



1969 - 1999



SYLLABUS

FOR CERTIFICATION OF MEDICAL LABORATORY ASSISTANTS

© BCSSLs/BCSMT 1997

British Columbia Society of Laboratory Science
(formerly British Columbia Society of Medical Technologists)
#720 – 999 West Broadway
Vancouver, BC V5Z 1K5
Phone (604) 714-1760 fax (604) 738-4080

www.bcsls.net

SYLLABUS

FOR CERTIFICATION OF MEDICAL LABORATORY ASSISTANTS

This syllabus describes the minimum level of knowledge and skills required for the certification of a Medical Laboratory Assistant.

©

Approved by the Board of Directors on April 24, 1998

UNIT 1

- A. Role of Lab Assistants***
- B. Professionalism***
- C. Legal and Ethical Issues***
- D. Interpersonal Communication***
- E. Quality Management and Improvement***

A *ROLE OF LABORATORY ASSISTANT*

Understand the role of the Medical Laboratory Assistant in hospital and private clinical laboratories and within the context of the health care system

List the major departments and sections within the clinical laboratory and the major types of procedures done in each

List the departments and services within the health care system

Describe organizational roles and relationships of personnel within the laboratory

Discuss the scope and services provided by hospital Laboratories, private laboratories and public health laboratories

Describe the work duties of the Medical Laboratory Assistant in hospital laboratories

B *PROFESSIONALISM*

Understand and discuss the components of professionalism

- Accountability
- Responsibility
- Communication
- Motivation and attitude
- Dress code, personal hygiene, and appearance
- Safety
- Competence
- Continuing Education

C *LEGAL AND ETHICAL ISSUES*

Define legal and ethical terms and discuss how these terms apply to the Medical Laboratory Assistant

- Assault and Battery
- Duty of Care
- Competence
- Confidentiality
- Consent
- Liability
- Negligence
- Ethics
- Documentation
- Patient Rights

D INTERPERSONAL COMMUNICATION

Identify, understand and practice the characteristics of effective communication with patients and other members of the health care team

- Characteristics and qualities of caring: respect, courtesy, empathy, warmth
- Relationship of self awareness and self esteem
- Response to others - feedback, listening skills, verbal and non verbal communication
- Negative effects of ineffective and unpleasant communication approaches
- Factors that may influence effective communication: Age, physical, mental condition, Stress levels, fear, etc.
- Communication with members of the health care team: telephone, computer, personal

E QUALITY MANAGEMENT AND IMPROVEMENT

The Laboratory Assistant must be able to explain the importance of quality assurance as it relates to the role of the Laboratory Assistant within the Health Care system

Define terms:

- Quality Assurance/ improvement
- Risk Management
- Utilization Management
- Quality Control
- Accuracy
- Precision
- Accreditation

UNIT 2

A. Anatomy and Physiology

***B. Laboratory Terminology and
Measurement***

***C. Laboratory Safety and Infection
Control***

A ANATOMY AND PHYSIOLOGY

The medical laboratory assistant must be able to demonstrate basic knowledge of the human body structure and some major body system functions

a. List and briefly describe the following body Systems:

- Integumentary
- Musculoskeletal
- Circulatory
- Urinary
- Digestive
- Respiratory
- Nervous
- Reproductive
- Endocrine
- Lymphatic
- Immune

b. Identify the main structures and functions of:

Circulatory system

- Blood components
- Coagulation
- Arteries, veins, capillaries relevant for blood collection

Urinary System

Respiratory System

Digestive System

Endocrine System

- Thyroid gland and hormones
- Pancreas and hormones
- Reproductive System and hormones

c. Discuss pathophysiology and common tests related to the above body systems.

