

# LP-1300: INTRODUCTION TO BLOOD COLLECTION

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## Cuyahoga Community College

**Viewing: LP-1300 : Introduction to Blood Collection**

**Board of Trustees:**

December 2023

**Academic Term:**

Fall 2024

**Subject Code**

LP - Laboratory Phlebotomy

**Course Number:**

1300

**Title:**

Introduction to Blood Collection

**Catalog Description:**

Introduction to theory and practice of phlebotomy. Principles of aseptic technique and familiarity with phlebotomy equipment. Performance of venipunctures and capillary punctures. Universal precautions and safety of phlebotomist and patient are strictly enforced.

**Credit Hour(s):**

3

**Lecture Hour(s):**

2

**Lab Hour(s):**

3

## Requisites

**Prerequisite and Corequisite**

ENG-0995 Applied College Literacies, or appropriate score on English Placement Test to enroll in ENG-1010 College Composition I, and MATH-0955 Beginning Algebra or qualified Math Placement to enroll in College-level Mathematics, and departmental approval: admission to Health Career/Nursing program.

Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.

## Outcomes

**Course Outcome(s):**

Discuss the health care delivery system and medical terminology.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Identify the health care providers in hospitals and clinics and the phlebotomist's role as a member of this health care team.
  2. Describe the various hospital departments and their major functions in which the phlebotomist may interact in his/her role.
  3. Describe the organizational structure of the clinical laboratory department.
  4. Discuss the roles of the clinical laboratory personnel and their qualifications for these professional positions.
  5. List the types of laboratory procedures performed in the various departments of the clinical laboratory department.
  6. Describe how laboratory testing is used to assess body functions and disease.
  7. Define medical terminology commonly used in the laboratory.
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**Course Outcome(s):**

Demonstrate knowledge of infection control and safety.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Identify policies and procedures for maintaining laboratory safety.
2. Identify and discuss the modes of transmission of infection and methods for prevention.
3. Identify and properly label biohazard specimens.
4. Describe safety measures that should be followed at all times by a phlebotomist when collecting a patient's specimen.
5. Describe the electrical, radiation, and biological hazards and fire safety procedures used in the hospital, including the clinical laboratory.
6. Discuss universal precautions as outlined by the Centers for Disease Control (CDC).
7. Discuss and perform proper infection control techniques, such as hand washing, gowning, gloving, masking, and double bagging.
8. Define and discuss the term Healthcare acquired infection (nosocomial infection).

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**Course Outcome(s):**

Describe and identify the anatomy and physiology of body systems and anatomic terminology in order to relate major areas of the clinical laboratory to general pathologic conditions associated with the body systems.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Describe the basic functions of each of the main body systems with emphasis on the cardiovascular system.
2. Identify parts of the body according to their proximity to one of the body planes.
3. Identify the veins of the arms, hands, legs, and feet on which venipuncture is performed.
4. Explain the functions of the major constituents of blood and differentiate between serum and plasma.
5. Define hemostasis and explain the basic process of coagulation and fibrinolysis.
6. Discuss the properties of arterial blood versus venous blood and describe the differences in collection methods.

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**Course Outcome(s):**

Discuss the importance of specimen collection in the overall patient care system.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Describe the legal and ethical importance of proper patient/sample identification.
2. Describe the types of patient specimens that are analyzed in the clinical laboratory and the phlebotomist's role in collecting and/or transporting these specimens to the laboratory.
3. Identify laboratory tests ordered by the standard abbreviations currently in use.
4. List the general criteria for suitability of a specimen for analysis, such as hemolysis and additive ratio.
5. Explain the importance of timed, fasting, and stat specimens.

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**Course Outcome(s):**

Discuss how to use collection equipment, various types of additives used, special precautions necessary, and substances that can interfere in clinical analysis of blood constituents.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Identify the various types of additives used in blood collection and explain the reasons for their use.
2. Identify the vacuum tube color codes associated with the additives.
3. Describe substances that can interfere in clinical analysis of blood constituents and ways in which the phlebotomist can help avoid these occurrences.
4. List and select the types of equipment needed to collect blood by venipuncture and capillary puncture.
5. Identify special precautions necessary during blood collections by venipuncture and capillary puncture.
6. List the supplies that should be carried on a phlebotomist's cart and/or tray.

