Scope of Practice for Medical Laboratory Science Professionals Practicing in Ethiopia

The Ethiopian Medical Laboratory Association
EMLA

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1. Background Information about Medical Laboratory Sciences (Laboratory Medicine)

1.1. Introduction

Health laboratories are an integral and essential component of the health system. They provide valuable inputs to physicians and public health managers in planning, implementing and evaluating interventions for the prevention and treatment of diseases to mitigate morbidity and mortality. Laboratory support is also vital to delineate disease epidemiology and understand risk factors for prevailing diseases.

Modern medical care concerns about the health of an individual’s at health institution while public health concerns at society level. However, both are highly interrelated and backup each other. The overall aim of all health professionals including medical laboratory practitioners is combating both infectious and non infectious diseases.

The role of medical laboratory professionals is very critical in modern medicine especially medical laboratory personnel provide evidence based information that can lead and support clinicians and other health personnel for patient management. The contribution of laboratory evidence is also vital in the prevention of non communicable diseases like diabetes, hereditary metabolic disorders and Transfusion medicine.

Evidence based information from medical laboratories are applicable in the diagnosis of diseases conditions, for indexing the prognosis of patients after an intervention measures, for screening patients for various diseases; for surveillance of communicable and non communicable diseases; for epidemic management were the cause of the epidemic has to be identified which could be communicable be it bacterial, viral, parasitic, fungal or microbial byproducts, or other non-communicable etiologies.

The features of microorganism are changing as changes occur in human life. These changes could have an impact on the management of the diseases which is caused by the microbes. The antimicrobial sensitivity patterns of the various microorganisms could be changed and there is a need to conduct surveillance of antimicrobial sensitivity testing regularly. Here the role of medical laboratories is underscored.

Today multidrug resistant bacteria, such as Multidrug Resistance Tuberculosis, Methicilin resistance Staphylocoous aureus, Extended Spectrum of Beta Lactamase producing bacteria and many other bacterial, viral and fungal pathogens are causing a very serious health problem in the society. These will affect patients, health personnel, the health institutions and the country at large. Having prior drug sensitivity patterns of any organism could warrant clinicians to select the most effective antimicrobial agents, pharmacy personnel could utilize this information to
purchase the useful drugs for management of the microbial etiologies, resource could be utilized appropriately and many other benefits could be anticipated.

Medical laboratory sciences are also plays a pivotal role in forensic laboratory medicine by providing evidence which is vital to know the cause of the condition. It could support and guide users of the information for final decision making. Modern medicolegal issues applied laboratory medicine tremendously.

Microorganisms and or their byproducts; toxic chemicals; Radioisotopes and other emerging and reemerging etiologies could be a risk. These dangerous microbes and or its byproducts could be released from the laboratories intentionally or accidentally. The medical laboratory expertise are key in indentifying the cause and notify the concerned bodies to prevent loss of human, animal life and even the ecosystem in general. The quality of foods, water and beverages has to be ascertained. Microbial, physical and chemical quality of water, foods and beverages has to be evaluated regularly. Both locally produced and imported products could be a vehicle for transmission of diseases. Here the role of medical laboratories is appreciated. Regular assessment of foods, water and other beverages is not only vital from health point of view it is also affects the economy of a nation.

Medical laboratory personnel could guide and support users of the laboratories for optimal test selection, teaching patients and clinicians for simple point of care testing instrument such as glucometer for blood glucose measurement and validate their performance in a regular manner which is a pivotal step for management of the respective diseases conditions. As a laboratory quality officers and administrators medical laboratory personnel advice and consult for proper selection, procurement and distribution of all laboratory commodities at facility level, regional and national level. As modern medicine advanced specially in the era of globalization medical laboratory practice should have all means to update their knowledge, skill and attitudes to apply this knowledge for control of infectious and noninfectious diseases which are existing; emerging; and re-emerging in the society in general. As the Maputo declaration emphasizes there is a need to strengthening medical laboratories in all countries to provide quality health services.

1.2. Philosophy of Medical Laboratory Technology

Medical Laboratory sciences professionals strive to generate and provide evidence based information for all its clients that benefit patients and the whole community at large.

Evidence based medicine is highly dependent on Laboratory information for best advantages of patients. Quality assured laboratory services is the current strategies that are advocated worldwide. Laboratory services in Ethiopia should be standardized to meet our client needs not only locally but also at global market in general.
Medical Laboratory services at all levels should be given through standard practice, ethically and all moral and financial deliverables to benefit the professionals and the society at large.

1.3. Core values

- Team work among all health professionals and our colleagues.
- Laboratory professionals should strive for best practice through continuous learning and advocacy.
- We share transparency, responsibility and accountability in the field of Laboratory medicine.
- Medical Laboratory science professionals strive for safety and quality of all laboratory commodities at facility, regional and national level
- Promote Good medical laboratory Practice
- Standards of Medical Laboratory should be in place and all medical laboratory professionals should adhere on it.
- Medical laboratory science professionals act with honesty and trustworthiness which ensures strict adherence to high ethical principles at all levels.

1.4. Areas of Practice for Medical Laboratory Sciences Professionals:

- Health service laboratories (Health Centers, Hospital)
- Diagnostic laboratories
- Regional/Reference laboratories
- Blood bank laboratories
- National/Central Laboratories
- Research laboratories
- Public health laboratories
- Import and export of IVD Devices and laboratory commodities
- Wholesales and distribution of IVD Devices and Laboratory commodities
- Laboratory Industry (Design, isolation, Production of IVD Devices and POC Technologies)
- Educational institutes (Teaching) of medical laboratory sciences and health sciences fields
- External quality assessment and Quality assurance centers
- Laboratory standard institutes and Accreditation body
- Laboratory Regulation, Management and administration body
2. Consultancy of laboratory medicine

2. Health Services Management, District, zonal, regional and federal including Ministry of health.

2. Categories of Medical Laboratory Sciences and Related Professions

2.1. Category: Laboratory Medicine

2.1.1. Sub-Category I. Medical Laboratory Sciences

2.1.2. Sub-Category II. Biomedical Sciences

2.2. Professions in the Sub-Category I of Medical Laboratory Sciences:

- Medical Laboratory Assistant I (Certificate in one year program)
- Medical Laboratory Assistant II (Certificate in two year program)
- Medical Laboratory Technician (Diploma in medical Laboratory Technology)
- Medical Laboratory Technologists (BSc in Medical Laboratory Technology)
- Clinical Laboratory Sciences specialist: (BSc in medical laboratory sciences, MSc and above) in:
  
  - Clinical chemistry
  - Hematology and Immunohaematology
  - Diagnostic and Public Health Microbiology
  - Laboratory Management and Quality Assurance
  - Medical Biochemistry
  - Medical Microbiology
  - Medical Parasitology
  - Medical Immunology
  - Cytotechnology
  - Histotechnology
Clinical/Medical Laboratory Scientist: Medical Laboratory Sciences Specialist and PhD in the fields listed under Sub-category I above and other Medical Laboratory sciences related fields.

2.3. Professions in the Sub-Category II of Biomedical Sciences:

- Biomedical science specialist: BSc in Chemistry, Biology, MD, DVM and MSc and above in:
  - Medical Biochemistry
  - Medical Microbiology
  - Medical Parasitology
  - Molecular biology
  - Medical genetics
  - Medical Immunology

- Biomedical Scientist: Biomedical Sciences specialist and PhD in the fields listed under Sub-category II and other related biomedical sciences fields.

3. Definitions of Each Profession in the Category

3.1. Medical Laboratory or Clinical Laboratory: Laboratory for the biological, immunological, immunohaematological, hematological, biophysical, cytological, pathological or other examinations of materials derived from the human body for the purpose of providing information for the diagnosis, prevention and treatment of disease in or assessment of the health of human beings, and which may provide a consultant advisory service covering all aspects of laboratory investigation including the interpretation of results and advice on further appropriate investigation. [ISO 15189 2007]. Most Laboratorians can also analyze environmental specimens such as water, foods, and other related samples to identify any microbiologic, toxins and chemicals which is associated with human and animal diseases.

3.2. Medical Laboratory Assistant I: Medical laboratory assistant I is a person who, having been admitted to a medical laboratory science educational program, duly recognized in the country and has successfully completed the prescribed course of one year Certificate Level studies in medical laboratory science and has been licensed by the regulatory authority to practice medical laboratory services at certificate capacity level.
3.3. Medical Laboratory Assistant II: Medical laboratory assistant II is a person who, having been admitted to a medical laboratory science educational program, duly recognized in the country and has successfully completed the prescribed course of two year Certificate Level studies in medical laboratory science and has been licensed by the regulatory authority to practice medical laboratory services at certificate capacity level.

3.4. Medical Laboratory Technician: A person who, under the supervision of a medical laboratory technologist, performs microscopic and bacteriologic tests of human blood, tissue, and fluids for diagnostic and research purposes. Medical laboratory technicians are educated in a 2-3 diploma program.

3.5. Medical Laboratory Technologist: are health professionals who perform pathological and non pathological specimens, interpret data through Good Clinical Laboratory Practice for evidence based medicine. These personnel also known as Medical Laboratory Science Practitioners are generalist that can practice in Health centers, various hospitals, and diagnostic laboratories in routine and advanced tests with full management and leadership roles. Generally Laboratory Technologists / medical laboratory science practioners attained 4 years training from recognized universities.

