Government of Kerala

Response to COVID-19
Milestones in the battle against COVID-19

Jan 18
WHO notification on 2019 novel Corona virus was observed and guidance note sent to all districts

Jan 20
First advisory on nCOV sent to all districts

Jan 23
First Wuhan returnee came to Medical College, Thiruvananthapuram
Screening of all passengers returning from China started at Airport.

Jan 24
Special control room was setup in the Directorate of Health Services.

Jan 26
Comprehensive State level guidelines on screening, testing, admissions on 2019-nCoV Guidelines released

Jan 29
A student who returned from Wuhan, China was tested positive for the 2019-nCoV. 2nd and 3rd Case on Feb 2nd and 3rd

Jan 30
All State & District Structures set up Daily Review Meetings chaired by Hon. Health Minister

Feb 2
Testing for COVID 19 has been started in laboratories within Kerala

Mar 8
Pathanamthitata Cluster detected
Milestones in the battle against COVID-19

- **March 11**: Surveillance Strengthened at Airport, Seaport, Railway Station, Borders
  - **March 12**: Revised guidelines on quarantine, testing, admission
  - **March 14**: Hon. Chief Minister, Hon. Health Minister, Hon. Revenue Minister started Daily Review
  - **March 16**: Break the Chain campaign launched- Social Justice
  - **March 27**: Kerala Epidemic Disease Ordinance published
  - **March 28**: First COVID 19 Death in the state
  - **April 20**: 16 Labs doing RTPCR, 4 Labs Xpert
  - **April 21**: Sentinel Surveillance started
Strategy for combating COVID-19 in Kerala

- Identification of Individuals with Risk & Rigorous Contact Tracing
- Ensuring Good Quality Home Isolation
- Rigorous Surveillance System
- Testing All Eligible Individuals
- High Quality Care to all COVID patients
- Proactive Care of Elderly & People with Morbidity
- Responsible Citizens following advisory
State Structures to control COVID-19

- **State COVID-19 Management Committee**
  - Chaired by Hon. Chief Minister

- **Crisis Management Committee**
  - Chaired By Chief Secretary

- **War Room at Secretariat**
  - Complimentary Activities
State level structures for Health Department

- State Expert Group
- State Medical Board
- State Rapid Response Team
Systems/Tools for combating COVID-19 in Kerala

- **42** Committees
- **18** District Control Rooms & State
- **133** Videos
- **117** PowerPoints
- **886382** persons trained
COVID-19 Kerala: Epidemiology

Distribution of Cases

- Positive India other
- Positive Tabique
- Positive imported case other gulf
- Positive imported case UK
- Positive imported case UAE
- Positive imported case Italy
- Positive Imported Case Wuhan
- Contact
COVID-19 Kerala: Imported & Locally Acquired
NEW POSITIVE CASES REPORTED IN LAST 14 DAYS

KSD: 11
KNR: 37
KKD: 6
WYD: 3
MPM: 5
PKD: 3
TSR: 14
EKM: 17
IDK: 5
KTM: 5
PTA: 1
TVM: 1
Recovered and Active Positive Cases as on 28th April 6.30 pm

- Thiruvananthapuram
- Kollam
- Pathanamthitta
- Alappuzha
- Kottayam
- Idukki
- Ernakulam
- Thrissur
- Palakkad
- Malappuram
- Kozhikode
- Wayanad
- Kannur
- Kasaragod
Top 13 states as on 29th April 10.00 am
Deaths

• There were three deaths with a case fatality of 0.6% (3/485).

• Low case fatality shows the early detection & efficiency of treatment provided.
‘Projections’ are only Mathematical Models

- All projections are based on assumptions and mathematical models. Model is only as good as assumptions used.

- If assumptions are not based on pragmatic realities and contextual settings, we might end up with results that are blown out of proportion.

- Biggest missing links in disease models are strength of health systems and human behaviours.
Testing for COVID-19
Type of Tests for COVID-19

Tests for COVID-19

- RT PCR based tests
  - Detect the virus's genetic material

- Antibody Tests
  - Detects the body's immune response to the infection caused by the virus rather than detecting the virus itself
Real Time PCR Test

Real time RT-PCR is a nuclear-derived method for detecting the presence of specific genetic material of virus.

Currently 14 labs in Public Sector and 2 labs in private are conducting in house RT-PCR tests in Kerala.
Whom to be Tested for COVID-19 using RT PCR?

- Symptomatic individuals who have undertaken international travel in the last 14 days.
- All symptomatic contacts of laboratory confirmed cases.
- All symptomatic health care workers who cared for COVID-19 cases.
- All patients with Severe Acute Respiratory Illness (fever AND cough and/or shortness of breath).
- Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 of coming in his/her contact.
- All symptomatic from locality/area where clustering of cases/community transmission have been reported in last 14 days.
- All symptomatic who attended mass gatherings, festivals, funerals in last 14 days where people from abroad are likely to have attended.
Xpress SARS-CoV-2 Test

• Xpress SARS-CoV-2 Test is a Cartridge Based Nucleic Acid Amplification Test
• It is a **Rapid** RT PCR Test (Detects Viral RNA) and confirmatory.
• Fully automated and provides results within 45 minutes.
• It is done in the same GeneXpert machine already in use for TB testing
• 4 laboratories started functioning in Kerala
Indications for Test: Samples with Emergency Nature

• Any COVID suspect before Emergency/ Unavoidable Surgery
• Any symptomatic Health Care Worker who worked in a setting with high exposure to COVID-19
• Any sick patients with Severe Acute Respiratory Illness for whom an emergency result has impact on clinical decision making
• Any suspected COVID deaths which requires testing for further actions.
ICMR has validated Truenat-beta- CoV test on Truelab workstation and has recommended it as a screening test.

