

MEDICAL LAB TESTS

What are lab tests?

Laboratory tests are medical procedures that involve testing samples of **blood, urine**, or other **tissues or substances** in the body. Lab tests may be done:

- as part of a **routine checkup**
- to confirm a **diagnosis**
- to monitor **health**
- to determine a **course of treatment**

Lab tests include some non-invasive, but mostly invasive procedures. A technician or your doctor analyzes the test samples to see if your results fall within the **normal** range. The tests use a range because what is normal differs from person to person. Many factors affect test results. These include:

- Your **sex, age and race**
- What you **eat and drink**
- **Medicines** you take
- How well you followed **pre-test instructions**

How do laboratories carry out testing?

The laboratory needs to receive a sample from a person in good condition for testing. To minimise errors, the sample has to be collected properly and transported to the lab in the correct transport containers. Samples can include:

- skin **scrapings**
- **blood**
- **swabs** from skin, eyes, ears and other bodily orifices for culturing
- **urine**
- **faeces**
- **hair**
- **biopsy** (pieces of tissue cut out of the body)

Many lab tests are carried out on automated testing machines or with special kits which contain testing chemicals of controlled quality so that the tests are reliable.

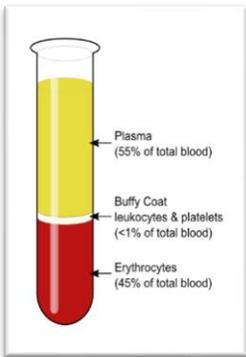
Commonly Used Lab Tests

1. Blood Tests

A blood test involves collecting a sample of blood for test analysis. A small sample of blood may be obtained using a “lancet” to poke a finger. Larger samples are collected in tubes called “vials” from an artery in the arm using a needle. The blood may be tested for the following:



a) Complete Blood Count



Measures the **types** and **numbers** of each type of **blood cells**, including red & white blood cells and platelets. This test is used to:

- determine general **health status**
- screen for **disorders**
- evaluate **nutritional status**
- evaluate **symptoms** such as weakness, fatigue and bruising
- diagnose some **medical conditions** such as anemia, leukemia, infection

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b) Basic Metabolic Panel

Also known as a Blood Chemistry Test, a BMP is a group of tests measuring different chemicals in the blood. The results of these tests tell the doctor or technician how well your body is functioning. These tests usually are done on the **blood plasma**. This blood test is used to measure levels of: sodium, potassium, calcium, chloride, carbon dioxide, blood urea nitrogen, glucose and creatinine which can help determine:

- blood sugar level
- electrolyte and fluid balance
- kidney function

The Basic Metabolic Panel can help:

- **monitor** the effect of **medications** you are taking (ie) blood pressure medicines
- help **diagnose** certain conditions
- can be part of a routine **health screening**

Before the test you may need to prepare for it by:

- **fasting** (up to 12 hours)
- **drinking** liquids
- taking a **medication**

BLOOD GLUCOSE CHART

Mg/DL	Fasting	After Eating	2-3 hours After Eating
Normal	80-100	170-200	120-140
Impaired Glucose	101-125	190-230	140-160
Diabetic	126+	220-300	200 plus



c) **Comprehensive Metabolic Panel**

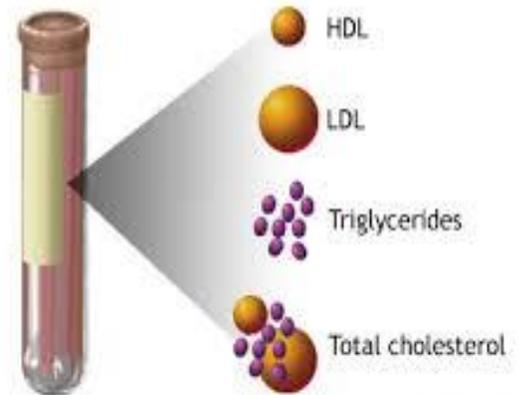
This test combines the Basic Metabolic Panel with **six** more tests for a more comprehensive evaluation of metabolic functions, with a focus on **organs** and **systems**. It includes tests for function of the:

- thyroid gland
- parathyroid gland
- liver, etc.

d) **Lipid Panel**

The lipid panel is a group of blood tests used to evaluate **cardiac risk**. It includes cholesterol and triglyceride levels.

A lipoprotein profile measures the level of cholesterol in the blood



2. **Urinalysis**



Often the first lab test performed, this is a general screening test. Urine is examined:

- macroscopically (**colour, appearance, odour**)
- microscopically (**bacteria, crystals**)
- Chemically (**hormones, glucose, etc**)

Tests are done to

- **detect** conditions and early signs of disease.
- **monitor** diabetes or kidney disease.

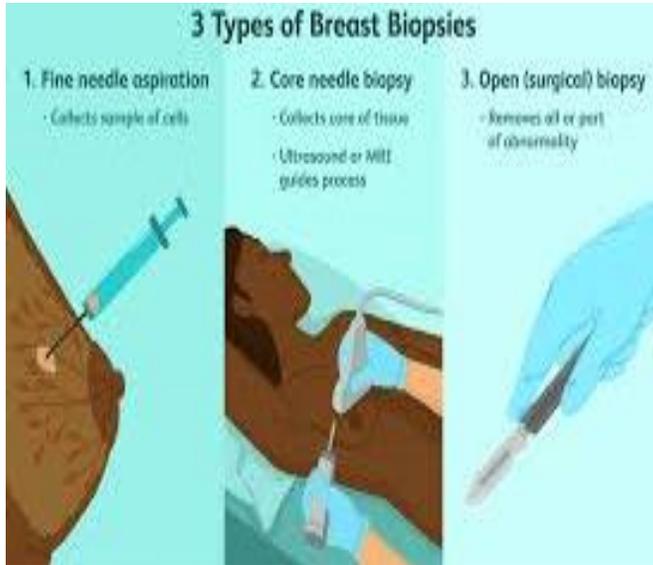
3. **Cultures**

Cultures are used to for the **testing, diagnosis** and **treatment** of infections. **Cotton swabs** are used to collect samples of fluid and cells. These **samples** are transferred to a nutrient agar plate and “**grown**” to determine the types of cells present. Used to:

- **detect illnesses** such as urinary tract infections, pneumonia, strep throat.
- used to **determine** the appropriate antibiotic **treatment**



4. Biopsy



A biopsy is a medical procedure that involves **extracting** a small sample of tissue so that it can be examined under a microscope. A tissue sample can be taken from almost anywhere on, or in the body, including the skin, stomach, kidneys, liver and lungs. Biopsies can be used to:

- **investigate** the cause of a person's symptoms
- help **diagnose** a number of different health conditions including cancer, ulcers, hepatitis, Crohn's, and specific infections.
- **measure** how severe or at what stage a disease is in when a condition has already been diagnosed such as cancer, liver disease.

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