Different Diagnostic Tests for Covid-19

- What is a Coronavirus
- What is Covid-19
- What are the different diagnostic tests?
- Difference between the Tests
- Limitations of different Tests

What is coronavirus?

- Coronaviruses are a large family of viruses which may cause illness in animals or humans.
- In humans it can cause infections ranging from common cold to more severe forms such has MERS
 & SARS.

What is COVID -19?

• Covid 19 is a disease that caused by severe acute respiratory syndrome coronavirus 2 (SARS-COV-2)

Different diagnostic tests that are available for COVID -19 Testing

• The testing number and accuracy of ongoing COVID-19 testing in India/Globally are increasing day by day, with new and improved kits developed by biotech companies worldwide coming into existence. Recently, the Indian Council of Medical Research recommended ELISA (enzyme-linked immunosorbent assay) for labs to test for COVID-19.

Serology based tests (Lateral Flow assay, ELISA and Chemiluminescent)
 These tests are of two types: A) Antibody testing

B) Antigen testing

2. PCR based tests

PCR based tests like RT-PCR and TrueNat (Developed by MolBio Diagnostics)

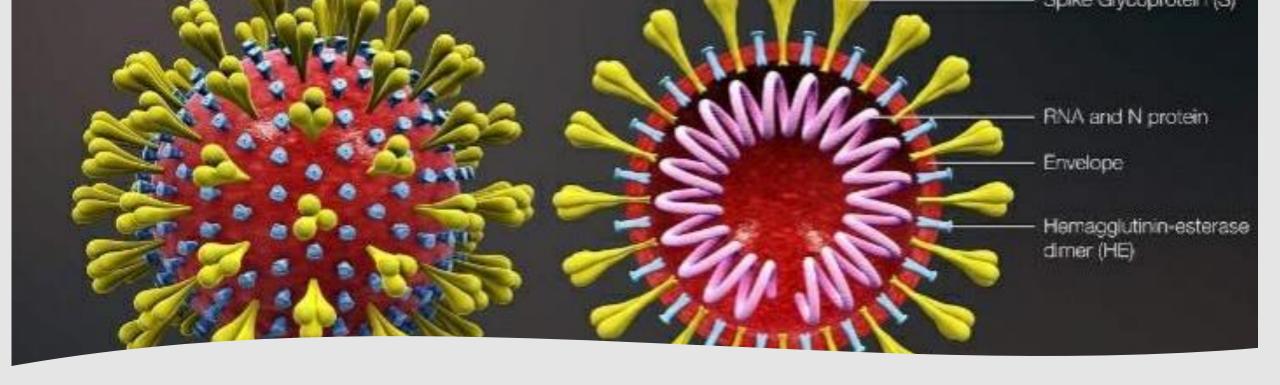
Antibody testing

- In this two specific types of antibodies will be identified
- IgM Antibodies
- IgG Antibodies



Antibody testing





Antigen testing

- These test finds out a specific protein of the virus
- Body produces specific antibodies against these particular protein
- Body immune response recognize these proteins as a foreign particles
- In covid 19 antigen tests targets *spike protein* of SARS-CoV-2 which present on the surface of the virus

RT-PCR

- It identify the Genetic material from pathogens
- Multiple the genetic materials through a chemical process
- More reliable than serological tests since it can detect even a single virus present in sample



Difference Between The Tests

Serology

- Sample: Blood for Ab
 Swab sample for Ag
- Time: With in 30 min
- Purpose:
- 1. Diagnosis
- 2. Epidemiological purpose
- 3. To Identify convalescent plasma donors
- 4. Vaccine development

RT-PCR

- Sample: Nasopharyngeal or Oropharyngeal swabs, sputum etc.
- Time: upto 8 hrs
- Purpose: Qualitative and Quantitative detection of Covid-19

Limitations of the Tests

Serology

- Antibodies
- Accuracy depends on Antigen specificity and type of antibody detected
- Cross reactivity concerns
- Antigen testing
- Only reveal whether a person is currently infected
- False negative results

RT-PCR

- Only detects on going infection
- Requires specialized equipment and training
- Quality control is not guaranteed

TrueNat test

- It's a chip based, portable RT-PCR
- Latest version of detect an enzyme (called RdRp) found in the RNA of the coronavirus SARS-CoV-2.