All positive samples need to be reconfirmed by a separate confirmatory assay for SARS-CoV-2.

19 machines are in transit.
Antibody Tests

- The rapid antibody test cannot replace the PCR test.
- The rapid Antibody test is a supplementary tool for epidemiological surveillance and research.
- The rapid antibody test will only be of utility after a minimum of 7 days of onset of symptoms.
- Kerala state planned to use the Antibody test for surveillance.
<table>
<thead>
<tr>
<th>Sample Required</th>
<th>Real Time RT PCR</th>
<th>Xpress SARS-CoV2 (Rapid RT PCR)</th>
<th>Truenat-beta-Cov (Screening PCR Test)</th>
<th>Antibody Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasopharyngeal Swab</td>
<td>Nasopharyngeal Swab</td>
<td>Nasopharyngeal Swab</td>
<td>Nasopharyngeal Swab</td>
<td>Blood</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expertise Required for Lab</th>
<th>High</th>
<th>Medium</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
</table>

| Minimum Time to get results once sample reaches Lab | 6 Hours (-96 tests/cycle) | 45 Min (-4 tests/cycle) | 60 min (-4 tests/cycle) | 30 Min |

<table>
<thead>
<tr>
<th>Applicability</th>
<th>Initial Days of Infection for Early detection</th>
<th>Initial Days of Infection for Emergency Detection</th>
<th>Initial Days of Infection for Ruling Out the disease. All positive results to be confirmed by another test.</th>
<th>Later days of Infection Only (After 7 days) for Surveillance</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>How is Kerala using these tests?</th>
<th>Confirmation of cases</th>
<th>When Emergency results are required (Pre Surgery, Health Care Worker, Emergency clinical decision making, Suspicious Death, )</th>
<th>Not Started Yet. Plan is to use for same indications as Xpert.</th>
<th>Surveillance</th>
</tr>
</thead>
</table>
Feb 1st week
NIV Alappuzha

March 4th week
State Public health lab
RGCB, Tvm
SCTIMST, Tvm
IUCBR Kottayam
MCC, Kannur

March 3rd week
GMC Kozhikode
GMC Trivandrum
GMC Thrissur

April 1st week
Central University, Kasargode

April 3rd week
GMC, Ernakulam
GMC, Manjeri
GMC, Kottayam
GMC, Kannur
The graph (in log scale) shows that the number of cases did not increase proportionately with the number of tests.

Despite a high number of tests, the percentage of positivity (% positive tests / Total Tests performed) is coming down in Kerala.

In week starting on 22 March, ONE positive test result was obtained per 20 tests performed, whereas in week starting with 20 April, to get one positive test, the state had to test 140 eligible samples.

This is a good indicator of declining transmission and adequacy of tests.
# Testing Strategies in Kerala

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine</td>
<td>Early Case Detection</td>
<td>As per eligibility criteria</td>
</tr>
<tr>
<td>Augmented sample Testing</td>
<td>Detect positivity among priority groups</td>
<td>3000 samples on a single day from hot spots</td>
</tr>
<tr>
<td>Sentinel Surveillance</td>
<td>Detect any community transmission</td>
<td>900 samples/ week from 5 non-COVID suspect groups in non-COVID settings.</td>
</tr>
</tbody>
</table>
## Results – Augmented sample Testing

<table>
<thead>
<tr>
<th>Total Samples Received</th>
<th>Total Tested</th>
<th>Negative</th>
<th>Positive</th>
<th>Rejected</th>
<th>Indeterminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>3128</td>
<td>3128</td>
<td>3085</td>
<td>4</td>
<td>21</td>
<td>18*</td>
</tr>
</tbody>
</table>

* Results awaited for confirmation - 4
<table>
<thead>
<tr>
<th>DATE</th>
<th>SAMPLES SENT</th>
<th>TESTED</th>
<th>NEGATIVES</th>
<th>POSITIVE</th>
<th>REJECTED/ INDETERMINATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.04.20</td>
<td>121</td>
<td>120</td>
<td>117</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>23.04.20</td>
<td>275</td>
<td>261</td>
<td>250</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>25.04.20</td>
<td>351</td>
<td>349</td>
<td>341</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>747</strong></td>
<td><strong>730</strong></td>
<td><strong>708</strong></td>
<td><strong>2</strong></td>
<td><strong>37</strong></td>
</tr>
</tbody>
</table>
Wash your hands frequently

Maintain social distancing

Avoid touching eyes, nose and mouth

Use Face Mask when in Public

If you have minor illness, call your health care provider and ask advise.