

## Safety Instructions in Immunology Laboratory

The clinical laboratory contains a wide variety of safety hazards include worker, specimens, and environment of clinical laboratories. It must be learn what hazards exist and the basic safety precautions associated with them. In the immunology laboratory, the most significant hazard exists in obtaining and testing patient specimens that mean must understand of the transmission-the chain of infection of microorganisms is necessary to prevent infection. The chain of infection requires a continuous link between **Three elements**:

- **Source infection: like specimens and contact with them**
- **Mode of transmission**
- **Susceptible host**

**instructions safety in immunology laboratory includes:**

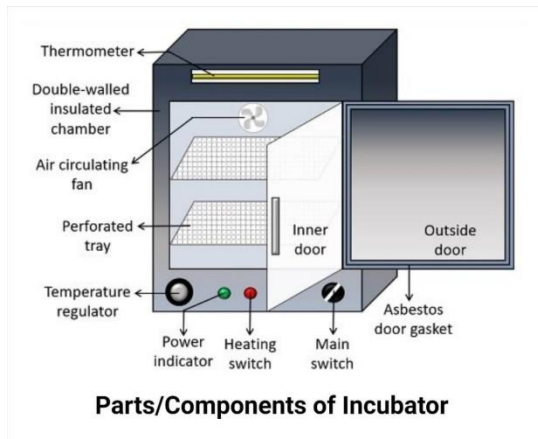
1. Hands should always be washed.
2. Wearing gloves, face classes, and lab coats.
3. Sample and solution labeling.
4. Don't leave any wastes inside laboratory and must be damaged.

**Materials and equipment used in immunology laboratory:-**

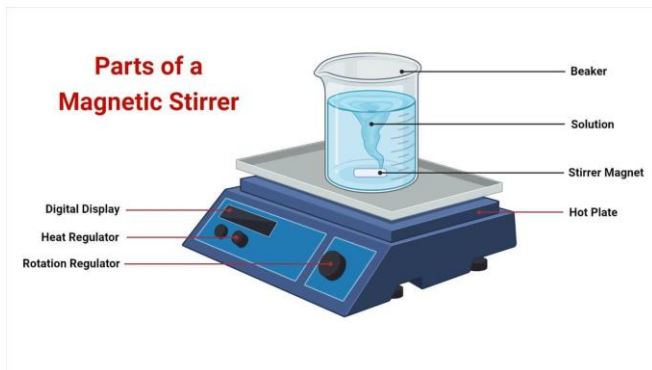
1. Glass wares: includes test tube, beaker, pipette, etc. these wares sterilized by oven and autoclave.



2. Constant temperature device: Incubator and water bath are usually used in serologic tests



3. Rotating machines: Magnetic stirrer, flat plate and vortex are required to facilitate mixing of antigen antibody reactions.



4. Micropipettes: used in taken smallest volume (microliter= $\mu\text{l}$ ) of specimens or reagents. They are different micropipettes which include constant and gradient volume.



5. Centrifuge: Usually used in separation of specimens as whole blood, urine, etc



6. Spectrophotometer: Used into reading the absorption of solutions.



7. Refrigerator and deep freezer: Used into keep specimens and solution.

### **Collection, Preparation, Preservation of Specimens for Serological**

#### **Tests:-**

The laboratory diagnosis of an infectious disease begins with collection of a clinical specimen for examination or processing in the laboratory. Specimens that are used for serologic test include:

**I. Blood:** Serum or plasma sample could be obtained from venous blood, which can be performed by the laboratory personal.

For serum or plasma sample, first 2-3 ml of venous blood is collected using sterile syringe with needle from a patient putting into a clean, dry, and sterile

tube. Care must be taken to avoid hemolysis:

**A.** If serum required, allow the whole blood to clot at room temperature for at least 30min and centrifuged for 10 minutes at 2000 rpm, then transfer the serum to a labeled tube with a pasture pipette and rubber bulb.

**B.** Plasma sample is obtained by treating fresh blood with an anticoagulant, centrifuge and separate the supernatant.

The specimen should be free from hemolyzed blood.

Finally, the tube should be labeled with full patient's identification (Age, Sex, code no, etc.). The test should be performed within hours after sample collection,

if testing cannot be performed immediately, serum may be stored between 2°C and 8°C for up to 72 hours. If this could not be done preserve it at -20°C.

**II. Cerebrospinal fluid:** It should be collected by a physician or a trained

**III. Urine:** Usually urine use into serologic or immunologic tests (such as pregnant test).

## **Blood preservation**

### **Anticoagulant materials**

The anticoagulant materials lead to prevent blood clotting for preserve whole blood long time.

### **Anticoagulant materials including:-**

1- EDTA.



2- Heparin



3- Sodium citrate.



4- CPDA (Citrate Phosphate Dextrose Adenin)

