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## Message

I am pleased to see that the Department of Health and Family Welfare has published a second volume on COVID19 testing.

The testing strategy has to be dynamic in any Epidemic. It needs to be worked out in a geographical area based on the field realities. The specific testing strategy to identify the cases earlier, identify the clusters formation and take intensive containment activities in the clusters need to be practiced. The private sector laboratory network is also playing a major role in providing testing facilities to people.

I appreciate the works done by the team of Kerala Health and I wish all the success.

With best wishes,

**K K Shailaja Teacher**

**Minister Health & Family Welfare**

**Social Justice**

**Woman & Child Development**

**Govt of Kerala**

## Introduction

In the technical paper of testing published earlier it has been described how the testing strategy of Kerala is formulated based on rigorous epidemiological analysis and focussing on risk approach, and at the same time it has inbuilt system for sentinel surveillance among general public. The testing strategy of the state is backed up by the strong public health approach.

The second volume covers areas of increase in Laboratory infrastructure, availability of other testing modalities which were not available in the first two three months such as Antigen Test Kits etc. and involvement of private sector.

The Department of Health & Family Welfare is conscious of the fact that the testing strategy has to be dynamic based on the progress of the epidemic. The testing should enable to identify the cases, identify areas where clustering is happening and take immediate actions to take containment measures. It also warrants different strategy within the clusters. The sub population such as elderly, pregnant and post-natal mothers, people with morbidity, sever acute malnourished children and people with Infulenza like illness to be covered to ensure early detection and treatment. As these vulnerable group are prone to get serious that results into mortality.

In areas outside the clusters, the cases identification through routine sample testing and sentinel sample testing gives lead to the district administration to take strong preventive actions, quarantine measures and awareness building. It also needs a constant focus on the 'bridge population' to see the entry of the infection through them in the congregation areas.

The districts are encouraged to keep a track on Test per million to Cases per million ratio and the test positivity rate. These two indicators give information to take up specific measures for further improvement in interventions in the district. The district teams are oriented to do analysis and identify sub district indicators level to take area specific activities.

This technical paper is to update on the present testing policy of the state and future plans related to testing.

## Summary of the present Testing Strategy

### A. Routine Testing

ICMR as per the advisory issued on 18/05/2020 has recommended to test the following categories of people

1. All symptomatic (ILI symptoms) individuals with history of international travel in the last 14 days.
2. All symptomatic (ILI symptoms) contacts of laboratory confirmed cases.
3. All symptomatic (ILI symptoms) health care workers / frontline workers involved in containment and mitigation of COVID19.
4. All patients of Severe Acute Respiratory Infection (SARI).
5. Asymptomatic direct and high-risk contacts of a confirmed case to be tested once between day 5 and day 10 of coming into contact.
6. All symptomatic ILI within hotspots/containment zones.
7. All hospitalised patients who develop ILI symptoms.
8. All symptomatic ILI among returnees and migrants within 7 days of illness.

Kerala state as per the advisory issued on 03/06/2020 is testing all the categories mentioned above. Apart from that the state is testing asymptomatic prisoners after parole and new prisoners, antenatal women, patients posted for elective surgeries, suspected deaths on routine testing track.

