INSACOG
Indian SARS-CoV-2 Genomics Consortium

25th June 2021
Indian SARS-CoV-2 Genomics Consortium (INSACOG)

- Launched jointly by the **Union Health Ministry and Department of Biotechnology (DBT)** with **Council for Scientific & Industrial Research (CSIR)** and **Indian Council of Medical Research (ICMR)** in December 2020

- A consortium of **10 National Laboratories expanded further to 28 labs** to monitor the **genomic variations in the SARS-CoV-2**

- To correlate whole genomics sequencing (WGS) data with clinical/epidemiological data for **advance preparedness for public health interventions** and better understanding of:
  - Disease transmission (Ro),
  - Clinical severity
  - Re-infections/ Immune escape
  - Vaccine efficacy
  - Available diagnostics tests (escape phenomenon)

  - **Inter-ministerial consortium of 28 Laboratories**
  - **Networked with Hospitals for clinical correlation**
  - **Ascertain Status of new SARS-Cov-2 variants**
  - **Sequencing of infection breakthrough**
  - **B.1.1.7 (alpha), B.1.351 (beta), P2 (gamma) B.1.617.2 (delta) variants identified**
  - **Sewage surveillance**
1. Target Samples

**International Arriving Passengers:**
- Country scenario
- Duration of the stay
- Infection/vaccination status
- Travel details etc.

**Community Samples:**
- States/Districts with **Unusual Scenarios:**
  - Representative samples
- **Sentinel Surveillance (as per WHO strategy):** Identified sites – Labs, Hospitals, High Transmission/Low Transmission areas (15 samples per site)

**Re-infection/Break Through Infection:**
- Repeat Infection
- Infection Post Vaccination: single dose, full coverage etc.

2. SOP

- **Sample transportation** to Regional **Genome Sequencing Laboratories**
- Genome sequencing and identification - Variants of Concerns/ Variants of Interest, Potential Variants of Interest, Other mutations
- **Information on Variants of Concerns/ Variants of Interest** - Submission to Central Surveillance Unit
- **Expert discussion in SCAG** - on Potential Variants of Interest and other mutations and recommendations to Central Surveillance Unit
- **Sharing of information and clinic - Epidemiological correlation by IDSP** - With MOH&FW, ICMR, DBT & CSIR and State authorities
- **Virus culture, testing for efficacy**
SARS-CoV-2 Variants of Concern circulating globally

**SPIKE gene mutations have been highlighted**

**ALPHA**
- 69-70 del
- 144-145 del
- N501Y
- A570D
- D614G
- P681H
- S982A
- D1118H

**BETA**
- D80A
- 242-245 del
- K417N
- E484K
- N501Y
- D614G
- A701V

**GAMMA**
- L18F
- D138Y
- K417T
- D614G
- T1027I
- V1176F

**DELTA**
- T19R
- DEL 157-158
- R158G
- L452R
- T478K
- D614G
- P681R
- D950N
## State-wise distribution of VOC (24-06-2021)