3.6. Clinical Laboratory Sciences specialist: These are health professionals who are medical laboratory technologists / Medical Laboratory Science practioners with MSc degree in Clinical Laboratory Sciences fields of specialty and or related fields listed under category 2.1. The specialist can do all practice of medical laboratory technologists / science practioners and more advanced laboratory duties in their fields of specialty. They are mainly engaged in specialized and teaching / referral hospital laboratories, regional and national research laboratories, diagnostic laboratories, private companies, consulting firms, industries, educational institutes in various positions including administrative and leadership roles.

3.7. Clinical/Medical Laboratory Scientist: These are specialists of Clinical Laboratory sciences with PhD in one of the specialty areas listed under category 2.2: These are health professionals who are medical laboratory technologists / Medical Laboratory Science practioners with MSc degree in Clinical Laboratory Sciences fields of specialty and or related fields listed under category 2.1. The consultant can do all practice of medical laboratory technologists / science practioners in general and more in his / her specialization areas in advanced problem solving research, teaching and community service. It is expected that he or she can lead, advice matters related to policy issues at all level of the health system with special emphasis in clinical laboratory Sciences at regional, national and international level.
3.8. Biomedical Science Specialist: Personnel earn a bachelor’s degree in biology, chemistry, MD, DVM and specialized in one of the fields listed under category 2.3. These personnel can practice only in their field of specialization. They can practice mainly in research laboratories, hospital laboratory with their area of expertise and related institutions.

3.9. Biomedical Scientist: specialist of biomedical sciences and PhD in one of the specialty areas listed under category 2.3. These personnel can practice only in their field of specialization. They can practice mainly in research laboratories, hospital laboratory with their area of expertise and related institutions.

4. To Do Lists (Scope of Practices) for Laboratory Medicine Category:

I. Sub-Category I: Medical Laboratory Sciences

1. Medical Laboratory Assistant I: Certificate Assistant level I
   Definition: Medical laboratory assistant I is a person who, having been admitted to a medical laboratory science educational program, duly recognized in the country and has successfully completed the prescribed course of one year Certificate Level studies in medical laboratory science and has been licensed by the regulatory authority to practice medical laboratory services at certificate capacity level.

   This assistant shall have the following responsibilities:

   1. Technical Skills: Inspection, Identification, Collection and preparation of clinical material:
      - Ensure the appropriateness of sample collection procedures,
      - Demonstrate correct identification and labeling requirements for patient specimens,
      - Collect appropriate biological and environmental specimens using standard operating procedures,
      - Ensure the appropriateness of specimen reception procedures,
      - Determines acceptability of samples within established guidelines,
      - Match requirements to specimen and documentation upon receipt in laboratory,
      - Notifies appropriate staff if patient identification error is observed or specimen is sub-optimal,

   2. Analytical Skills: Evaluate specimen suitability prior to analysis:
• Determines acceptability of samples using established protocols and guidelines,
• Determine the priority of laboratory requests (triage) to effectively manage service requirements,
• Prioritizes assignment of test requests according to established guidelines,
• Coordinates general workflow and reorganizes to suit changes in priority.

3. Practice Limitation or Restriction:
Medical Laboratory Assistant-I is NOT Authorized to Perform:
• Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

4. Reserved Title: Medical Laboratory Assistant I

2. Medical Laboratory Assistant II: Certificate Assistant level II

Definition: Medical laboratory assistant II is a person who, having been admitted to a medical laboratory science educational program, duly recognized in the country and has successfully completed the prescribed course of two year Certificate Level studies in medical laboratory science and has been licensed by the regulatory authority to practice medical laboratory services at certificate capacity level.

This assistant shall have the following responsibilities:

1. Technical Skills: Inspection, Collection and preparation of samples:
   • Process specimen utilizing appropriate techniques,
   • Prepares specimens for analysis,
   • Perform routine urinalysis, parasitological, microscopic examination for screening and diagnosis of diseases following the respective SOPs,
   • Prepare basic laboratory regents for the above mentioned simple lab procedures,
   • Interpretation, reporting and issue of laboratory results,

2. Analytical / Decision Making: Interpretation, reporting and issue of laboratory results:
   • Verify report(s) with sample identification,
   • Use the administrative systems in place to communicate the results,
   • Observes principles of data security / patient confidentiality,
   • Follows procedures to ensure communication of results occurs in timely manner and this process is documented,
   • Ensure appropriate storage and disposal of data and reports,
Ensures results are recorded according to regulatory requirements,

3. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock:
   - Coordinate supplies of stocks and reagents,
   - Maintains inventory and supplies,
   - Ensures stock received is transported and subsequently stored according to manufacturers specifications,

4. **Safety**: Maintenance and promotion of safe working practices;
   - Prepare and store reagents and solutions,
   - Prepares, labels, handles and stores reagents according to requirements,
   - Identify and respond to unsafe work practices and breaches of regulations,
   - Complies with and promotes safety guidelines,
   - Ensure correct procedures are followed for acquisition, collection, storage, of basic laboratory wastes,
   - Adheres to appropriate safety regulations and is responsible to community and environment when handling and/or disposing of hazardous substances,
   - Respond appropriately to emergency situations,
   - Practice safety documentation and use of safety equipment,
   - Documents safety related incidents according to protocol,

5. **Accountability**: Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
   - Accept responsibility for own actions / omissions,
   - Make appropriate decisions commensurate with level of experience and/or job description,

6. **Communication**: Liaison with health workers and others to continuously improve health the service:
   - Participate in quality improvement activities,
   - Documents issues and refers these to senior staff,

7. **Education and Training**: Participation in education and training of health workers and others:
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Responds to technical questions consistent with level of training, knowledge and/or qualifications to new laboratory assistants,
   - Provides instruction on collection and/or testing of specimens commensurate with experience and qualifications,

8. **Practice Limitation/Restriction**:  
    Medical Laboratory Assistant II is **NOT** Authorized to Perform:
    - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

9. Reserved Title: Medical Laboratory Assistant II

3. Medical Laboratory technician: Diploma in medical Laboratory Technology

**Definition:** Medical laboratory technician is a person who, having been admitted to a medical laboratory educational program, duly recognized in the country or equivalent and has successfully completed the prescribed course of Diploma Level studies and has been licensed by the regulatory authority acquired to practice medical laboratory services at diploma capacity level.

This Medical Laboratory Technician shall have the following responsibilities and will have a supervisory or guidance role for laboratory assistant I and II.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials,
   - Determine the priority of laboratory requests (triage) to effectively manage service requirements,
   - Determines quality and timeliness of patient test results by investigating problems involving specimen collection, result reporting and turnaround time,
   - Process specimen utilizing appropriate techniques,
   - Performs some non-automated and specialized laboratory procedures,
   - Read and validate results,
   - Performs quality control procedures using established protocols,
   - Troubleshoots instrument problems using established procedures,
   - Performs preventative maintenance on laboratory equipment appropriate to role,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Understands the basic physiology behind laboratory results,
   - Perform validation of results,
   - Evaluates and interprets test results within position requirements,
   - Reports abnormal results within position requirements and seeks advice when necessary,
   - Understand the theory of laboratory procedures under the level of the profession,
   - Make decisions about reporting results, repeating procedures, consulting senior staff and carrying out further tests within established guidelines,
Differentiates technical, instrumental and/or physiologic causes for unexpected test results,

3. **Analytical / Decision Making**: Interpretation, reporting and related issues of laboratory results
   - Verify report(s) with sample identification,
   - Reports test results appropriate to role,
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Ensures reference intervals and/or reported comments on results are communicated where necessary and this is documented according to procedures,
   - Ensure appropriate storage and disposal of data and reports,
   - Ensures results and/or reports are stored according to regulatory requirements,
   - Ensures reports are disposed according to regulatory requirements and ensuring privacy and confidentiality is maintained,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock:
   - Coordinate supplies of stocks and reagents,
   - Prepare microbiological, hematological, biochemical and other reagents using SOPs,
   - Determines quantities of blood and blood products to be held by laboratory,
   - Participate in preparation and revision of manuals and protocols,
   - Maintains records / documentation and monitors for any updates,
   - Follows relevant guidelines for method / manual content,
   - Ensure appropriate resources are available to the laboratory,
   - Communicates requirements for laboratory resources to appropriate personnel,

5. **Safety**: Maintenance and promotion of safe working practices:
   - Prepare and store reagents and solutions,
   - Prepares and store laboratory reagents following SOPs and Maintains inventory of hazardous reagents and reviews periodically to ensure substances no longer in use are discarded appropriately,
   - Identify and respond to unsafe work practices and breaches of regulations,
   - Ensures procedures do not contain unsafe practice and notifies appropriate personnel with concerns or improvement suggestions,
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Holds appropriate license for handling radioactive substances,
   - Respond appropriately to emergency situations,
   - Aware of hazards caused by interaction of some substances,
6. **Professional Development**: Professional accountability and participation in continuing professional development:
   - Develop skills relevant to the enhancement of professional growth,
   - Demonstrates understanding of laboratory operations and place of laboratories in health care,
   - Develops additional skills by participating in relevant activities or attending approved courses,