## B. Sentinel Surveillance

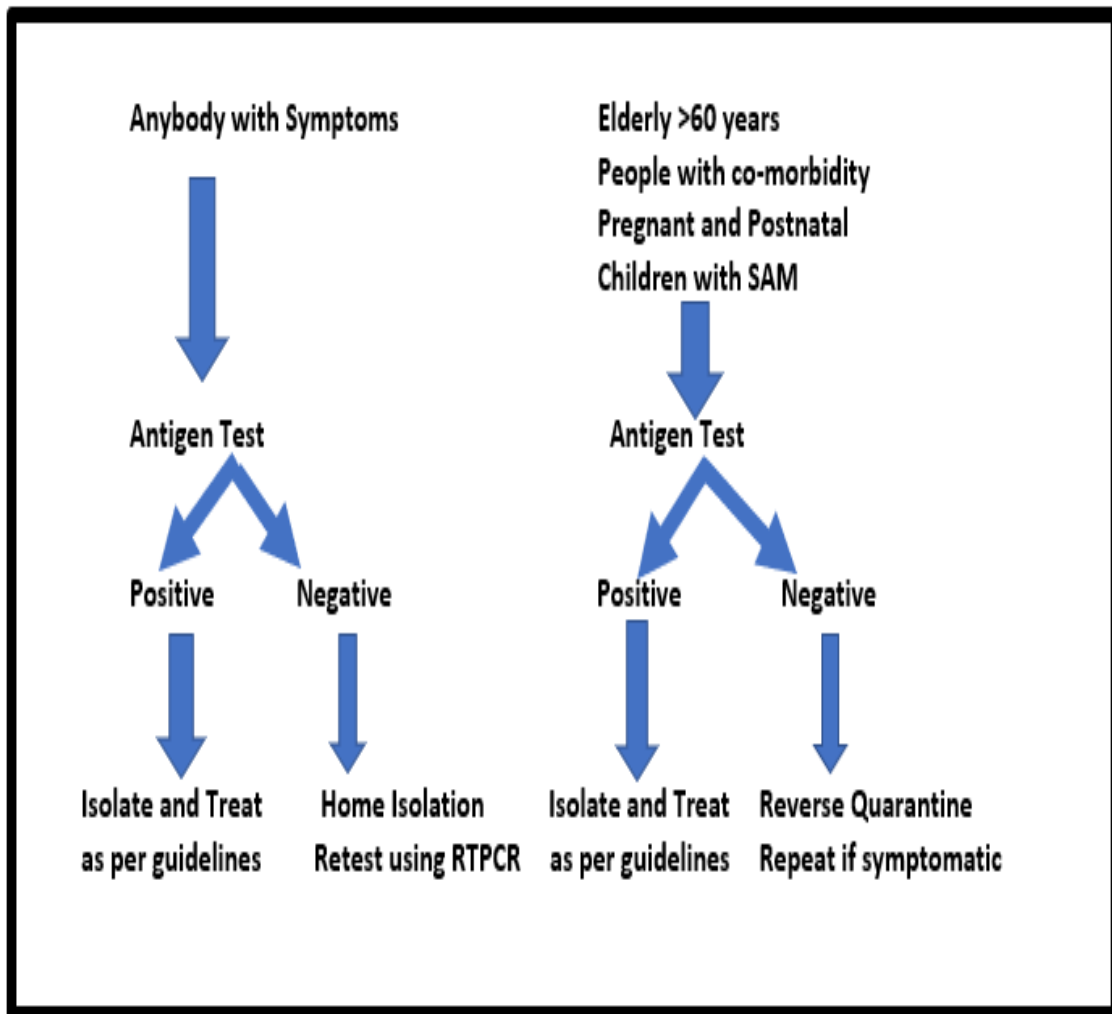
Apart from routine testing track, the state is performing sentinel surveillance in the following categories of people.

