

Content

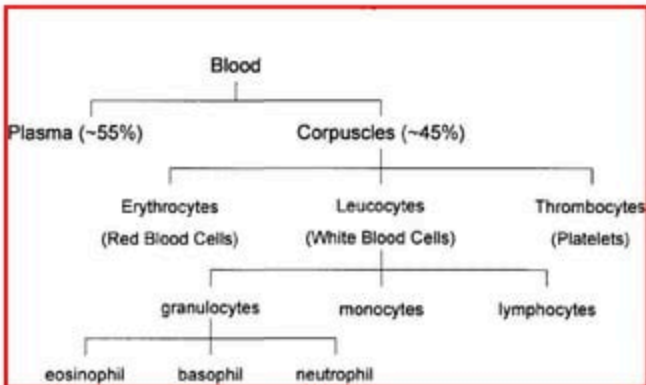
- Blood :
 - Blood Routine Test (**BRT**)
 - Bleeding time & Clotting time
 - Others
- Bone marrow examination
- Urine :
 - Urine Routine Test
 - Renal Function Test (RFT)

Content

- Liver Function Test (LFT)
- Stool Test
- Sputum
- CSF
- Serous Membrane Fluid

The normal range of particular test depends upon the method used, so its always better to consider the reference range provided by particular lab.

Blood Routine Test (BRT)



Classically Five Items are Included :

RBC count

Plt count

WBC count

DC

Hb

CBC : Complete Blood Count

DC : Differential Count

Hemoglobin

Normal Range (g/dL)

Men

13.8 - 18.0

Women

12.1 - 15.1

Children

11 - 16

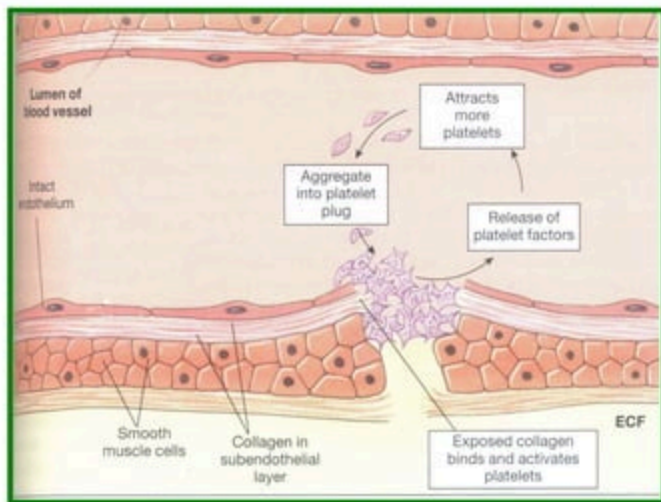
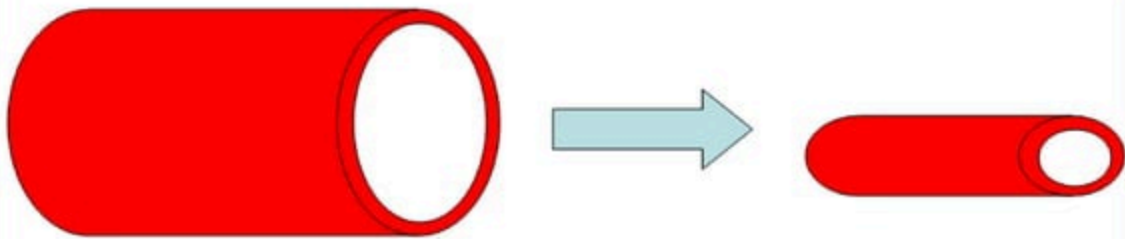
Pregnant women

11 - 14

Test for Hemostasis

Stage of hemostasis

- Vascular spasm
- Formation of a platelet plug
- Formation of a blood clot (coagulation)



Test for Hemostasis

- Platelet count
- Capillary resistance/ fragility test
- Bleeding time
- Clotting time
- Clot retraction test

Test for Hemostasis

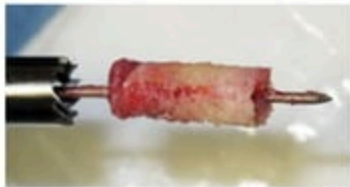
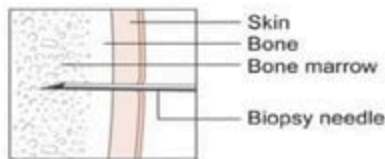
- Prothrombin time (PT)
- Activated partial thromboplastin time (APTT)
- Thrombin time (TT)
- Tests for DIC

Platelet count

- Normal range is 150,000 – 400,000 / μ L.
- The ratio of platelets to RBC in adult is 1:10 to 1:20.
 - Thrombocytopenia
 - Thrombocytosis

BONE MARROW EXAMINATION:

- Type of examination-
 - Bone marrow aspiration.
 - Trephine biopsy.