7. **Accountability**: Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
   - Accept responsibility for own actions / omissions,
   - Delegates tasks (enlists help of others) and ensures appropriate completion of these, commensurate with role and ability,

8. **Communication**: Liaison with health workers and others to continuously improve the service:
   - Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
   - Suggests cost effective laboratory procedures or protocol,
   - Establish and maintain relationships with suppliers,
   - Assists in establishing and maintaining appropriate communication with internal and external suppliers,
   - Assists in establishing service level for suppliers and documents and refers any failure of this to senior staff,
   - Establish and maintain relationships with service users,
   - Communicates and maintains confidentiality in relation to service delivery,
   - Demonstrates awareness of key performance indicators to ensure laboratory meets clients needs,

9. **Education and Training**: Participation in education and training of health workers and others:
   - Train personnel in the operation of basic instruments and equipment, and the observation of safety measures,
   - Trains laboratory new technicians and laboratory assistants in basic laboratory procedures,

10. **Managerial role**: Contribute to leading and managing a laboratory activity
    - Contribute to management of laboratory,
    - May play a managerial role at peripheral laboratories in his/her capacity
    - Assist senior staff as deputy manager,

12. **Practice Limitation/Restriction**:
    Medical Laboratory Technician Is **NOT** Authorized to Perform:
    - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved Title: Medical Laboratory Technician

4. Medical Laboratory Technologist: BSc in Medical Laboratory Technology

**Definition:** Medical laboratory technologist is a person also known as a medical laboratory science professional who, having been admitted to a medical laboratory educational program, duly recognized in the country and has successfully completed the prescribed course of Baccalaureate Degree Level studies and has been licensed by the regulatory authority to practice medical laboratory services at a professional capacity level.

This Medical Laboratory Technologist shall have the following responsibilities and will have a supervisory or guidance role for laboratory technicians.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Process specimen utilizing appropriate techniques,
   - Recognizes appropriate and inappropriate selection of all lab tests,
   - Operates, calibrates and run preventive and curative maintenance of equipment used in quantitative analysis, manual or semi-automated instruments and point of care analyzers,
   - Determines when “backup” methods must be initiated,
   - Conducts routine and advanced bio-chemical, microbiological, immunoserological, Molecular testing that follows established protocols,
   - Read and validate results,
   - Evaluates quality control measures and institutes appropriate corrective action within established guidelines,
   - Assess laboratory testing using statistical methods,
   - Evaluates and calculates quality control statistics to assess accuracy, reproducibility and validity of current laboratory methods,
   - Establishes and monitors quality assurance programs and activities to ensure the accuracy of laboratory results,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Identifies technical, instrumental, and/or physiologic causes of unexpected test results,
   - Develops solutions to problems based on knowledge, patient diagnosis and instrument performance,
- Make decisions about reporting results, repeating procedures, consulting senior staff and carrying out further tests within established guidelines,
- Correlates abnormal laboratory data with pathologic states to determine validity and/or whether follow up tests should be done,
- Integrates and relates laboratory data generated by various lab sections in making judgments regarding possible discrepancies,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Approves test results produced by subordinates,
   - Ensures accurate advice is communicated where necessary and this is documented according to procedures,
   - Works with senior staff to establish critical level values and develop acceptable criteria,
   - Interacts with other health care workers to solve problems and interpret patient lab results within the framework of medical science,
   - Informs physicians concerning details and limitations of lab procedures,
   - Ensure appropriate storage and disposal of data and reports,
   - Analyses laboratory computer applications to manage data,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and Stock:
   - Participate in preparation and revision of manuals and protocols,
   - Appropriately communicates changes to all relevant staff,
   - Writes standard operating procedures (SOP) according to prescribed format,
   - Ensure appropriate resources are available to the laboratory,
   - Involved in appropriate utilization of human and technical resources, including position descriptions,
   - Role in the procurement of laboratory commodities and supply chain management system,
   - Procure, store, secure and distribute medical laboratory supplies and equipment based on standard procedures,
   - Plan, design and execute appropriate quantification of laboratory commodities,
   - Participate in vendor selection and prequalification,
   - Prepare appropriate national test menu,
   - Perform need assessment and appropriate marketing in laboratory medicine,

5. **Safety:** Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes
   - Enforces safety regulations,
   - Develops safety and waste management procedures and guidelines,
- Respond appropriately to emergency situations,
- Involve in surveillance and control of communicable disease,

6. Professional Development: Professional accountability and participation in continuing professional development:
- Establish and communicate personal goals in professional development,
- Assists with professional development of staff,
- Develop skills relevant to the enhancement of professional growth,
- Develops and utilizes research skills,
- Comply with the profession code of ethics,
- Exercises professional judgment, skill and care indecisions made regarding patients and others,

7. Accountability: Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
- Make independent, professional judgments,
- Applies step by step thinking, problem solving and critical thinking patterns and is aware of implications associated with outcomes,
- Performs analytical and decision making functions without supervision
- Supervises laboratory personnel as assigned,
- Contributes to resolution of conflicting decisions / interpretations within the laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Evaluates and validates new methodologies,
- Possesses scientific knowledge to evaluate clinical laboratory technology,
- Reviews current literature relating to new or improved procedures and makes recommendations for adoption where appropriate,
- Develops and implements new tests as required,

8. Communication: Liaison with health workers and others to continuously improve the service:
- Participate in quality improvement activities,
- Monitors quality assurance systems,
- Identifies and suggests standards of practices,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Implements changes in response to technology and laboratory procedures,

9. Education and Training: Participation in education and training of health workers and others:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers minor training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
• Prepares and presents continuing education lectures and conferences for personnel,
• Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
• Provides advice on interpretation and significance of results, giving consideration to clinical information and limitations of test,
• Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
• Instructs personnel in work group on new methods / instruments,
• Instructs patients, new technicians, medical students, residents and peers regarding laboratory testing as required,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practices:
• Evaluate results and the need for further experimental work,
• Evaluates and validates new methodologies,
• Collects, analyses data and contributes to interpretation of results,
• Assists in determining requirements for further research in consultation with appropriate personnel,
• Assists with design of a project within position requirements,
• Prepare and deliver report to the appropriate body,
• Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
• Contribute to management of laboratory,
• Play managerial role in peripheral and district laboratories, other health care systems (MoH, RHB, Health offices) and private health institutions,
• Establish diagnostic laboratories as per the policy requirements,
• Assist senior laboratory personnel in regional and research laboratories,
• Import and distribute laboratory commodities,
• Prepare and distribute standard laboratory reagents,
• Attain consultancy role for industries, importers, and institutions at large,
• Involve in mentoring activities in accreditation and standard institutions,

12. **Practice Limitation or Restriction:**
Medical Laboratory Technologist is **NOT** Authorized to Perform:
• Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.
5. Clinical Laboratory Sciences specialist (Speciality in Clinical Chemistry/Medical Biochemistry) MSc in Clinical chemistry/Medical Biochemistry

**Definition:** Clinical laboratory science specialist is a qualified medical laboratory technologist (BSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Clinical Chemistry/Medical Biochemistry. Clinical chemistry (also known as clinical biochemistry) is the study of chemical and biochemical mechanisms of the body in relation to disease, mostly through the analysis of body fluids (such as blood or urine) and tissues.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists. A clinical chemistry/biochemistry specialist provides a link between front line clinical staff and the basic sciences employing analytical and interpretative skills to aid the clinician in the prevention, diagnosis and treatment of disease.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Performs more complex biochemical and molecular biology tests using manual, semi-automated or fully automated laboratory procedures,
   - Validate and approve laboratory test results at any level within his/her specialty,
   - Validate new laboratory technologies,
   - Assuring the quality of clinical biochemistry investigations,
   - Auditing the diagnostic and clinical use and performance of investigations,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,
3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development:** Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies biochemical and molecular biology tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. Communication: Liaison with health workers and others to continuously improve the service:
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and Implement changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. Education and Training: Participation in education and training of clinical/medical laboratory technologists and other related health workers:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instruct personnel in work group on new methods / instruments,
- Clinical chemistry tests that use a wide range of analytical techniques such as molecular diagnostics, measurement of enzyme activities, spectrophotometry, electrophoresis, the separation of molecules based on physical characteristics and immunoassays,
The work involves manual techniques for which the biomedical scientist develops complex practical and interpretive skills, through operation and management of highly automated testing systems.