B LABORATORY TERMINOLOGY AND MEASUREMENT

Understand and use correct medical terminology related to the human anatomy and physiology and measurements (basic SI units commonly used in the laboratory and 24-hr clock)

- Define and use correct terminology for anatomical terms related to specimen collection
- Terminology commonly used in the laboratory
- Terminology related to the major body systems and diseases
- Terminology related to the measurement systems used in the laboratory
 - SI Units
 - Metric System
 - 24 hour clock

C *LABORATORY SAFETY AND INFECTION CONTROL*

Understand basic principles of laboratory safety

- a. Describe infectious diseases and etiological agents
 - bacteria, viruses, fungi, parasites

- b. Explain the following
 - basic mechanisms of disease transmission and host interaction with emphasis on Hepatitis, HIV.
 - Universal Precautions
 - protective clothing and equipment
 - isolation techniques
 - cleaning routines
 - means of disinfection and sterilization
 - control of microbial populations
 - chemical hazards found in the Laboratory
 - electrical safety
 - fire safety
 - WHMIS
 - importance of documentation and reporting requirements

UNIT 3

- A. Venipuncture***
- B. Skin Puncture Microcollection***
- C. Terminology and Conditions***
- D. Collection of Urine Specimens***
- E. Miscellaneous Specimen
Collection***
- F. Protocols and Procedures for
Processing, Transport and
Storage of Specimens***

SPECIMEN COLLECTION

A VENIPUNCTURE

- a. Must be able to identify and describe the types, parts and appropriate uses of equipment required to collect specimens by venipuncture
 - syringes
 - needles (including butterfly needles)
 - evacuated tubes and additives including adapters and holders
 - tourniquets
 - antiseptic cleansing solutions
 - disposal systems for needles

- b. Must be able to discuss and demonstrate correct Venipuncture Technique
 - patient identification
 - proper patient positions for blood collection for adults and children
 - labeling specimens
 - sites for venipuncture
 - order of draw
 - care after collection

- c. Dealing with unusual circumstances and common complications associated with venipuncture
 - Unconscious
 - Impaired
 - Abusive
 - Anxious
 - Uncooperative
 - Fainting
 - Failure to draw blood
 - Hematoma
 - Petechiae
 - Obesity
 - Sclerosed Veins
 - Collapsed Veins
 - Thrombosed or scarred Veins
 - Burned area
 - Infections
 - Excessive Bleeding
 - Rolling Veins
 - Collapsed Veins
 - Seizures
 - Patient with no identification

B SKIN PUNCTURE MICROCOLLECTION

- a. Must be able to identify and describe the types and appropriate uses of equipment required to collect specimens by skin puncture
 - skin puncture devices
 - microcollection containers
 - cleansing solutions

- b. Discuss and demonstrate proper technique for skin puncture for adults, children, infants and neonates
 - choice of correct site and equipment
 - warming, cleansing and collection technique
 - complications and limitations of skin puncture collection
 - care after collection

C *TERMINOLOGY AND CONDITIONS*

- basal state and factors affecting
- rational for rejection of specimens
- specimen priority
- Special conditions e.g. shunts and fistulas, edema, mastectomy, oncology
- protocols regarding repeat collections
- special testing e.g. Blood Cultures, cold agglutinins, tolerance tests
- isolation techniques

D *COLLECTION OF URINE SPECIMENS*

a. Must be able to demonstrate knowledge and skills necessary for the correct collection of urine specimens.

- routine and microscopic
- culture and sensitivity
- different types of urine specimens
- special instructions for collection
- random
- first morning
- timed
- midstream
- clean catch
- 24 hour urine
- equipment required for urine collection
- labeling
- transport, storage and treatment of urine specimens
- protocol for collecting urine specimens for drug analysis

E *MISCELLANEOUS SPECIMEN COLLECTION*

a. Understands the requirements and instructions for collection of

- Stool specimens for
 - occult blood
 - ova and parasites
 - culture and sensitivity
 - fecal fat
- Semen collection for
 - fertility
 - post vasectomy
- Therapeutic drug monitoring
- Sputum collection for
 - culture and sensitivity
 - cytology
- Synovial fluid

F *PROTOCOLS AND PROCEDURES FOR PROCESSING, TRANSPORT AND STORAGE OF SPECIMENS*

a. Demonstrate knowledge of and requirements for the following

Clinical Chemistry

- Electrolytes
- Calcium
- Phosphorus
- Bilirubin
- Urea
- Creatinine
- Glucose
- Enzymes
- Proteins
- Iron
- Magnesium
- Hormones
- Blood Profiles

Hematology

- Blood counts: WBC, CBC, RBC, Platelets
- Hemoglobin
- Hematocrit
- Red Cell Morphology
- White cell differential
- Erythrocyte Sedimentation Rate
- Hemoglobin Electrophoresis
- Haptoglobin
- Coagulation Tests
- Prothrombin time
- Partial Thromboplastin time
- Antinuclear Antibody
- Rheumatoid Factor
- Anti DNA
- Monotest

