

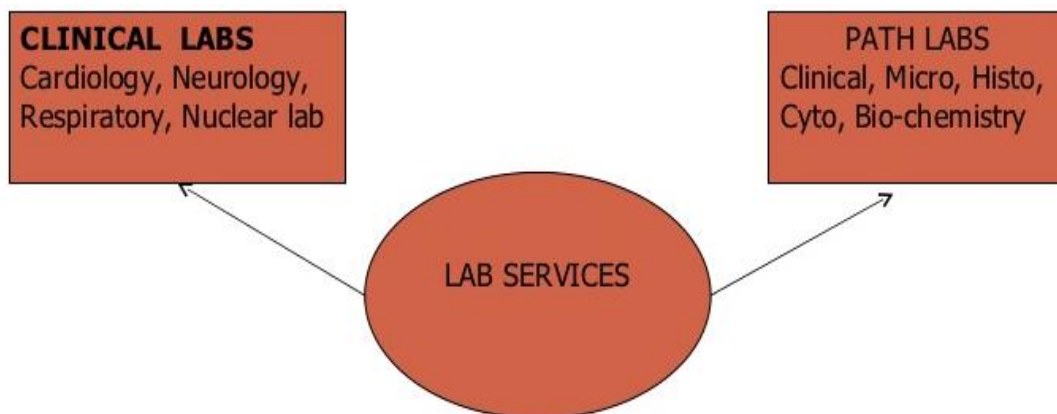


## Laboratory services

A **medical laboratory** is a place where tests are done on samples to get information about a patient's health.

**Laboratory services** include testing materials, tissues, or fluids obtained from a patient or clinical studies to determine the cause and nature of the disease.

Laboratory services play a critical role in detecting, diagnosing, and treating disease. Samples are collected, and examination and analysis of body fluids, tissue, and cells.



The main services are:

- To perform diagnostic tests
- To identify organisms, like *E. coli* bacteria
- To count and classify blood cells to identify infection or disease
- To perform immunological tests to check for antibodies
- To match blood samples for transfusions
- To analyze DNA

# Lab equipment and LIS

## Planning for equipment

- Basic instruments and equipment should be made available.
- All vital equipment should be in duplicate or have an alternative arrangement.
- Selecting the best instrument for the laboratory is a very important part of equipment management.

Follow elements should be considered during the management program in the lab



## Lab equipment

Basic equipment for all types of routine investigations are:

- **A centrifuge** is a laboratory device used to separate liquids based on their density.
- **A water bath** is a device made of a metal bowl, most likely filled with hot water. It is used to incubate samples in water at a constant temperature for a long time. It is also used to heat reagents, dissolve some materials, and incubate environments.
- **A microscope** is a device for enlarging small things that cannot be seen with the naked eye or showing the fine details of objects to discover their composition and study.
- **An autoclave** is a metal pressure tank designed to heat aqueous solutions above their boiling point at standard atmospheric pressure for sterilization.
- **A pH meter** is an instrument used to measure a specific liquid's pH (pH or basic level).
- **An incubator** is a device used to grow and maintain microbial colonies or a cell colony.
- **Balance** is used to measure the mass of objects and chemicals with very great accuracy

## **Other tools and glassware used in the laboratory**

**Standard flask** It has a neck engraved with a sign (\_\_\_) in the form of a circular line indicating the extent to which the surface of the liquid should reach, and there is a written indication of the size of the vessel.

**Burette** A graduated glass tube, at the bottom end of which is a plunger glass spout. Various sizes are intended to be taken out

**The conical flask** The solution is transferred to it by the pipette. Easy to move. It is used to prepare, preserve, and measure chemicals and solutions.

**Beaker** It is a vessel used to stir, mix, and mix liquids in chemical laboratories.

**A test tube** is a glass laboratory instrument with an opening from the top used to pour, transport, or mix solutions, chemicals, and liquids

## **Lab Information System (LIS)**

A lab information system (LIS) is a class of software that receives processes, and stores information generated by medical laboratory processes. These systems often must interface with instruments and other information systems such as hospital information systems (HIS).

A LIS is a highly configurable application customized to facilitate a wide variety of laboratory workflow.

**Three main components: Sample Tracking, Protocol Execution, and Storage Organization.**

**A laboratory information system (LIS) is a healthcare software solution that processes, stores and manages patient data related to laboratory processes and testing.**

**The main advantages of LIS are: reduced clerical work, better evaluation of workload, faster communication, improvement of information given to the clinician: adapted reference values, interpretation, comments, improved retrieval operations, and faster billing.**