| Group   | Sub Group | Description                                                                                                          |
|---------|-----------|----------------------------------------------------------------------------------------------------------------------|
| Group 1 | 1         | Patients in general population with Acute Respiratory Infection (ARI)/Influenza like illness but NOT a COVID suspect |
| Group 2 | 2a        | Hospitals (Doctors, Nurses, Paramedics)                                                                              |
|         | 2b        | General Practitioners                                                                                                |
|         | 2c        | Ambulance Drivers                                                                                                    |
|         | 2d        | Others                                                                                                               |
| Group 3 | 3a        | Food delivery persons                                                                                                |
|         | 3b        | Community Volunteers (ASHA, LSG volunteer)                                                                           |
|         | 3c        | Provisions shop vendors                                                                                              |
|         | 3d        | Ration Shop                                                                                                          |
|         | 3e        | wholesale fruits or vegetable vendors                                                                                |
|         | 3f        | Police Personnel                                                                                                     |
|         | 3g        | Media Personnel                                                                                                      |
|         | 3h        | Health Staff at Field (JHI, JPHN etc)                                                                                |
| Group 4 | 4a        | Head load workers                                                                                                    |
|         | 4b        | Vendors in market places                                                                                             |
|         | 4c        | Street vendors                                                                                                       |
|         | 4d        | Warehouse- in- charges                                                                                               |
|         | 4e        | People at Vehicle Transit Camps                                                                                      |
|         | 4f        | FSW& MSM                                                                                                             |
| Group 5 | 5         | Guest Workers                                                                                                        |
| Group 6 | 6         | Epidemiological Samples                                                                                              |
| Group 7 | 7a        | Passengers travelled in Aeroplane/ship cabin                                                                         |
|         | 7b        | Person with travel history from red zone districts (outside Kerala)                                                  |
|         | 7c        | Persons with travel history outside Kerala not belonging to above two sub-categories                                 |

**C.** The state is performing special surveillance in coastal, tribal and urban slums to identify the cases at the earliest. As any spread of COVID in such areas will turn out a major risk of fast spread of infection as well as increase in number of fatalities.

## D. Testing in large community clusters

State is testing all Influenza like illness in large clusters and anybody with vulnerability as follows.



## E. Antibody tests for Surveillance

Antibody tests are only for sero surveillance purpose and is not used for any clinical decision making. ICMR initiated second round of sero surveillance, it will happen shortly in 3 districts in the state.