Microbiology

- Categories of organisms
- Requirements for handling specimens for microbiological analysis
- Immunology
- Immunohematology

Histology

Cytology

Laboratory Equipment

General requirements for transport including TDG storage and disposal

Documentation requirements

Protocols for using test library

UNIT 4

- A. Cardiac Anatomy***
- B. Conduction System of the Heart***
- C. Lead Theory***
- D. Evaluation of
Electrocardiogram***
- E. Electrocardiograph Equipment
and Components***
- F. Recording an
Electrocardiogram***

ELECTROCARDIOGRAPHY

Anatomy and electrical conduction system of the heart, correct procedure for performance of an electrocardiogram, use and maintenance of equipment and analysis of electrocardiogram tracings including detection and correction of artifacts.

A *CARDIAC ANATOMY*

- Identification of major heart vessels
- Identification of heart chambers, valves, septum, and layers.
- Knowledge of the pattern of blood flow through the heart

B *CONDUCTION SYSTEM OF THE HEART*

- Identify and locate the components of the conduction system of the heart
- Discuss how the electrical impulse is initiated and moves through the heart

C *LEAD THEORY*

- Explain Einthoven's Law
- Define Einthoven's Triangle
- Define the term "Lead"
- Identify and explain standard and augmented limb leads
- Identify reference points for placement of leads
- Locate the exact positions for the precordial leads V1 - V6
- Discuss the importance of precise lead location

D *EVALUATION OF ELECTROCARDIOGRAM*

- a. Identify electrocardiogram patterns
 - P wave
 - PR interval
 - QRS Wave
 - ST segment
 - T Wave
 - QT interval
 - U wave
- b. Determine heart rhythm, heart rate
- c. Discuss unusual or abnormal patterns
 - Steps of arrhythmic recognition
 - Identification of possible myocardial Infarction
 - Identification and correction of artifacts

E *ELECTROCARDIOGRAPHY EQUIPMENT AND COMPONENTS*

Identify components of the electrocardiograph and demonstrate knowledge and components of equipment

F RECORDING AN ELECTROCARDIOGRAM

- Assemble equipment
- Explain procedure to the patient
- Prepare the patient
- Place sensors on the patient
- Attach machine cables to machine sensors
- Record Electrocardiogram
- Disconnect
- Prepare ECG for interpretation

REFERENCES

Possible Resources and Reference Material

McCall, R.E. & Tankersley, C.M. (1993). Phlebotomy Essentials Philadelphia: J.B. Lippincott (available at the Vancouver Community College bookstore)

Burdick Corporation. (1988). Electrocardiography: A Better Way. Milton, WI: Seimens-Burdick

Drury, P. (1986). CSMLS Guidelines for Laboratory Safety (2nd ed.). Hamilton, Ont.: CSMLS

Dubin, D. (1989). Rapid Interpretation of EKGs (4th ed.). Tampa: Cover Publishing

Garza, D. & Becan-McBride, K. (1989). Phlebotomy Handbook (2nd ed.). Norwalk, CT: Appleton & Lange

Memmler, R.L., Cohen, B.J., & Wood, D.L. (1992). Structure and Function of the Human Body. Philadelphia: J.B. Lippincott.

National Committee for Clinical Laboratory Standards. (1984) Collection and Transportation of single- collection urine specimens. Villanova, PA.: NCCLS

National Committee for Clinical Laboratory Standards. (1985). Use of devices for collection of skin puncture blood specimens. Villanova, PA.: NCCLS

CSMLS – Quality Assurance

National Committee of Clinical Laboratory Standards & Guidelines (NCCLS) – Phlebotomy

Strasinger, S. K. & Di Lorenzo, M.A. (1996). Phlebotomy Workbook. Philadelphia, PA: F.A. Davis Co.

Worker's Compensation Board of British Columbia (1988) What's WHMIS? Richmond, BC:

©
British Columbia Society of Laboratory Science
#720 – 999 West Broadway
Vancouver. BC V5Z 1K5
Phone (604) 714-1760 fax (604) 738-4080

www.bcsls.net