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - May initiate or lead formal research projects,
   - Independently formulate problem oriented research projects according to the needs of the society,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation or Restriction:**
   Clinical Laboratory Sciences specialist (specialty in Clinical/Medical Biochemistry) is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title:** Clinical Laboratory Sciences specialist (Specialty in Clinical Chemistry/ Medical Biochemistry)
6. Clinical Laboratory Sciences Specialist (Specialty in Hematology and Immunohaematology) MSc in Hematology and immunohaematology

**Definition:** Clinical laboratory science specialist is a qualified medical laboratory technologist (BSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Hematology and immunohaematology.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within his specialty,
   - Perform advanced hematology techniques on peripheral and Bone marrow smears and interpret the results,
   - Perform and interpret advanced hematology Molecular techniques Such as immunophenotyping, Flowcytometery and cytogenetics,
   - Validate new laboratory technologies,
   - Perform compatibility testing for organ transplantation science (transplant Screening tests like HLA typing, Antibody Screening, Compatibility testing),
   - Adopt and implement technologies to produce reagents for blood grouping,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
• Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development:** Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory. Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. **Communication:** Liaison with health workers and others to continuously improve the service:
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
- Independently formulate problem oriented research projects according to the needs of the society,
- Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Manage and coordinate activities of blood banks and Hematology Laboratories,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation or Restriction:**
    Clinical Laboratory Sciences specialist (Specialty in Hematology and Immunohaematology) is NOT Authorized to Perform:
    - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
    - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title:** Clinical Laboratory Sciences specialist (Specialty in Hematology and immunohaematology)
Clinical Laboratory Sciences specialist (Speciality in Diagnostic and Public Health Microbiology/Medical Microbiology) MSc in Diagnostic and Public Health Microbiology/Medical Microbiology

**Definition:** Clinical laboratory sciences specialist is a qualified medical laboratory technologist (BSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Diagnostic and Public Health Microbiology/Medical Microbiology.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level in the area of diagnostic microbiology and public health microbiology laboratory,
   - Validate new laboratory technologies in diagnostic microbiology and public health microbiology laboratory,

2. **Knowledge Base:** Correlation and validation of microbiologic results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise with in diagnostic microbiology and public health microbiology laboratory,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results of diagnostic microbiology and public health microbiology laboratory:
   - Ensure that results with important diagnostic or treatment implications are Communicated as per established protocols,
   - Creates an evidence base for use by clinicians for the benefit of patients,
4. Resource Maintenance: Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. Safety: Maintenance and promotion of safe working practices in diagnostic and public health microbiology laboratories:
   - Ensure correct procedures are followed for acquisition, collection, storage, Transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,
   - Involve in surveillance of microbiologic and related diseases,

6. Professional Development: Professional accountability and participation in Continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within diagnostic microbiology and public health microbiology laboratory,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically in the diagnostic microbiology and public health microbiology laboratory,

7. Accountability: Responsibility for Medical Science practice including test selection, development and use of microbiology laboratory investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
   - Identifies tests / parameters which help diagnose, screen and monitor treatment, Demonstrates innovation and highly developed and specialized skills,
8. **Communication:** Liaison with health workers and others to continuously improve the service:
   - Participate in quality improvement activities,
   - Develop and implement a comprehensive Quality Management System,
   - Continuously improve quality to meet goals,
   - Audits clinical use, general guidelines and promulgates best practice,
   - Lead internal and external quality assessment schemes in diagnostic and public health microbiology laboratories,
   - Mentor regional, hospital and research microbiology laboratory staffs,
   - Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
   - Initiate and implements changes in response to technology and laboratory procedures,
   - Establish and maintain relationships with suppliers,
   - Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Preparations and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the Performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instruct personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of in diagnostic and public health microbiology laboratory practices:
    - Contribute to planning and design of research and development projects,
    - May initiate or lead formal research projects,
    - Independently formulate problem oriented research projects according to the needs of the society,
    - Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role**: Contribute to leading and managing a diagnostic and public health microbiology laboratory activity:

- Contribute to management of diagnostic and public health microbiology laboratory,
- Play a leading role in project management especially in diagnostic microbiology and public health microbiology laboratory,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies more specialized in diagnostic microbiology and public health microbiology laboratory,
- Lead laboratory supply management activities of the diagnostic microbiology laboratories,
- Attain lead role in biomedical industries and manufacturing setups notably in microbiology laboratories and public health microbiology laboratories,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation or Restriction**: Clinical Laboratory Sciences specialist (Specialty in Diagnostic and Public Health Microbiology) is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title**: Clinical Laboratory Sciences Specialist (Speciality in Diagnostic and Public Health Microbiology/Medical Microbiology)
8. Clinical Laboratory Sciences specialist (speciality in Laboratory Management and Quality Assurance) MSc in Laboratory Management and Quality Assurance

Definition: Clinical laboratory science specialist is a qualified medical laboratory technologist (BSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Laboratory Management and Quality Assurance.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills**: Collection, preparation, storage, retrieval, disposal and analysis of biological specimens:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within his specialty,
   - Validate new laboratory technologies,

2. **Knowledge Base**: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,
   - Demonstrates a working knowledge of medical laboratory safety requirement,

3. **Analytical / Decision Making**: Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
- Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development:** Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. **Communication:** Liaison with health workers and others to continuously improve the service:
- Counsels patients regarding the purpose and result of laboratory tests,
- Consult clinicians about appropriate test selection and interpretation,
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Demonstrates a holistic approach to laboratory quality assurance and quality control,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
- Independently formulate problem oriented research projects according to the needs of the society,
- Conduct operational research to support program needs,
- **Prepare and deliver report**, Prepare and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role**: Contribute to leading and managing a laboratory activity:
- Contribute to management of laboratory
- Play a leading role in project management
- Plays consultancy role in policy formulation and implementations
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc
- Demonstrate leadership skills in problem solving, diagnostic test management and conflict resolution,
- Create quality management tool,
- Create and coordinate referral network for specimen transfer and result delivery, including feedback mechanism,

12. **Practice Limitation or Restriction**:
Clinical Laboratory Sciences specialist (Speciality in Laboratory Management and Quality assurance) is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title**: Clinical Laboratory Sciences Specialist (Speciality in Laboratory Management and Quality Assurance)
9. Clinical Laboratory Sciences specialist (Speciality in Medical Parasitology)  
MSc in Medical Parasitology

**Definition:** Clinical Laboratory Sciences specialist (speciality in Medical Parasitology) is a qualified Medical Parasitologist who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Medical Parasitology.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within Medical Parasitology laboratory,
   - Validate new Medical Parasitology laboratory technologies,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within Medical Parasitology specialty,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base Medical Parasitology results for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock
   - Participate in preparation and revision of manuals and protocols,
- Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
- Approves new methods as fit for use,

5. **Safety**: Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the Medical Parasitology laboratory team in emergency situations,

6. **Professional Development**: Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of Medical Parasitology staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within Medical Parasitology specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability**: Responsibility for Medical Science practice including test selection, development and use of Medical Parasitology investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
   - Identifies tests / parameters which help diagnose, screen and monitor treatment,
   - Demonstrates innovation and highly developed and specialized skills,
8. **Communication:** Liaison with health workers and others to continuously improve the service:
   - Participate in quality improvement activities,
   - Develop and implement a comprehensive Quality Management System,
   - Continuously improve quality to meet goals,
   - Audits clinical use, general guidelines and promulgates best practice,
   - Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
   - Initiate and implements changes in response to technology and laboratory procedures,
   - Establish and maintain relationships with suppliers,
   - Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instructs personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
    - Contribute to planning and design of research and development projects,
    - May initiate or lead formal research projects,
    - Independently formulate problem oriented research projects according to the needs of the society,
    - Prepare and deliver report,
    - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
11. **Managerial role:** Contribute to leading and managing a laboratory activity:

- Contribute to management of laboratory,
- Play a leading role in project management,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation/Restriction:**
Clinical Laboratory Sciences specialist (Speciality in Medical Parasitology) Is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered,
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely,

13. **Reserved title:** Clinical Laboratory Sciences Specialist (Speciality in Medical Parasitology)

10. **Clinical Laboratory Sciences specialist (Speciality in Medical Immunology)**

**MSc in Medical Immunology**

**Definition:** Clinical Laboratory Sciences specialist (speciality in Medical Immunology) is a qualified Medical Immunologist who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Medical Immunology.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:

- Read and validate results,
Validate and approve laboratory test results at any level within Medical Immunology laboratory,

Validate new Medical Immunology laboratory technologies,

2. **Knowledge Base**: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within Medical Immunology specialty,

3. **Analytical / Decision Making**: Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base Medical Immunology results for use by clinicians for the benefit of patients,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety**: Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the Medical Immunology laboratory team in emergency situations,

6. **Professional Development**: Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of Medical Parasitology staff,
- Maintain and update scientific / technical knowledge and skills,
- Maintain the required technical knowledge and skills within Medical Parasitology specialty,
- Develop skills relevant to the enhancement of professional growth,
- Researches and develops the field of analysis both analytically and clinically,

7. **Accountability**: Responsibility for Medical Science practice including test selection, development and use of Medical Parasitology investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
   - Identifies tests / parameters which help diagnose, screen and monitor treatment,
   - Demonstrates innovation and highly developed and specialized skills,

8. **Communication**: Liaison with health workers and others to continuously improve the service:
   - Participate in quality improvement activities,
   - Develop and implement a comprehensive Quality Management System,
   - Continuously improve quality to meet goals,
   - Audits clinical use, general guidelines and promulgates best practice,
   - Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
   - Initiate and implements changes in response to technology and laboratory procedures,
   - Establish and maintain relationships with suppliers,
   - Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training**: Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,

- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instruct personnel in work group on new methods / instruments,

