INTRODUCTION

Laboratory and the diagnostic tests are tools, they are not therapeutic. In combination with a pertinent history and clinical examination, these tests can confirm a diagnosis or provide valuable information about a patient status and response to therapy. For a laboratory service to be effect and contribute to health care and disease prevention, every member of laboratory worker needs to learns:

• Understand the role of the laboratory and its contribution to the nation's health service;

• Appreciate the need to involve all members in the provision of health service;

• Follow professional ethics and code of conduct;

• Experience job satisfaction and have professional loyalty.

Medical laboratory science is a complex field embracing a number of different disciplines such as Microbiology, Hematology, Clinical Chemistry, Urinalysis, Immunology, Serology, Histopathology, Immuno-hematology and Molecular biology and others.

LABORATORY: GENERAL OVERVIEW

Laboratory is a place that is equipped with different instruments, equipments and chemicals (reagents) etc., for performing experimental works, research activities and investigative procedures. Medical laboratory is one part of the laboratory that is equipped with various biomedical instruments, equipments, materials and reagents (chemicals) for performing different laboratory investigative activities by using biological specimens (whole blood, serum, plasma, urine, stool, etc).

Classification of medical laboratories

The world Health Organization (WHO) lists four kinds of levels of laboratories based on their bio-safety these are:

1. Basic laboratory level I

Basic laboratory level I is the simplest kind for work with organisms which have low risk to the individual laboratory personnel as well as to the members of the community. Such organisms are categorized under **Risk Group I** by WHO. These organisms are unlikely to cause human diseases. Examples are food spoilage bacteria, common molds and yeasts.

2. Basic laboratory level II

Basic laboratory level II is suitable for work with organisms that predispose to moderate risk to the laboratory worker and a limited risk to the members of the community. Such organisms are categorized under **Risk Group II** by WHO. They can cause serious human diseases but not serious hazards due to the availability of effective preventive measures and treatment. Examples are staphylococci, streptococci, entero bacteria except *Salmonella typhi* and others. Such laboratory should be clean, provide enough space, have adequate sanitary facilities and equipped with autoclave.

3. Containment laboratory (Level III)

Containment laboratory is more advanced, and it is used for work with infectious organisms that present a high risk to the laboratory personnel but a lower risk to the community. Such organisms are categorized under **Risk Group III** by WHO. Examples are Tubercle bacilli, *Salmonella typhi*, HIV, Yersina and others. They are

easily transmitted through air, ingestion of contaminated food or water and paranterally. Such laboratory should be a separate room with controlled access by authorized staff. It should also be fitted with microbial safety cabinet.

4. Maximum containment laboratory

Maximum containment laboratory is intended for work with viruses, which predispose to a high risk for both laboratory personnel and the community. Such organisms are categorized under **Risk Group IV** by WHO. Example, *Small pox*, Ebola, Lassa fever and others. Most of these organisms cause serious disease and readily transmitted from person to another. These laboratories are usually a separate building with strictly controlled access.