**Course Outcome(s):**

Discuss and demonstrate proper techniques to perform venipuncture and capillary puncture.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Identify potential sites for venipuncture and capillary puncture.
2. Differentiate between sterile and antiseptic technique.
3. Describe and demonstrate the steps in the preparation of a puncture site.
4. List the effect of tourniquet, hand squeezing, and heating pads on capillary puncture and venipuncture.
5. Recognize proper needle insertion and withdrawal techniques including direction, angle, depth and aspiration.
6. Describe and perform the correct procedure for capillary collection method on infants and adults.
7. List the circumstances that would lead to recollection or rejection of a patient sample.
8. Identify alternate venipuncture collection sites and describe the limitation and precautions of each.
9. Name and explain frequent causes of phlebotomy complications.
10. Describe signs and symptoms of physical problems that may occur during blood collection.
11. List the steps necessary to perform a venipuncture and/or capillary puncture in chronological order.
12. Select the correct vacutainer tubes for the tests indicated and follow the correct order of draw when performing venipuncture and capillary puncture.
13. Perform 10 competent/effective venipunctures in the classroom setting on a fellow classmate and/or artificial arms.
14. Perform 5 competent/effective capillary punctures in the classroom setting on a fellow classmate and demonstrate the ability to fill a microtainer and microhematocrit tube.

**Course Outcome(s):**

Discuss the process for requisitioning, specimen transport and specimen processing.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Describe the laboratory criteria for identifying an appropriate request for specimen collection.
2. Relate legal responsibilities of the laboratory and phlebotomist to the physician's requests for all specimen collection and testing.
3. Explain methods for processing and transporting blood specimens for routine and special testing within the hospital.
4. Explain methods for processing and transporting blood specimens for testing at reference laboratories.
5. Describe the potential clerical and technical errors that may occur during specimen processing.
6. In regards to processing and transporting of blood specimens, describe the general effects of time on quality and patient care.
7. Describe the conditions that must be met if blood specimens and laboratory tests are to be used as legal evidence.

**Course Outcome(s):**

Discuss compliance with quality assurance programs in the clinical laboratory.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Describe the system for monitoring quality assurance in the collection of blood specimens.
2. Identify policies and procedures used in the clinical laboratory to assure quality in obtaining blood specimens.

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**Course Outcome(s):**

Demonstrate effective communication, personal and patient interaction, stress management, professional behavior, and discuss the legal implications of this work environment.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Discuss and explain the importance of maintaining patient confidentiality.
2. Describe the proper manner for greeting and interacting with a patient.
3. Explain the major points in interviewing a patient or a patient's representative in preparation for obtaining specimens.
4. Describe instructions to be given to patients in preparation for routine blood collection.
5. Describe and discuss techniques for dealing with family and visitors during the blood specimen collection.
6. Describe and discuss the major points of the American Hospital Associations' Patient's Bill of Rights as it applies to clinical laboratory personnel.
7. Discuss the importance of appearance and grooming for phlebotomists.
8. Define the different terms used in the medico-legal aspect for phlebotomy, and discuss policies and protocol designed to avoid medico-legal problems.
9. List the causes of stress in the work environment, and discuss the coping skills used to deal with stress in the work environment.
10. Discuss and explain basic concepts of communication.

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**Course Outcome(s):**

Demonstrate proper pre-analytical and post-analytical procedures for performing point-of-care testing.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Accurately perform one or more point-of-care tests by utilizing a standard operating procedure.
2. Perform required quality control in point-of-care testing, and demonstrate understanding of out-of-range results by performing proper follow-up.
3. Perform a capillary blood glucose and use a glucose meter to obtain a reportable glucose value.