10. Research and Development: Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
- Independently formulate problem oriented research projects according to the needs of the society,
- Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. Managerial role: Contribute to leading and managing a laboratory activity:
- Contribute to management of laboratory,
- Play a leading role in project management,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. Practice Limitation/Restriction:
Clinical Laboratory Sciences Specialist (Speciality in Medical Immunology) is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved title: Clinical Laboratory Sciences specialist (speciality in Medical immunology)
Clinical Laboratory Sciences Specialist (Speciality in Molecular Biology)
MSc in Molecular biology

Definition: Clinical laboratory science specialist is a qualified medical laboratory technologist (BSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Molecular biology.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills**: Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within his specialty,
   - Validate new laboratory technologies,

2. **Knowledge Base**: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,

3. **Analytical / Decision Making**: Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,
5. **Safety**: Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development**: Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific/technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability**: Responsibility for Medical Science practice including test selection, development and use of laboratory investigations
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
   - Identifies tests/parameters which help diagnose, screen and monitor treatment,
   - Demonstrates innovation and highly developed and specialized skills,

8. **Communication**: Liaison with health workers and others to continuously improve the service
   - Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education / Training:** Participation in education and training of health workers and others
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instruct personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - May initiate or lead formal research projects,
   - Independently formulate problem oriented research projects according to the needs of the society,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
- Play a leading role in project management,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. Practice Limitation/Restriction:
Clinical Laboratory Sciences Specialist (Specialty in Molecular biology) is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved title: Clinical Laboratory Sciences Specialist (Speciality in Molecular biology)

12. Clinical Laboratory Sciences specialist (Speciality in Human Genetics) MSc in Human Genetics

**Definition:** Clinical Laboratory Sciences Specialist is a Person earned a bachelor's degree (BSc) in medical laboratory technology, who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in human Genetics.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:

- Read and validate results,
- Validate and approve laboratory test results at any level within Medical Immunology laboratory,
- Validate new Medical Immunology laboratory technologies,
2. **Knowledge Base**: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:

- Assess validity of data / results against possible range of outcomes,
- Demonstrates high level of clinical and scientific expertise within Medical Immunology specialty,

3. **Analytical / Decision Making**: Interpretation, reporting and issue of laboratory results:

- Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
- Creates an evidence base Medical Immunology results for use by clinicians for the benefit of patients,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock:

- Participate in preparation and revision of manuals and protocols,
- Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
- Approves new methods as fit for use,

5. **Safety**: Maintenance and promotion of safe working practices:

- Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
- Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
- Respond appropriately to emergency situations,
- Involve actively in leading the Medical Immunology laboratory team in emergency situations,

6. **Professional Development**: Professional accountability and participation in continuing professional development:

- Establish and communicate personal goals in professional development,
- Play a leading role in professional development of Medical Parasitology staff,
- Maintain and update scientific / technical knowledge and skills,
- Maintain the required technical knowledge and skills within Medical Parasitology specialty,
- Develop skills relevant to the enhancement of professional growth,
- Researches and develops the field of analysis both analytically and clinically,
7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of Medical Parasitology investigations:

- Make independent, professional judgments,
- Demonstrates responsibility and accountability for management and planning of services and/or departments,
- Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
- Responsible for or contributes to strategic direction of laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. **Communication:** Liaison with health workers and others to continuously improve the service:

- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and Implement changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:

- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
• Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
• Organize and instruct personnel in work group on new methods / instruments,

10. Research and Development: Contribution to advancement of knowledge and improvement of laboratory practice:
• Contribute to planning and design of research and development projects,
• May initiate or lead formal research projects,
• Independently formulate problem oriented research projects according to the needs of the society,
• Prepare and deliver report,
• Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. Managerial role: Contribute to leading and managing a laboratory activity:
• Contribute to management of laboratory,
• Play a leading role in project management,
• Plays consultancy role in policy formulation and implementations,
• Actively involved in recruiting, importing and distributing laboratory supplies,
• Lead laboratory supply management activities,
• Attain lead role in biomedical industries and manufacturing setups,
• Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. Practice Limitation/Restriction:
Clinical Laboratory Sciences Specialist (Speciality in Human Genetics) Is NOT Authorized to Perform:
• Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved title: Clinical Laboratory Sciences specialist (speciality in Human Genetics)
13. Clinical Laboratory Sciences specialist (Speciality in Cytotechnology) MSc in Cytotechnology

**Definition:** Clinical laboratory science specialist is a qualified medical laboratory technologist (BSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Cytotechnology.

This Clinical Laboratory Sciences Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within his specialty,
   - Validate new laboratory technologies,
   - Perform full range of cytological procedures including fine needle aspiration, biopsy,
   - Perform microscopic and molecular examination on normal and abnormal changes, including but not limited to, malignant neoplasm, precancerous lesions, infectious agents and inflammatory process in gynecologic, non-gynecologic and fine needle aspiration specimen,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
- Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
- Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety**: Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development**: Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability**: Responsibility for Medical Science practice including test selection, development and use of laboratory investigations
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. Communication: Liaison with health workers and others to continuously improve the service
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. Education / Training: Participation in education and training of health workers and others
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,

10. Research and Development: Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
Independently formulate problem oriented research projects according to the needs of the society,
Prepare and deliver report,
Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
- Contribute to management of laboratory,
- Play a leading role in project management,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation/Restriction:**
Clinical Laboratory Sciences specialist (speciality in Cytotechnology) Is NOT Authorized to Perform:
- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title:** Clinical Laboratory Sciences Specialist (Speciality in Cytotechnology)

14. **Clinical Laboratory Scientist in Clinical Chemistry/Medical Biochemistry:** PhD in Clinical Chemistry/Medical Biochemistry

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level in clinical chemistry/medical biochemistry.**

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:
1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures.
   - Organize and instructs personnel in work group on new methods / instruments.

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication.

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Clinical Laboratory Scientist in clinical chemistry/medical biochemistry) is NOT Authorized to Perform:
Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.

Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. Reserved title: Clinical Laboratory Scientist in clinical chemistry/medical biochemistry.

15. Clinical Laboratory Scientist in Hematology and Immunohaematology: PhD in Hematology and immunohaematology

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Hematology and immunohaematology.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instruct personnel in work group on new methods / instruments,
2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Clinical Laboratory Scientist in Hematology and immunohaematology) is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Clinical Laboratory Scientist in Hematology and immunohaematology.
Clinical Laboratory Scientist in Diagnostic and Public Health Microbiology/Medical Microbiology: PhD in Diagnostic and Public Health Microbiology/Medical Microbiology.

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level** in Diagnostic and Public Health Microbiology/Medical Microbiology.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and Instruct personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
• Prepares and reviews reports (written, verbal, journal) and submits for peer review,
• Review documents and reports for publication,

3. Managerial role: Contribute to leading and managing a laboratory activity:
• Contribute to management of laboratory,
• Play a leading role in project management,
• Plays consultancy role in policy formulation and implementations,
• Actively involved in recruiting, importing and distributing laboratory supplies,
• Lead laboratory supply management activities,
• Attain lead role in biomedical industries and manufacturing setups,
• Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. Practice Limitation/Restriction:
Clinical Laboratory Scientist in Diagnostic and Public Health Microbiology/Medical Microbiology is NOT Authorized to Perform:

• Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. Reserved title: Clinical Laboratory Scientist in Diagnostic and Public Health Microbiology/Medical Microbiology.

17. Clinical Laboratory Scientist in Laboratory Management and Quality Assurance: PhD in Laboratory Management and Quality Assurance

Definition: Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Laboratory Management and quality assurance.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory
technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instruct personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.
4. **Practice Limitation/Restriction:**
Clinical Laboratory Scientist in Laboratory Management and Quality Assurance is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Clinical Laboratory Scientist in Laboratory Management and Quality Assurance.

18. **Clinical Laboratory Scientist in Medical Parasitology:** PhD in Medical Parasitology

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Medical Parasitology.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
• Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
• Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
• Organize and Instruct personnel in work group on new methods / instruments,

2. Consultation, Research and Development: Contribution to advancement of knowledge and improvement of laboratory practice:
• Contribute to planning and design of research and development projects,
• Initiate or lead formal research (basic /operational) projects,
• Prepare and deliver report,
• Prepares and reviews reports (written, verbal, journal) and submits for peer review,
• Review documents and reports for publication,

3. Managerial role: Contribute to leading and managing a laboratory activity:
• Contribute to management of laboratory,
• Play a leading role in project management,
• Plays consultancy role in policy formulation and implementations,
• Actively involved in recruiting, importing and distributing laboratory supplies,
• Lead laboratory supply management activities,
• Attain lead role in biomedical industries and manufacturing setups,
• Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. Practice Limitation/Restriction:
Clinical Laboratory Scientist in Medical Parasitology is NOT Authorized to Perform:
• Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. Reserved title: Clinical Laboratory Scientist in Medical Parasitology.
Clinical Laboratory Scientist in Medical Immunology: PhD in Medical Immunology

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level** in Medical Immunology.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and Instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,
3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Clinical Laboratory Scientist in **Medical Immunology** is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Clinical Laboratory Scientist in **Medical Immunology**.

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**20. Clinical Laboratory Scientist in Medical Genetics: PhD in Medical Genetics**

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level** in Medical Genetics.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,

2. Consultation, Research and Development: Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. Managerial role: Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. Practice Limitation/Restriction:
   Clinical Laboratory Scientist in Medical Genetics is NOT Authorized to Perform:
• Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Clinical Laboratory Scientist in Medical Genetics.