## Pyramid of efficient testing for COVID

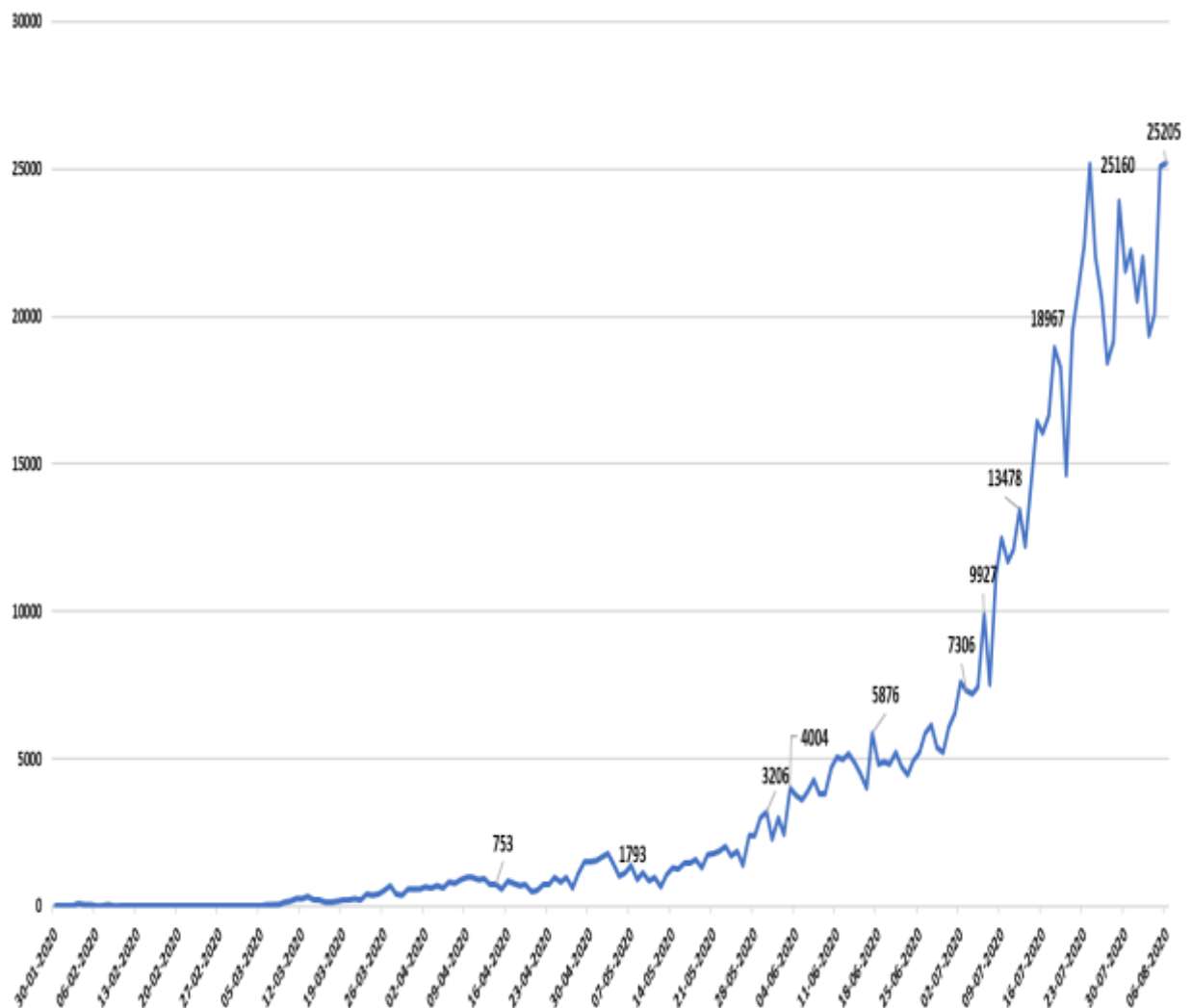




## Cumulative Number of tests performed ( As on 6<sup>th</sup> Aug 2020)

|            | TYPE OF SAMPLES                                                                | Samples received | No. of positives detected | Under processing |
|------------|--------------------------------------------------------------------------------|------------------|---------------------------|------------------|
| DIAGNOSTIC | Routine samples including Private labs & augmented samples (RTPCR-open system) | 425570           | 17796                     | 6346             |
|            | Sentinel surveillance including expatriate surveillance (RTPCR – open system)  | 132306           | 2902                      | 1615             |
|            | Xpert NAAT                                                                     | 4283             | 136                       | 0                |
|            | TRUENAT                                                                        | 35167            | 526                       | 0                |
|            | Rapid Antigen Assay                                                            | 233798           | 9089                      | 0                |
| SCREENING  | ICMR Sero surveillance                                                         | 1193             | -                         | -                |
|            | Sero surveillance using CLIA                                                   | 1479             | -                         | -                |
|            | Airport Surveillance                                                           | 74559            | -                         | -                |
|            | TOTAL                                                                          | 9,08,355         | 30,449                    | 7961             |