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**Course Outcome(s):**

Demonstrate the ability to perform non-blood specimens and tests.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Perform the physical and chemical (dipstick) reading on a random urine.
2. Explain the methods used to collect different types of urine specimens and the rationale for collecting each type of sample.
3. Explain the proper procedure and collection of samples for glucose tolerance test.
4. Demonstrate proper sterile technique when collecting and plating a throat sample.

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**Course Outcome(s):**

Discuss special collection procedures.

**Essential Learning Outcome Mapping:**

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

**Objective(s):**

1. Differentiate between normal, critical, urgent, therapeutic, and toxic laboratory results.
  2. Identify the difference between therapeutic and recreational drugs.
  3. Indicate an understanding of the use of chain-of-custody forms used for legal specimens.
  4. Identify the generic and brand-name for common therapeutic drugs.
  5. Identify and explain the reason for drawing peak and trough levels for therapeutic drug samples.
  6. Identify unique and special collection devices/additives, and state the appropriate tests.
  7. Differentiate between venipuncture and the collection of arterial blood gases.
  8. State the purpose of the Allen test for arterial identification.
  9. Demonstrate proper, sterile technique when collecting routine blood cultures.
  10. Explain routine concerns and specific techniques utilized for pediatric and geriatric patients.
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**Methods of Evaluation:**

1. Homework
2. Written lecture and lab finals
3. Lecture and lab quizzes
4. Lecture exams

**Course Content Outline:**

1. Terminology
  - a. Hospital & Clinical Laboratory Departments
  - b. Roles in the Clinical Laboratory
  - c. Qualifications in Clinical Laboratory
  - d. Standard Clinical Laboratory Tests
2. Laboratory Safety
  - a. Universal Precautions, statutes, PPE
  - b. Location and use of safety equipment
  - c. Disinfection and disposal of contaminated materials
3. Anatomy & Physiology
  - a. Anatomic regions and Positions
  - b. Cardiovascular
  - c. Lymphatic
4. Specimen collection and transportation
  - a. Legal responsibility of the phlebotomist
  - b. Routine and special testing
    - i. Within hospitals
    - ii. Reference laboratories
  - c. Effects of time on quality and patient care
  - d. Potential clerical and technical errors during specimen processing
  - e. Laboratory testing used as legal evidence.
    - i. Chain of custody
5. Unique vacuum tubes and additives
  - a. Reference laboratory testing
  - b. Blood bank samples
  - c. Blood cultures
6. Arterial specimen collection vs. venous collections

- a. Patient preparation procedures
  - b. Site of collection
  - c. Differences in lab results between specimen types
7. Complications in blood collection
- a. Pre-analytical errors
    - i. Before specimen collection
    - ii. During specimen collection
    - iii. During specimen processing
  - b. Pediatric and geriatric patients
8. Quality control and quality assurance
- a. Quality management system
  - b. Quality assurance indicators
  - c. Use of quality control
9. Point of Care Testing
- a. Standard operating procedures
  - b. Use of quality control
  - c. OSHA regulations for Point of Care Testing

## Resources

McCall, Ruth and Tankersley, Cathee M. (2023) *Phlebotomy Essentials, Enhanced Edition*, Burlington, MA: Jones & Bartlett Learning.

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McCall, Ruth. (2023) *Phlebotomy Exam Review*, Burlington, MA: Jones and Bartlett Learning.

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Schaub DiLorenzo, Marjorie and King Strasinger, Susan. (2022) *Blood Collection for Healthcare Professionals: A Short Course*, Philadelphia, PA: F.A. Davis.

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Schaub DiLorenzo, Marjorie and King Strasinger. (2019) *The Phlebotomy Textbook*, Philadelphia, PA: F.A. Davis.

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Diana Garza, Kathleen Becan-McBride. (2019) *Phlebotomy Handbook: Blood Specimen Collection from Basic to Advanced*, Upper Saddle River, NJ: Pearson Education, Inc. .

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## Resources Other

Reference Articles from the following periodical publications:

Advance for Medical Laboratory Professionals  
Clinical Laboratory Science  
Laboratory Medicine  
Medical Laboratory Observer (MLO)

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