BONE MARROW EXAMINATION:

Routine

- **Cellularity**
- **M:E ratio- Normal is 3-4:1**
- **Erythropoietic tissue**
 - **Erythropoiesis**
- **Leukocpoietic tissue**
 - **Types**
 - **Morphology**
 - **Number**
- **Megakaryocytes**
 - **Number**
 - **Morphology**

Urine Routine Test (URT)

Sample collection

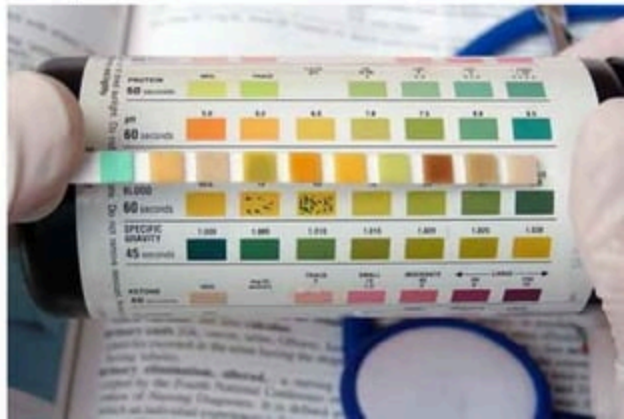
- The first voided morning urine (**most concentrated**)
 - Most accurate
- Random urine (routine)
- 24hrs sample- quantitative
- Mid-stream clean catch (MSCC)
- Post prandial sample-D.M

Need to be examined within 1 hour of collection of sample

URT - General properties

Urine pH

- Normal urine pH: 6 - 6.5
- Aciduria :
 - Gout ,DM, meat consumption.etc.
- Alkaluria :
 - UTI , RTA.etc.



Blood Urea Nitrogen

- ADA "BUN"
- The normal range is 6 - 20 mg/dL.
- **Increased BUN**
 - Azotemia
 - Uremia
- Azotemia is used when the abnormality can be measured chemically but is not yet so severe as to produce symptoms. Uremia is the pathological manifestations of severe azotemia.

Blood Urea Nitrogen

- **BUN increased in:**

- Renal failure
- Urinary tract obstruction
- Nephrotoxic drugs
- Shock, Burn, GI bleeding, Dehydration

- **BUN decreased in:**

- Hepatic failure
- NS
- Cachexia (low-protein and high-carbohydrate diets)

Liver Function Test (LFT)

- LFT gives information about the state of a liver.

LFT

- True LFTs
 - Prothrombin Time (PT/INR)
 - aPTT
 - Albumin
 - Bilirubin (direct and indirect)
- Liver injury related LFTs
 - Liver transaminases
 - **Aspartate transaminase (AST)** or **Serum glutamic oxaloacetic transaminase (SGOT)**
 - **Alanine transaminase (ALT)** or **serum glutamate-pyruvate transaminase (SGPT)**

Stool Test

- Appearance
- Consistency
- Odor
- Chemical tests
- Microbiology tests
- Fecal Occult Blood Test

Stool Test (Appearance)

Stool Color Disease

Yellow Giardiasis

Pale or Clay Decreased Stercobilin

GI Bleeding

Iron

Black or Red Bismuth

Beetroot

Blueberry

Blue Radiation

Thallium poisoning

Grape soda.....

Silver (Clay stool with blood)

Ca ampulla vater

Green (Due to unprocessed bile)

Intake of large quantity of
sugar

Violet or Purple Porphyria

- Normally is a light to dark brown coloration.

Stool Test (Consistency)

- Normally it is semisolid, with a mucus coating.
- Hard in constipation, dehydration.
- Loose in diarrhea.
- Stickiness increased in shigella.

Stool Test (Odor)

- Feces odor vary according to diet.

Stool Test (Chemical test)

- Fecal pH test
 - Used to determine **Steatorrhea**:
 - » lactose intolerance
 - » Infection
- **Faecal elastase levels**
 - For pancreatitis
 - These days is the mainstay diagnosis of pancreatitis.

Stool Test (Microbiology test)

- Stool is examined under a microscope for the presence of:
 - Parasites
 - Larvae or Eggs
 - Toxins
 - Eg: Toxin of *Clostridium difficile*
 - Viruses through EM

Stool Test (Microbiology test)

Hanging Drop test

- Is done to test Bacterial Motility.