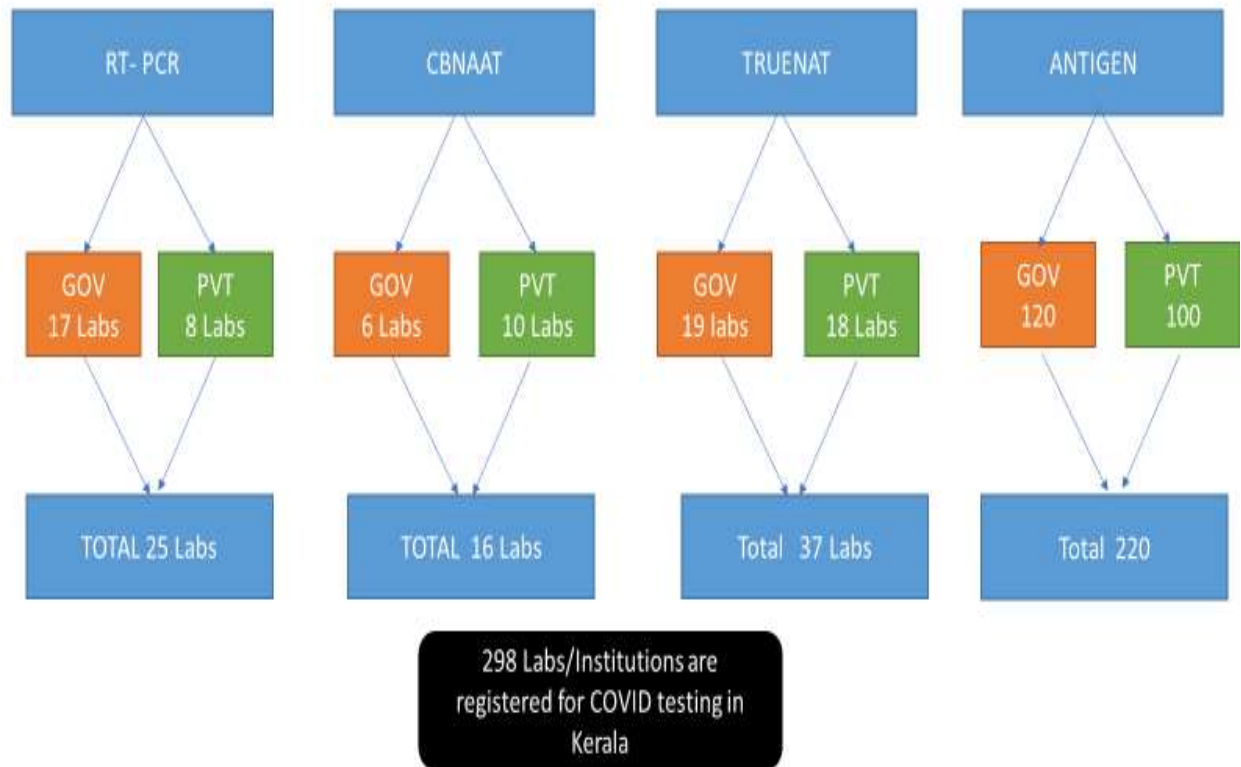
## Trend in the Number of Daily Tests Performed by the state



The state is testing in the range of 22000-25000 daily now. This is equal to 733 tests per million population per day.

## COVID testing Infrastructure in Kerala

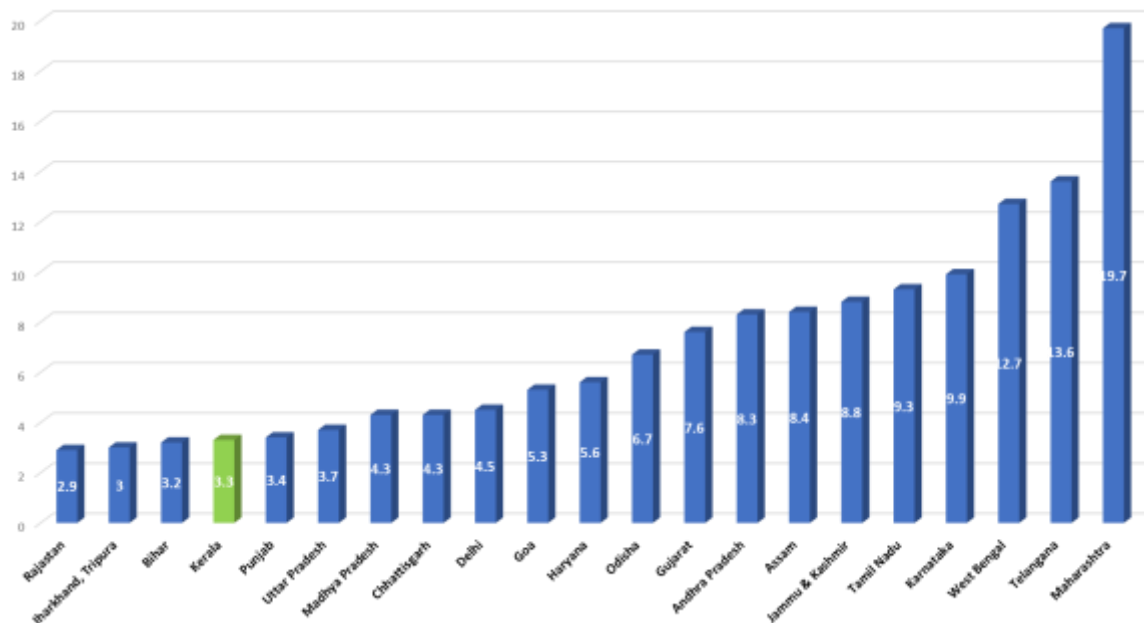
### Active COVID-19 Testing Labs/Hospitals in Kerala