21. **Clinical Laboratory Scientist in Cytotechnology: PhD in Cytotechnology**

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Cytotechnology.

This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and Instruct personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- Initiate or lead formal research (basic/operational) projects,
- Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,
- Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Clinical Laboratory Scientist in **Cytotechnology** is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Clinical Laboratory Scientist in Cytotechnology.

22. **Clinical Laboratory Scientist in Histotechnology:** PhD in Histotechnology

**Definition:** Clinical laboratory scientist is a qualified medical laboratory technologist (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level in Histotechnology**.
This Clinical Laboratory Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instruct personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic / operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
• Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Clinical Laboratory Scientist in Histotechnology is NOT Authorized to Perform:
   • Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   • Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Clinical Laboratory Scientist in Histotechnology.

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**II. Sub-Category II: Biomedical Sciences**

1. **Biomedical Sciences specialist (Speciality in Medical Biochemistry) MSc in Medical Biochemistry**

   **Definition:** Biomedical science specialist is a Person earned a bachelor's degree (BSc) chemistry and who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Medical Biochemistry. Clinical chemistry (also known as clinical biochemistry) is the study of chemical and biochemical mechanisms of the body in relation to disease, mostly through the analysis of body fluids (such as blood or urine) and tissues.

   This Biomedical science specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists. A clinical chemistry/biochemistry specialist provides a link between front line clinical staff and the basic sciences employing analytical and interpretative skills to aid the clinician in the prevention, diagnosis and treatment of disease.

   **1. Technical Skills:** Collection, preparation and analysis of clinical materials:
   • Read and validate results,
   • Performs more complex biochemical and molecular biology tests using manual, semi-automated or fully automated laboratory procedures,
   • Validate and approve laboratory test results at any level within his/her specialty,
   • Validate new laboratory technologies,
Assuring the quality of clinical biochemistry investigations,
Auditing the diagnostic and clinical use and performance of investigations,

2. **Knowledge Base**: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,

3. **Analytical / Decision Making**: Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety**: Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development**: Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,
7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of laboratory investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
   - Identifies biochemical and molecular biology tests / parameters which help diagnose, screen and monitor treatment,
   - Demonstrates innovation and highly developed and specialized skills,

8. **Communication:** Liaison with health workers and others to continuously improve the service:
   - Participate in quality improvement activities,
   - Develop and implement a comprehensive Quality Management System,
   - Continuously improve quality to meet goals,
   - Audits clinical use, general guidelines and promulgates best practice,
   - Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
   - Initiate and implements changes in response to technology and laboratory procedures,
   - Establish and maintain relationships with suppliers,
   - Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of clinical/medical laboratory technologists and other related health workers:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instruct personnel in the work group on new methods/instruments,
- Clinical chemistry tests that use a wide range of analytical techniques such as molecular diagnostics, measurement of enzyme activities, spectrophotometry, electrophoresis, the separation of molecules based on physical characteristics and immunoassays,
- The work involves manual techniques for which the biomedical scientist develops complex practical and interpretive skills, through operation and management of highly automated testing systems.

10. **Research and Development**: Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
- Independently formulate problem-oriented research projects according to the needs of the society,
- Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role**: Contribute to leading and managing a laboratory activity
- Contribute to management of laboratory,
- Play a leading role in project management,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation or Restriction**: Biomedical Science specialist (specialty in Medical Biochemistry) is NOT Authorized to Perform:
- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
• Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title:** Biomedical Science specialist (Specialty in Medical Biochemistry)

2. **Biomedical Science specialist (Speciality in Medical Microbiology) MSc in Medical Microbiology**

**Definition:** Biomedical science specialist is a Person earned a bachelor's degree (BSc) biology, MD, or DVM and who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Medical Microbiology. This Biomedical science specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level in the area of diagnostic microbiology and public health microbiology laboratory,
   - Validate new laboratory technologies in diagnostic microbiology and public health microbiology laboratory,

2. **Knowledge Base:** Correlation and validation of microbiologic results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise with in diagnostic microbiology and public health microbiology laboratory,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results of diagnostic microbiology and public health microbiology laboratory:
   - Ensure that results with important diagnostic or treatment implications are Communicated as per established protocols,
   - Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
• Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
• Approves new methods as fit for use,
5. **Safety:** Maintenance and promotion of safe working practices in diagnostic and public health microbiology laboratories:
• Ensure correct procedures are followed for acquisition, collection, storage, Transportation and disposal of biological, toxic and radioactive wastes,
• Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
• Respond appropriately to emergency situations,
• Involve actively in leading the laboratory team in emergency situations,
• Involve in surveillance of microbiologic and related diseases,

6. **Professional Development:** Professional accountability and participation in Continuing professional development:
• Establish and communicate personal goals in professional development,
• Play a leading role in professional development of staff,
• Maintain and update scientific / technical knowledge and skills,
• Maintain the required technical knowledge and skills within diagnostic microbiology and public health microbiology laboratory,
• Develop skills relevant to the enhancement of professional growth,
• Researches and develops the field of analysis both analytically and clinically in the diagnostic microbiology and public health microbiology laboratory,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of microbiology laboratory investigations:
• Make independent, professional judgments,
• Demonstrates responsibility and accountability for management and planning of services and/or departments,
• Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
• Responsible for or contributes to strategic direction of laboratory,
• Demonstrate knowledge of new tests and their potential in the laboratory,
• Identifies tests / parameters which help diagnose, screen and monitor treatment, Demonstrates innovation and highly developed and specialized skills,

8. **Communication:** Liaison with health workers and others to continuously improve the service:
• Participate in quality improvement activities,
• Develop and implement a comprehensive Quality Management System,
Continuously improve quality to meet goals,
Audits clinical use, general guidelines and promulgates best practice,
Lead internal and external quality assessment schemes in diagnostic and public health microbiology laboratories,
Mentor regional, hospital and research microbiology laboratory staffs,
Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
Initiate and implements changes in response to technology and laboratory procedures,
Establish and maintain relationships with suppliers,
Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. Education and Training: Participation in education and training of health workers and others:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,

10. Research and Development: Contribution to advancement of knowledge and improvement of diagnostic and public health microbiology laboratory practices:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
- Independently formulate problem oriented research projects according to the needs of the society,
- Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. Managerial role: Contribute to leading and managing a diagnostic and public health microbiology laboratory activity:
Contribute to management of diagnostic and public health microbiology laboratory,

Play a leading role in project management especially in diagnostic microbiology and public health microbiology laboratory,

Plays consultancy role in policy formulation and implementations,

Actively involved in recruiting, importing and distributing laboratory supplies more specialized in diagnostic microbiology and public health microbiology laboratory,

Lead laboratory supply management activities of the diagnostic microbiology laboratories,

Attain lead role in biomedical industries and manufacturing setups notably in microbiology laboratories and public health microbiology laboratories,

Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. Practice Limitation or Restriction:
Biomedical science specialist (speciality in Medical Microbiology) is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved title: Biomedical science specialist (Speciality in Medical Microbiology)

3. Biomedical Science specialist (Speciality in Medical Parasitology) MSc in Medical Parasitology

Definition: Biomedical science specialist is a Person earned a bachelor's degree (BSc) in biology, who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Medical Parasitology.

This Biomedical science specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. Technical Skills: Collection, preparation and analysis of clinical materials:
• Read and validate results,
• Validate and approve laboratory test results at any level within Medical Parasitology laboratory,
• Validate new Medical Parasitology laboratory technologies,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   • Assess validity of data / results against possible range of outcomes,
   • Demonstrates high level of clinical and scientific expertise within Medical Parasitology specialty,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   • Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   • Creates an evidence base Medical Parasitology results for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock
   • Participate in preparation and revision of manuals and protocols,
   • Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   • Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices:
   • Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   • Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   • Respond appropriately to emergency situations,
   • Involve actively in leading the Medical Parasitology laboratory team in emergency situations,

6. **Professional Development:** Professional accountability and participation in continuing professional development:
   • Establish and communicate personal goals in professional development,
   • Play a leading role in professional development of Medical Parasitology staff,
   • Maintain and update scientific / technical knowledge and skills,
- Maintain the required technical knowledge and skills within Medical Parasitology specialty,
- Develop skills relevant to the enhancement of professional growth,
- Researches and develops the field of analysis both analytically and clinically,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of Medical Parasitology investigations:
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
   - Responsible for or contributes to strategic direction of laboratory,
   - Demonstrate knowledge of new tests and their potential in the laboratory,
   - Identifies tests / parameters which help diagnose, screen and monitor treatment,
   - Demonstrates innovation and highly developed and specialized skills,

8. **Communication:** Liaison with health workers and others to continuously improve the service:
   - Participate in quality improvement activities,
   - Develop and implement a comprehensive Quality Management System,
   - Continuously improve quality to meet goals,
   - Audits clinical use, general guidelines and promulgates best practice,
   - Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
   - Initiate and implements changes in response to technology and laboratory procedures,
   - Establish and maintain relationships with suppliers,
   - Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instruct personnel in work group on new methods / instruments,

**10. Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
- Contribute to planning and design of research and development projects,
- May initiate or lead formal research projects,
- Independently formulate problem-oriented research projects according to the needs of the society,
- Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,

**11. Managerial role:** Contribute to leading and managing a laboratory activity:
- Contribute to management of laboratory,
- Play a leading role in project management,
- Plays consultancy role in policy formulation and implementations,
- Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

**12. Practice Limitation/Restriction:**
Biomedical science specialist (Speciality in Medical Parasitology) Is NOT Authorized to Perform:
- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered,
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely,

**13. Reserved title:** Biomedical science specialist (Speciality in Medical Parasitology)
4. Biomedical Science specialist (Speciality in Medical Immunology) MSc in Medical Immunology

**Definition:** Biomedical science specialist is a Person earned a bachelor's degree (BSc) in biology, who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Medical Immunology.

