Aim: Determination of clotting time

References:

1. Guyton, A.C., & Hall, J.E. (2021). Textbook of Medical Physiology. Elsevier.
2. Rodak, B.F., Fritsma, G.A., & Doig, K. (2020). Hematology: Clinical Principles and Applications. Elsevier.
3. Clinical and Laboratory Standards Institute (CLSI) Guidelines.

Objective: To determine the clotting time of blood using the capillary tube method or Lee-White method.

Principle: Clotting time is the time taken for blood to clot after being withdrawn from the body. It is an essential test to assess coagulation disorders and monitor anticoagulant therapy. When blood is exposed to air or a foreign surface, the coagulation cascade initiates, leading to fibrin clot formation. This test measures the time required for this clot to form.

Materials required: Sterile lancet or needle, Capillary tubes (for Capillary Tube Method), Glass test tubes (for Lee-White Method), Stopwatch, Cotton swabs, Alcohol swabs, Disposable gloves **,** Blood sample (from the patient or volunteer)

Procedure:

A. Capillary Tube Method:

1. Clean the fingertip with an alcohol swab and allow it to dry.
2. Prick the fingertip using a sterile lancet and wipe off the first drop of blood.
3. Collect blood into a capillary tube, filling it about 2/3rd of its length.
4. Start the stopwatch immediately after blood enters the tube.
5. Break a small portion of the tube every 30 seconds to check for fibrin thread formation.
6. When a fibrin thread is observed between the broken ends, stop the timer.
7. Record the clotting time.

B. Lee-White Method (Whole Blood Clotting Time):

1. Collect 2-3 mL of venous blood in a clean, dry test tube.

2. Start the stopwatch as soon as blood is collected.

3. Tilt the test tube gently every 30 seconds to observe clot formation.

4. When the blood completely clots and stops flowing, stop the timer.

5. Record the clotting time.

Normal values:

- Capillary Tube Method: 2-6 minutes
- Lee-White Method: 5-15 minutes

Precautions:

- Use only sterile equipment to prevent contamination and infection.
- Ensure proper disposal of used lancets and blood samples.
- Perform the test at room temperature to maintain consistency.
- Do not squeeze the fingertip too hard while collecting blood to avoid dilution with tissue fluid.

Clinical significance: Prolonged clotting time may indicate conditions such as hemophilia, liver disease, vitamin K deficiency, or the effect of anticoagulant drugs. Shortened clotting time may occur in hypercoagulable states.

Result:

Sample Result Table:

Sample No.	Method Used	Clotting Time (min)	Normal Range (min)	Interpretation
1	Capillary Tube Method	4.5	2-6	Normal

2	Capillary Tube Method	7.2	2-6	Prolonged
3	Lee-White Method	12	5-15	Normal
4	Lee-White Method	16	5-15	Prolonged