Currently there are 25 RTPCR labs, 16 Xpert labs, 37 Truenat labs and 220 antigen testing labs in Kerala. It is expected that the private laboratory network will further improve to around 200-300 with increase in Antigen testing and TrueNAT laboratories. With the private testing laboratories infrastructure the number of tests per day will increase in a big way in coming days.

## Adequacy of testing

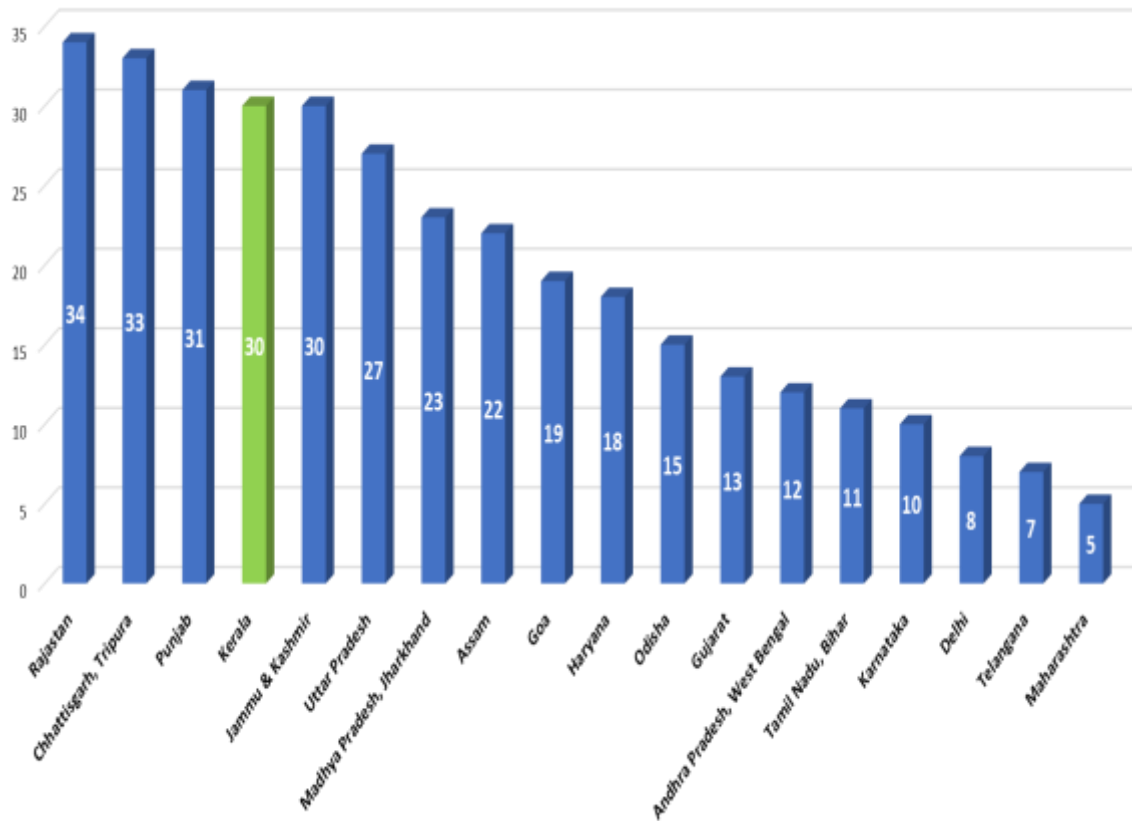
Test positivity rate is an indicator recommended by scientific organisations and experts to assess the adequacy of testing. It is independent of the absolute number of cases and tests that vary widely with time and across states. Instead, it depends only on their relation with each other. The positivity rate goes up when the epidemic grows and testing lags behind. So as such, it captures the size of the epidemic and the scale of testing in a single number.