This Biomedical Science Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within Medical Immunology laboratory,
   - Validate new Medical Immunology laboratory technologies,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within Medical Immunology specialty,

3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base Medical Immunology results for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices:
• Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
• Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
• Respond appropriately to emergency situations,
• Involve actively in leading the Medical Immunology laboratory team in emergency situations,

6. Professional Development: Professional accountability and participation in continuing professional development:
• Establish and communicate personal goals in professional development,
• Play a leading role in professional development of Medical Parasitology staff,
• Maintain and update scientific / technical knowledge and skills,
• Maintain the required technical knowledge and skills within Medical Parasitology specialty,
• Develop skills relevant to the enhancement of professional growth,
• Researches and develops the field of analysis both analytically and clinically,

7. Accountability: Responsibility for Medical Science practice including test selection, development and use of Medical Parasitology investigations:
• Make independent, professional judgments,
• Demonstrates responsibility and accountability for management and planning of services and/or departments,
• Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
• Responsible for or contributes to strategic direction of laboratory,
• Demonstrate knowledge of new tests and their potential in the laboratory,
• Identifies tests / parameters which help diagnose, screen and monitor treatment,
• Demonstrates innovation and highly developed and specialized skills,

8. Communication: Liaison with health workers and others to continuously improve the service:
• Participate in quality improvement activities,
• Develop and implement a comprehensive Quality Management System,
• Continuously improve quality to meet goals,
• Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. **Education and Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instructs personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - May initiate or lead formal research projects,
   - Independently formulate problem oriented research projects according to the needs of the society,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
Lead laboratory supply management activities,
Attain lead role in biomedical industries and manufacturing setups,
Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. Practice Limitation/Restriction: 
Biomedical Science Specialist (Speciality in Medical Immunology) Is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved title: Biomedical Science specialist (speciality in Medical immunology)

5. Biomedical Science Specialist (Speciality in Molecular Biology) MSc in Molecular biology

**Definition:** Biomedical science specialist is a Person earned a bachelor's degree (BSc) in biology, who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Molecular biology.

This Biomedical Science Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills:** Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within his specialty,
   - Validate new laboratory technologies,

2. **Knowledge Base:** Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,
3. **Analytical / Decision Making:** Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base for use by clinicians for the benefit of patients,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
   - Involve actively in leading the laboratory team in emergency situations,

6. **Professional Development:** Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of laboratory investigations
   - Make independent, professional judgments,
- Demonstrates responsibility and accountability for management and planning of services and/or departments,
- Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
- Responsible for or contributes to strategic direction of laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. Communication: Liaison with health workers and others to continuously improve the service
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. Education / Training: Participation in education and training of health workers and others
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,
10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - May initiate or lead formal research projects,
   - Independently formulate problem oriented research projects according to the needs of the society,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc,

12. **Practice Limitation/Restriction:**
    Biomedical Science Specialist (Specialty in Molecular biology) is NOT Authorized to Perform:
    - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
    - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title:** Biomedical Science Specialist (Speciality in Molecular biology)

6. **Biomedical Science specialist (Speciality in Human Genetics) MSc in Human Genetics**

**Definition:** Biomedical science specialist is a Person earned a bachelor's degree (BSc) in biology, who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies
and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in human Genetics.

This Biomedical Science Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. **Technical Skills**: Collection, preparation and analysis of clinical materials:
   - Read and validate results,
   - Validate and approve laboratory test results at any level within Medical Immunology laboratory,
   - Validate new Medical Immunology laboratory technologies,

2. **Knowledge Base**: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:
   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within Medical Immunology specialty,

3. **Analytical / Decision Making**: Interpretation, reporting and issue of laboratory results:
   - Ensure that results with important diagnostic or treatment implications are communicated as per established protocols,
   - Creates an evidence base Medical Immunology results for use by clinicians for the benefit of patients,

4. **Resource Maintenance**: Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety**: Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situations,
6. **Professional Development:** Professional accountability and participation in continuing professional development:
- Establish and communicate personal goals in professional development,
- Play a leading role in professional development of Medical Parasitology staff,
- Maintain and update scientific / technical knowledge and skills,
- Maintain the required technical knowledge and skills within Medical Parasitology specialty,
- Develop skills relevant to the enhancement of professional growth,
- Researches and develops the field of analysis both analytically and clinically.

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of Medical Parasitology investigations:
- Make independent, professional judgments,
- Demonstrates responsibility and accountability for management and planning of services and/or departments,
- Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
- Responsible for or contributes to strategic direction of laboratory,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills.

8. **Communication:** Liaison with health workers and others to continuously improve the service:
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and Implement changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,
9. **Education and Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and Instructs personnel in work group on new methods / instruments,

10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
    - Contribute to planning and design of research and development projects,
    - May initiate or lead formal research projects,
    - Independently formulate problem oriented research projects according to the needs of the society,
    - Prepare and deliver reports,
    - Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activity:
    - Contribute to management of laboratory,
    - Play a leading role in project management,
    - Plays consultancy role in policy formulation and implementations,
    - Actively involved in recruiting, importing and distributing laboratory supplies,
    - Lead laboratory supply management activities,
    - Attain lead role in biomedical industries and manufacturing setups,
    - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.
12. Practice Limitation/Restriction:
Biomedical Science Specialist (Speciality in Human Genetics) Is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. Reserved title: Biomedical Science specialist (speciality in Human Genetics)

7. Biomedical Specialist (Speciality in Tropical and Infectious diseases) MSc in Tropical and Infectious diseases

Definition: Biomedical science specialist is a Person earned a bachelor's degree (BSc) in biology, Medical Laboratory Technology, MD, or DVM; who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Master of Science level (MSc) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in Tropical and Infectious diseases.

This Biomedical Science Specialist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists among others.

1. Technical Skills: Collection, preparation and analysis of clinical materials:

   - Read and validate results,
   - Validate and approve laboratory test results at any level within his specialty,
   - Validate new laboratory technologies,

2. Knowledge Base: Correlation and validation of results of investigations using knowledge of method(s) including analytical principles and clinical information:

   - Assess validity of data / results against possible range of outcomes,
   - Demonstrates high level of clinical and scientific expertise within his specialty,

3. Analytical / Decision Making: Interpretation, reporting and issue of laboratory results:


- Ensure that results with important diagnostic or treatment, and public health implications are communicated as per established protocols,
- Creates an evidence base for use by clinicians for the benefit of patients and community,

4. **Resource Maintenance:** Maintenance of documentation, equipment, resources and stock:
   - Participate in preparation and revision of manuals and protocols,
   - Creates analytically valid and traceable routine assays, underpinned by reference materials and methods in order to measure entities appropriately,
   - Approves new methods as fit for use,

5. **Safety:** Maintenance and promotion of safe working practices:
   - Ensure correct procedures are followed for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Demonstrate a leading role for acquisition, collection, storage, transportation and disposal of biological, toxic and radioactive wastes,
   - Respond appropriately to emergency situation,
   - Involve actively in leading the laboratory team in emergency situations,
   - Participate in epidemic investigation and surveillance,

6. **Professional Development:** Professional accountability and participation in continuing professional development:
   - Establish and communicate personal goals in professional development,
   - Play a leading role in professional development of staff,
   - Maintain and update scientific / technical knowledge and skills,
   - Maintain the required technical knowledge and skills within his area of specialty,
   - Develop skills relevant to the enhancement of professional growth,
   - Researches and develops the field of analysis both analytically and clinically,

7. **Accountability:** Responsibility for Medical Science practice including test selection, development and use of laboratory investigations
   - Make independent, professional judgments,
   - Demonstrates responsibility and accountability for management and planning of services and/or departments,
   - Conduct need assessment and evaluate the outcome of clinical laboratory testing for each individual patient and the entire health care system,
- Responsible for or contributes to strategic direction of laboratory,
- Responsible for the prevention and control of emerging and re-emerging of Tropical and infectious diseases,
- Demonstrate knowledge of new tests and their potential in the laboratory,
- Identifies tests / parameters which help diagnose, screen and monitor treatment,
- Demonstrates innovation and highly developed and specialized skills,

8. Communication: Liaison with health workers and others to continuously improve the service:
- Participate in quality improvement activities,
- Develop and implement a comprehensive Quality Management System,
- Continuously improve quality to meet goals,
- Audits clinical use, general guidelines and promulgates best practice,
- Lead Infection control activities in the hospital and laboratory,
- Continually review laboratory processes and testing to streamline, minimize waste and increase efficiency,
- Initiate and implements changes in response to technology and laboratory procedures,
- Establish and maintain relationships with suppliers,
- Actively participate in initiating and maintain relationships with laboratory equipment suppliers,

9. Education / Training: Participation in education and training of health workers and others:
- Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Involve in Infection Control team,
- Involve in clinical review meetings,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery,
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the Performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,
10. **Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice, and patient safety:
   - Contribute to planning and design of research and development projects,
   - May initiate or lead formal research projects,
   - Independently formulate problem oriented research projects according to the needs of the society,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,

11. **Managerial role:** Contribute to leading and managing a laboratory activities, Infection Control team, and other related areas:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

12. **Practice Limitation/Restriction:**
    Biomedical Sciences Specialist (Speciality in Tropical and Infectious Diseases) Is NOT Authorized to Perform:
    - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
    - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

13. **Reserved title:** Biomedical Sciences Specialist (Speciality in Tropical and Infectious Diseases)

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8. **Biomedical Scientist in Clinical Chemistry/Medical Biochemistry:** PhD in Clinical Chemistry/Medical Biochemistry

**Definition:** Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the
prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level in clinical chemistry/medical biochemistry**.

