Revised: Fall 2016

MDL 105, 106
Phlebotomy

COURSE OUTLINE

Prerequisites:

None

Course Description:

MDL 105 - Phlebotomy

Introduces basic medical terminology, anatomy, physiology, components of health care delivery and clinical laboratory structure. Teaches techniques of specimen collection, specimen handling, and patient interactions.

This course introduces the student to the techniques of obtaining blood samples from patients in health care settings. Students will learn venipuncture, heel, and finger stick techniques for adult and pediatric patients. Students will also be introduced to techniques of specimen preparations, interpretation of nurses and physicians orders, and proper techniques for handling of blood specimens.

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Semester Credits: 4 **Lecture Hours: 2 Lab/Recitation Hours: 3**

MDL 105, 106 Phlebotomy

Course Outcomes

At the completion of this course, the student should be able to:

1. Understand basic medical terminology.
2. Understand laboratory orders from nurses and physicians.
3. Understand basic human anatomy, especially the circulatory system.
4. Be able to obtain blood from laboratory models such as simulated arms.
5. Understand how to properly handle laboratory blood specimens.
6. Understand how to process blood samples for various clinical laboratories.

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MDL 105, 106

Required Materials:

Required Materials Here

Textbook:

Phlebotomy Essentials fifth edition, Ruth E. McCall* Cathee M. Tankersley. Walters Kluwer/Lippincott Williams & Wilkins. ISBN-13;978-1-60547-637-7…ISBN-10: 1-60547-637-4

The following supplementary materials are available:

1. Phlebotomy Exam Review, fourth edition
2. Website ***thePoint***
3.

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MDL 105, 106

Topical Description: (Outline chapters and sections to be covered in the book – may include timeline)

Unit I…….The Healthcare Setting

Past and Present and The Healthcare Setting

- Describe the evolution of phlebotomy and the role of the phlebotomist today
- Describe the traits that form the professional image and identify national organizations that support professional recognition of phlebotomists.
- Describe the basic concepts of communication as they relate to healthcare and how appearance and nonverbal messages affect the communication process
- Describe proper telephone protocol in a laboratory or other healthcare setting
- Compare types of third-party payers, coverage, and methods of payment to the patient, provider, and institutions.
- Hospital organization and identify the healthcare providers in the inpatient facility
- List the clinical areas of the laboratory and the types of laboratory procedures performed in the different areas
- Describe the different levels of personnel in the clinical laboratory and how CLIA regulations affect their job description

Quality Assurance and Legal Issues

- Identify national organizations, agencies, and regulations that support quality assurance in healthcare
- Define quality and performance improvement measurements as they relate to phlebotomy
- List and describe the components of a quality assurance program and identify areas in phlebotomy subject to quality control
- List areas in phlebotomy subject to QC and identify QC procedures associated with each
- Demonstrate knowledge of the legal aspects associated with phlebotomy procedures by defining legal terminology and describing situations that may have legal ramifications.

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Infection Control, Safety, First Aide, and Personal Wellness

- Identify the components of the chain of infection and give examples of each, describe infection-control procedures used to break the chain, identify four functions of infection-control programs
- Describe proper procedures for hand hygiene, putting on and removing protective clothing, and entering the nursery or neonatal ICU.
- Describe standard and transmission-based precautions and identify the organizations and developed them
- State safety rules to follow when working in the laboratory and in patient areas

CONT.

- List examples of blood-borne pathogens and describe their means of transmission in a healthcare setting

UNIT II…….Overview of The Human Body

Medical Terminology

- Identify basic word elements and medical terms
- State the meaning of common word roots, prefixes, and suffixes and identify unique plural endings
- State the meaning of medical terms composed of elements
- Demonstrate proper pronunciation of medical terms by using the general guidelines
- State the meaning of common abbreviations
- Identify items currently on the Joint Commissions " Do not use" list of items for possible future inclusion

Human Anatomy and Physiology Review

- Identify and describe body positions, planes, cavities, and directional terms
- Define homeostasis and primary processes of metabolism
- Identify and describe the structural components of cells and the four basic types of tissue
- Describe the function and identify the components of major structures of each body system
- List disorders and diagnostic tests commonly associated with each body system

The Circulatory System

- Identify the layers and structures of the heart and describe their function
- Describe the cardiac cycle and how an ECG tracing related to it; also explain the origins of heart sounds and pulse rates
- Describe how to take a blood pressure reading and explain what they represent
- Identify the two main divisions of the vascular system, describe the function of each and trace the flow of blood throughout the system
- Identify the different types of blood vessels and describe the structure and function of each
- Name and locate major arm and leg veins and describe the suitability of each for venipucture
- List the major constituents of blood, describe the function of each of the formed elements, and differentiate between serum, plasma, and whole blood
- Describe how ABO and Rh blood types are determined and explain the importance of compatibility testing prior to transfusion
- Define hemostasis and describe basic coagulation and fibrinolysis processes

