



Immunology

Blood collection and sample

LAB 3-4

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Blood collection and sample

Materials and equipments used in immunology laboratory

1) Glassware:

The glass-wares are using in immunology laboratory includes (test tubes, beakers, pipettes, slides, etc...) they should be soaked in detergent for several hours and rinsed several times in tap water because the dirty glassware easily affect serological test. Finally allow drying by placing in a dry oven or dust free place. Test tubes and pipettes should not be scratched or broken, which will interfere with the reading of a test.

Types of glassware include:

- Test tubes
- Glass slide
- Serologic pipettes with a size of (10 ml, 5 ml, 2 ml, and 1 ml).

2) Constant temperature device:

Incubator and water bath are usually using in serologic(immunologic) tests. These devices are electrically operated and have thermostat that hold the temperature within the required limits. These devices should be checked prior to use by installing a thermometer.



water bath device

3) Rotating machines:

Rotating machines are required to facilitate antigen-antibody reactions. Such machine has a flat plate, which rotate at aprescribed rate of speed. A knob located on the front part of the machine controls the number or round per minute (rpm).

4) Micropipettes:

Usually it used in serologic tests for taken smallest volume (microliter μl) of specimens or react reagents, and they are different micropipette, which include constant and gradient volume (20 – 100 – 200 – 500 - 1000 μl).



5) Centrifuge:

Usually used in immunologic lab for separation blood specimen into serum and another cellular element.



Collection, Preparation, and Preservation of Specimen for Serologic Tests:

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

A-Blood

Serum or plasma sample could be obtained from venous blood, which can be performed by the laboratory personnel. For serum or plasma sample, first 2-3 ml (cc) of venous blood is collected using sterile syringe and needle from a patient putting into a clean, dry, sterile tube. Care must be taken to avoid hemolysis, since this may produce a false- positive test.

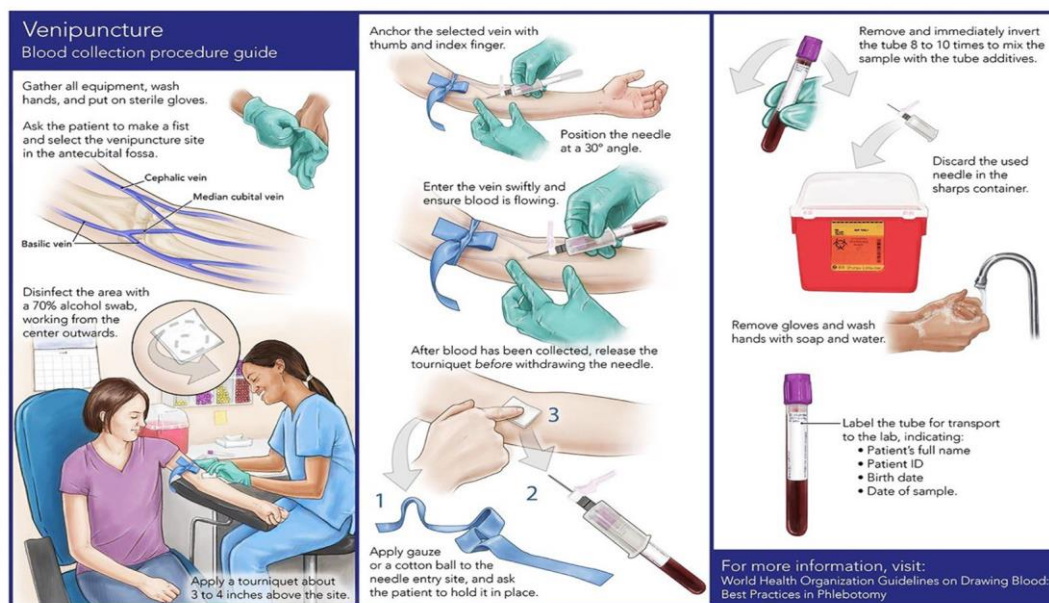
- **Serum** if required, allow the whole blood to clot at temperature for at least one hour and centrifuge the clotted blood for 10 min. at 2000 RPM (Round Per Minute) then transfer the serum to a labeled tube with a pasture pipette and rubber bulb or micropipette.
- **Plasma** if required, treat the fresh blood with an anticoagulant, centrifugation, and separate the supernatant. The sample/specimen should be free from hemolysis blood. Finally, mark the specimen containing tube; the tube should be labeled with full patient's identification (Name, Age, Sex, Code No., etc.).






B: Urine:

Usually urine use into serologic or immunologic tests (such as pregnant test), urine is sterile but the lower part of the urogenital are normally colonized by pathogenic organisms which may also cause urinary tract infection that lead to using it in different tests.

Blood collection

- 1-Identify the patient's information.
- 2- Properly position the patient's.
- 3-Apply the tourniquet.
- 4-Select the vein site.
- 5-Cleanse and sterilize the venipuncture site.
- 6-Enter the venipuncture site by needle.
- 7- Release the tourniquet.
- 8- Aspirate the blood.
- 9- Remove the needle and apply pressure on venipuncture site.
- 10-Transfer specimen to collection tubes.
- 11-Label the specimen tubes.
- 12-Do investigation as requested.



Tube cap color	Additive	Function of Additive	Common laboratory tests
Light-blue 	3.2% Sodium citrate	Prevents blood from clotting by binding calcium	Coagulation
Red or gold (mottled or "tiger" top used with some tubes is not shown) 	Serum tube with or without clot activator or gel	Clot activator promotes blood clotting with glass or silica particles. Gel separates serum from cells.	Chemistry, serology, immunology
Green 	Sodium or lithium heparin with or without gel	Prevents clotting by inhibiting thrombin and thromboplastin	Stat and routine chemistry
Lavender or pink 	Potassium EDTA	Prevents clotting by binding calcium	Hematology and blood bank
Gray 	Sodium fluoride, and sodium or potassium oxalate	Fluoride inhibits glycolysis, and oxalate prevents clotting by precipitating calcium.	Glucose (especially when testing will be delayed), blood alcohol, lactic acid