The general guidance provided by World Health Organisation is that for a place to be confident about adequacy of testing, the test positivity should not exceed 10% and ideally should remain less than 5%. Test positivity rate for Kerala is 3.3%.

WHO suggested that if the test positivity rate remains less than 5% for last 14 days, the region is classified as having good testing. Kerala's test positivity for last 14 days is 4.7%.

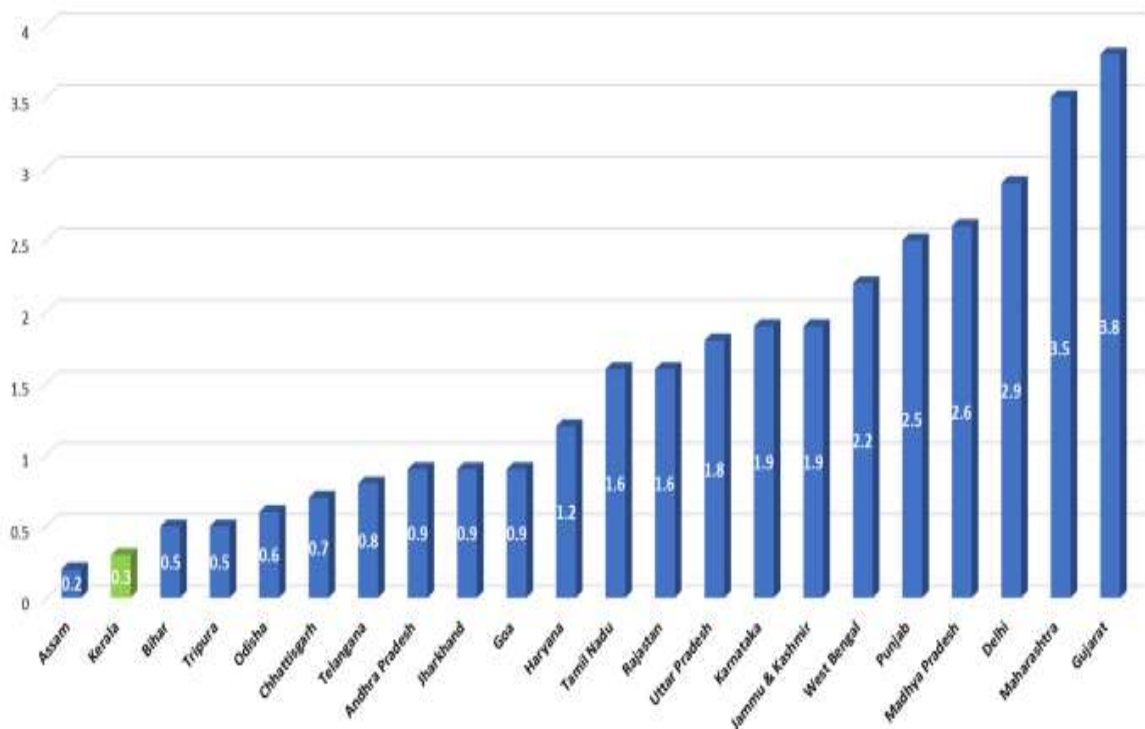
## Tests Per Million/ Case Per Million



World Health Organisation has also suggested around 10-30 tests per confirmed case a general benchmark of adequate testing. Kerala is performing 30 tests per confirmed case.