- Identify the structures and vessels and describe the function of the lymphatic system
- List the disorders and diagnostic tests of the circulatory system

UNIT III……..Blood Collection Procedures

Blood Collection Equipment, Additives, and Order of Draw

- List, describe, and explain the purpose of the equipment and supplies needed to collect blood by venipucture
- Compare and contrast antiseptics and disinfectants and give example of each
- Identify appropriate phlebotomy needles by length, gauge, and any associated color coding
- List and describe evacuated tube system (ETS) and syringe system components, explain how each system works and tell how to determine which system and components to use
- Identify the additives used in blood collection, list the various additives within each category, and describe how each additive works
- Describe the color coding used to identify the presence or absence of additives in blood collection tubes and name the additive, laboratory department, and individual tests associated with the color-coded tubes

- List the “order of draw” when multiple tubes are being collected and explain why it is important

Venipuncture Procedures

- Describe the test request process, identify the type of requisitions used, and lost the required information
- List and define test status designations, status priorities, and describe the procedure to follow for each status
- Describe proper “bedside manner” and how to handle special situations associated with patient contact
- Explain the importance of patient identification, how to verify, how to handle discrepancies, and what to do if a patient’s ID band if missing
- Describe how to prepare patients for testing, how to answer inquires concerning tests, and what to do if a patient objects to a test
- Describe fasting and other diet requirements and what to do when diet requirements have not been met
- Describe each step in the venipucture procedure, list necessary information found on tube labels, and list the acceptable reason for inability to collect a specimen
- Describe collection procedures when using a butterfly or syringe and the proper way to safety dispense blood into tubes following syringe collection.
- Describe unique requirements associated with drawing from special populations, including pediatric, geriatric, and hospice patients

Cont.

Preanalytical Considerations

- List and describe the physiological variables that influence laboratory tes resuots and identify the tests most affected by each one
- List problem areas to avoid to site collection, identify causes for concerns, and describe procedures to follow when encountering each
- Identify and describe various vascular access sites and devices and explain what to do when encountered
- How to handle patient complications associated with blood collection
- How to avoid or handle procedural error risks, specimen quality concerns, and reasons for failure to draw blood

Capillary Puncture Equipment and Procedures

- Describe the various type of equipment needed for capillary collection specimens
- Describe the composition of capillary specimens, identify which tests have different reference values when collected by capillary collection method, and name tests that cannot be preformed
- Indications for performing capillary puncture on adults, children, and infants
- List the order of draw for capillary collection
- Describe routine and thick blood smears and the reasons for making then at the collection site
- Explain the significance of capillary blood gas, neonatal bilirubin, and newborn screening tests and how specimens for these tests are collected

UNIT IV……..Special Procedures

Special Collections and Point-of-Care Testing

- Explain principles behind each special collection procedure, identify the steps involved, and list special supplies or equipment required
- Patient identification and specimen labeling procedures required for blood bank tests and identify the types of specimens typically required
- Describe sterile technique in blood culture collection, why it is important, the the reasons why a physician might order blood cultures
- List examples of coagulation specimens and describe how to collect and handle them
- Describe chain-of-custody procedures
- Explain the importance of timing, identify the role of drug half-life, providing names of drugs for examples, and describe peak and trough, and therapeutic levels in drug monitoring
- Define POCT, explain the principle behind the POCT and identify special equipment required

Computers and Specimen Handling and Processing CONT

- Describe components and elements of a computer. Identify general computer skills, and computer terminology
- Trace the flow of specimens through the laboratory with an information management system
- Define bar coding

- Describe routine and special handing procedures for specimens
- List time constraints and exceptions for delivery and processing of specimens
- Identify OSHA required protective equipment worn when processing specimens
- Describe the steps involved in processing the different types of specimens and reasons for specimen rejection

Nonblood Specimens and Tests

- Describe nonblood specimen labeling and handling
- Name and describe the various urine tests, specimen types, and collection handling methods
- Describe the types of nonblood specimens other than urine and explain why these specimens are tested
- Describe collection and handling procedures
- Identify tests performed on various nonblood specimens other than urine

Arterial Puncture Procedures

- State the primary reason for performing arterial puncture and identify the personnel who may be required to perform them
- Explain the purpose of collection ABG specimens and identify and describe the ABG parameters
- Identify the sites that can be used for arterial puncture, the criteria used for selection of the site and advantages and disadvantages of each site
- List equipment and supplies needed for arterial puncture
- Identify preparation procedures, administration prior to drawing arterial blood gas specimens
- Explain the purpose of the modified Allen test, describe how it is performed, define what constitutes a positive or negative result, and give the procedure to follow for either result
- Describe procedures for collecting radial arterial blood gas specimens and the role of the phlebotomist in other site collections
- List hazards and complications of arterial puncture, identify errors that may affect specimen integrity, and describe criteria for specimen rejection

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MDL 105, 106

Notes to Instructors
(List information about optional topics, departmental exams, etc)

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