This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and Instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
- Lead laboratory supply management activities,
- Attain lead role in biomedical industries and manufacturing setups,
- Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Biomedical Scientist in clinical chemistry/medical biochemistry) is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Biomedical Scientist in clinical chemistry/medical biochemistry

9. **Clinical Laboratory Scientist in Hematology and Immunohaematology:**
   PhD in Hematology and immunohaematology

Definition: Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Hematology and immunohaematology.

This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:

   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.

Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,

Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,

Organize and instruct personnel in work group on new methods/instruments.

2. Consultation, Research and Development: Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic/operational) projects,
   - Prepare and deliver report,
   - Prepare and review reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. Managerial role: Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. Practice Limitation/Restriction: Biomedical Scientist in Hematology and immunohaematology) is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. Reserved title: Biomedical Scientist in Hematology and immunohaematology
10. Clinical Laboratory Scientist in Diagnostic and Public Health Microbiology/Medical Microbiology: PhD in Diagnostic and Public Health Microbiology.

**Definition**: Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Diagnostic and Public Health Microbiology/Medical Microbiology.

This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training**: Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development**: Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
- Prepares and reviews reports (written, verbal, journal) and submits for peer review,
- Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Biomedical Scientist in **Diagnostic and Public Health Microbiology/Medical Microbiology** is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Biomedical Scientist in **Diagnostic and Public Health Microbiology/Medical Microbiology**

11. **Clinical Laboratory Scientist in Medical Parasitology:** PhD in Medical Parasitology

**Definition:** Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a scientist capacity level in Medical Parasitology.

This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:
1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.
4. **Practice Limitation/Restriction:**
Biomedical Scientist in **Medical Parasitology** is NOT Authorized to Perform:

- Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
- Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Biomedical Scientist in **Medical Parasitology**

### 12. Clinical Laboratory Scientist in Medical Immunology: PhD in Medical Immunology

**Definition:** Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level** in Medical Immunology.

This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:

   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and Instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Biomedical Scientist in Medical Immunology is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Biomedical Scientist in Medical Immunology
13. **Clinical Laboratory Scientist in Medical Genetics: PhD in Medical Genetics**

**Definition:** Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of **Doctor of Philosophy (PhD)** studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a **scientist capacity level** in Medical Genetics.

This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

1. **Education / Training:** Participation in education and training of health workers and others:
   - Research, prepare and deliver appropriate presentations to peers in-house or externally,
   - Prepares and delivers standard training and/or presentations relevant to position as required,
   - Participate in interdepartmental and other meetings,
   - Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
   - Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
   - Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
   - Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
   - Organize and Instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,
3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Biomedical Scientist in Medical Genetics is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
   - Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. **Reserved title:** Biomedical Scientist in Medical Genetics

14. **Biomedical Scientist in Tropical and Infectious diseases: PhD in Tropical and Infectious diseases**

   **Definition:** Biomedical scientist is a qualified personnel with appropriate (BSc with MSc) who, having been admitted to a postgraduate educational program, duly recognized in the country and has successfully completed the prescribed course of Doctor of Philosophy (PhD) studies and has been licensed by the regulatory authority to practice in clinical laboratory services at a specialist capacity level in speciality in Tropical and Infectious diseases.

   This Biomedical Scientist shall have the following responsibilities and will have a supervisory or guidance role for Medical Laboratory technologists/specialists among others; will give emphasis for the following areas:

   1. **Education / Training:** Participation in education and training of health workers and others:
      - Research, prepare and deliver appropriate presentations to peers in-house or externally,
- Prepares and delivers standard training and/or presentations relevant to position as required,
- Participate in interdepartmental and other meetings,
- Organize and lead preparation and presentations on continuing education lectures and conferences for personnel,
- Where appropriate, provide instruction on collection, testing of specimens, interpretation and significance of results and service delivery.
- Provide consultation on interpretation and significance of results, giving consideration to clinical information and limitations of test,
- Train personnel in the operation of instruments and equipment, the performance of methods and quality control procedures, patient confidentiality, and the observation of safety measures,
- Organize and instructs personnel in work group on new methods / instruments,

2. **Consultation, Research and Development:** Contribution to advancement of knowledge and improvement of laboratory practice:
   - Contribute to planning and design of research and development projects,
   - Initiate or lead formal research (basic /operational) projects,
   - Prepare and deliver report,
   - Prepares and reviews reports (written, verbal, journal) and submits for peer review,
   - Review documents and reports for publication,

3. **Managerial role:** Contribute to leading and managing a laboratory activity:
   - Contribute to management of laboratory,
   - Play a leading role in project management,
   - Plays consultancy role in policy formulation and implementations,
   - Actively involved in recruiting, importing and distributing laboratory supplies,
   - Lead laboratory supply management activities,
   - Attain lead role in biomedical industries and manufacturing setups,
   - Involve actively in guideline preparations for laboratory regulations, epidemic management, surveillance etc.

4. **Practice Limitation/Restriction:**
   Biomedical Scientist in Tropical and Infectious diseases is NOT Authorized to Perform:
   - Any clinical activity outside of his/her scope of practice and outside of the practice stream in which he/she is registered.
Any clinical activity (procedure or service) that requires specific professional competence or advanced education, training and experience to be performed safely.

5. Reserved title: Biomedical Scientist in Tropical and Infectious diseases

5. Practice Limitations / Restrictions of Laboratory Medicine Category

5.1. Medical laboratory services should be executed by well trained medical laboratory professionals at all levels based on the level of qualification and regulatory requirement set by FMHACA and other governmental bodies.

5.2. Except in few occasions medical laboratory service by non-laboratory personnel is prohibited.

5.3. Medical Laboratory services at diagnostic laboratories, hospitals laboratories and research laboratories shall not be operated by medical laboratory technicians as a sole professional.

5.4. Medical Laboratory service which required high level of practice and High Technology should be managed by the respective field of specialty.

5.5. Medical laboratory services delivered by laboratory technicians, technologists should be approved by senior colleagues and specialists with the respective field of studies.

5.6. Medical laboratory services provided by non laboratory personnel who have got special authorization by law should be controlled by licensed laboratory professionals.

5.7. Treatment of diagnosed patients is strictly forbidden.

5.8. Biomedical Science specialists cannot practice in General medical laboratories except with their area of specialty.
6. Reserved Titles of Laboratory Medicine Category

<table>
<thead>
<tr>
<th>No.</th>
<th>Qualification</th>
<th>Profession/Reserved Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Certificate in Medical Laboratory Technology</td>
<td>Medical Laboratory Assistant</td>
</tr>
<tr>
<td>2</td>
<td>Diploma in Medical Laboratory Technology</td>
<td>Medical Laboratory Technician</td>
</tr>
<tr>
<td>3</td>
<td>Bachelor of Medical Laboratory Technology</td>
<td>Medical Laboratory Technologist</td>
</tr>
<tr>
<td>4</td>
<td>MSc in clinical Laboratory Sciences</td>
<td>Clinical Laboratory Sciences specialist</td>
</tr>
<tr>
<td>5</td>
<td>PhD in Clinical Laboratory sciences</td>
<td>Clinical Laboratory scientist</td>
</tr>
<tr>
<td>6</td>
<td>MSc in Biomedical Sciences</td>
<td>Biomedical sciences specialist</td>
</tr>
<tr>
<td>7</td>
<td>PhD in Biomedical Sciences</td>
<td>Biomedical scientist</td>
</tr>
</tbody>
</table>

7. Key remarks

- The Ethiopian Medical Laboratory Association would like to use this opportunity to thank all stakeholders specially FMHACA to initiate the development of scope of practices of the various health personnel in general and Medical Laboratory personnel practicing in Ethiopia in particular. EMLA believed that these efforts should be continued.

- Ethiopian Medical Laboratory Professionals is very keen to work with FMOH, FMHACA, sister’s professional associations and other governmental and nongovernmental organization to its best with mutual benefit, trust, transparency and accountability. Such initiatives could benefit the professionals, the governments, other stakeholders and the society at large.

- EMLA strongly suggest and believe that this scope of practice would be reviewed, amended and updated in a regular manner depending on the existing and upcoming professionals’ development in the country.

8. References

- ISO 15189, 2007
- Maputo declaration