## Case Fatality Rate

# CASE FATALITY RATE



States which publish data on daily number of samples tested and number of new positives are considered

Rajasthan, Tripura, Punjab which has better TPM/CPM than Kerala however has high case fatality in the range of 1.6, 0.5 and 2.5 as compared to 0.3% in Kerala.

Any one indicator in isolation does not give complete information. It will be appropriate to study all indicators together to arrive at sound inference regarding the epidemic and interventions.

## Enhancing Testing in Private sector

Currently 80% of tests are being conducted by Government and only 20% are being conducted by private. For tests kits alone the government is spending roughly 1.7 Crore INR per day at current rate of testing.

Following policy steps have been taken to enhance testing in private sector

- The NABH/NABL accreditation criteria required for laboratories/hospitals has been modified to provide laboratories and hospitals not having NABH/NABL accreditation without relaxing on the infection control and biomedical waste criteria. This has enabled smaller hospitals and laboratories even in rural areas to obtain registration and approval for performing rapid antigen tests. Currently permission has been given for 99 private hospitals/laboratories which is expected to increase to 300 by the end of this month.
- At present the rapid antigen tests are being conducted in private sectors labs and hospitals based on a prescription from a registered medical practitioner. The testing numbers can be increased in the private sector by providing walk-in strategy at registered laboratories and hospitals.
- Fast tracking approvals and permissions for Truenat and Xpert for private sector. State is expecting 50 Trunat/Xpert labs in private sector by end of this month.
- State has fixed ceiling price for all tests at private sector, established systems for real time reporting of tests, helps private sector in capacity building and has issued necessary advisories related to testing.

## Way forward

The Department of Health and Family Welfare has been taking efforts to have a strong Laboratory network in the Government and Private Sector. It will continue these efforts to increase the number of tests based on the study of epidemic. It will be done based on the evidence and take up area specific strategies with the specific objectives of saving lives and curtailing transmission of infection.

Testing for COVID is challenging from the point of view that once tested and negative does not mean that in future there is no possibility of the individual becoming positive. It solely depends on what behaviour change has been brought in by the individual. To do that on a large scale requires sustained interventions and resources. As people understand the reasons for contracting infection and the measures that can be taken to minimize the chance of getting infected, only then the equilibrium can be reached.

The department will follow the risk-based approach and test all Influenza like illness and test people with high pre-test probability for COVID. The testing shall be easily accessible to vulnerable sections of the community including elderly, people with severe co-morbidity, children with malnutrition and pregnant women.

The Department encourages private sector to extend their services and offer testing for eligible individuals approaching them.



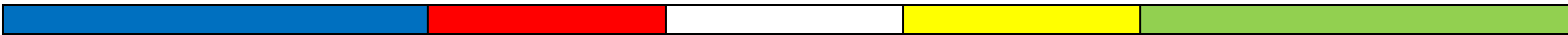
## Acknowledgment

The COVID testing is widely debated area world over. Through the intellectual debate and evidence, we hope that the standard protocol for testing regarding COVID will get developed and practiced in coming years. Test – Quarantine- – Treatment or Quarantine – Test – Treatment is a dynamic process to follow and is contextual in COVID pandemic. It depends on multitude of factors such socio-cultural setting, governance structures, health and social infrastructure and most importantly social and economic capital.

We earnestly appreciate the efforts of one and all who have contributed in strengthening COVID Testing management at all levels.

We look forward to the technical suggestions to improve the testing strategies and response to the epidemic.

**Dr Rajan Khobragade**  
**Principal Secretary**  
**Health & Family Welfare**  
**Government of Kerala**  
**Thiruvananthapuram**



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OUR HEALTH IS OUR RESPONSIBILITY