Professional Culture of Excellence

As an independent certification agency, the *National Center for Competency Testing* is able to provide certification and continuing education products and services for individuals, schools, or programs irrespective of their allegiance to any specific professional organization or accreditor.

7007 College Boulevard, Suite 385 | Overland Park, Kansas 66211
www.ncctinc.com | t: 800.875.4404 | f: 913.498.1243