Data as on 24th June

<table>
<thead>
<tr>
<th>State</th>
<th>Alpha variant</th>
<th>Beta Variant</th>
<th>Gamma Variant</th>
<th>Delta variant</th>
<th>B.1.617.1 and B.1.617.2</th>
<th>Total VOC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tr&amp;Co Community</td>
<td>Total</td>
<td>Tr&amp;Co Community</td>
<td>Total</td>
<td>Tr&amp;Co Community</td>
<td>Total</td>
</tr>
<tr>
<td>ANDAMAN NICOBAR</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ANDHRA PRADESH</td>
<td>28</td>
<td>52</td>
<td>80</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>ASSAM</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ARUNACHAL PRADESH</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>BIHAR</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CHANDIGARH</td>
<td>90</td>
<td>90</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CHATTISGARH</td>
<td>1</td>
<td>23</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DELHI</td>
<td>91</td>
<td>594</td>
<td>685</td>
<td>4</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>GOA</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GUJARAT</td>
<td>18</td>
<td>119</td>
<td>137</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HARYANA</td>
<td>6</td>
<td>597</td>
<td>603</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>HIMACHAL PRADESH</td>
<td>111</td>
<td>111</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>JAMMU &amp; KASHMIR</td>
<td>174</td>
<td>174</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>480</td>
</tr>
<tr>
<td>JHARKHAND</td>
<td>29</td>
<td>29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>222</td>
</tr>
<tr>
<td>KARNATAKA</td>
<td>40</td>
<td>74</td>
<td>114</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>KERALA</td>
<td>15</td>
<td>627</td>
<td>642</td>
<td>65</td>
<td>65</td>
<td>1</td>
</tr>
<tr>
<td>LADAKH</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MADHYA PRADESH</td>
<td>4</td>
<td>56</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MAHARASHTRA</td>
<td>35</td>
<td>104</td>
<td>139</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>MANIPUR</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MEGHALAYA</td>
<td>17</td>
<td>17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>MIZORAM</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ODISHA</td>
<td>3</td>
<td>32</td>
<td>35</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PUDUCHERRY</td>
<td>23</td>
<td>70</td>
<td>93</td>
<td>1</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>PUNJAB</td>
<td>8</td>
<td>830</td>
<td>838</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>RAJASTHAN</td>
<td>5</td>
<td>21</td>
<td>26</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SIKKIM</td>
<td>11</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TAMIL NADU</td>
<td>40</td>
<td>57</td>
<td>97</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>TELANGANA</td>
<td>213</td>
<td>80</td>
<td>293</td>
<td>80</td>
<td>14</td>
<td>94</td>
</tr>
<tr>
<td>TRIPURA</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>UTTAR PRADESH</td>
<td>17</td>
<td>10</td>
<td>27</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>UTTARAKHAND</td>
<td>1</td>
<td>68</td>
<td>69</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>WEST BENGAL</td>
<td>18</td>
<td>110</td>
<td>128</td>
<td>11</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>575</td>
<td>3974</td>
<td>4549</td>
<td>117</td>
<td>149</td>
<td>266</td>
</tr>
</tbody>
</table>

Tr&Co = Travelers and contacts
Trend of Variants of Concern Circulating in India, INSACOG

B.1.1.7
B.1.1.7
B.1.1.7
B.1.1.7
B.1.1.7
B.1.1.7
B.1.617
B.1.617
B.1.617
B.1.617
B.1.617
B.1.617
B.1.351
B.1.351
B.1.351
B.1.351
B.1.617.2
B.1.617 includes all sublineages except B.1.617.2

B.1.1.7
B.1.1.7
B.1.1.7
B.1.1.7
B.1.1.7
B.1.1.7
B.1.617
B.1.617
B.1.617
B.1.617
B.1.617
B.1.617

Updated 200621
Variants of Concerns in India from Feb–Mar 2021

Sudden change in landscape of Variants of Concerns in India from Feb–Mar 2021
Delta Variant (B.1.617.2) Distribution by District

(1 District affected till Dec’20)  (52 Districts affected till Mar’21)  (174 Districts affected till Jun’21)
Current Status of Variants of Concern

- Variants of Concerns are found to be distributed in **174 districts in 35 States**.

- Highest numbers are reported from districts in **Maharashtra, Delhi, Punjab, Telangana, West Bengal & Gujarat**

- **Variants of Concerns with public health importance detected in community samples** in India:
  - Alpha – 3,974
  - Beta- 149
  - Gamma- 1

- **B.1.617, Delta and Kappa – 16,260**
  - This lineage, first observed in Maharashtra, was associated with unusual rise observed in several districts of the state.
  - It is found in many States in India.

- Proportion of cases with Variants of Concerns has **risen from 10.31% in May 2021 to 51% on 20th June 2021**.
Delta Plus, K417N and AY.1 lineage (B.1.617.2.1)

- Delta Plus variant signifies Delta variant with an additional mutation
- B.1.617.2.1 (AY.1) specifically refers to acquisition of K417N genetic variant in the background of Variant of Concern Delta (B.1.617.2)
- K417N is of public significance as this mutation is also present in the Variant of Concern Beta (B.1.351)
Delta Plus Variant (AY.1) – 50 cases found from 45,000 samples sequenced (including retrospective samples)

<table>
<thead>
<tr>
<th>State (10)</th>
<th>Total cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madhya Pradesh</td>
<td>07</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>22</td>
</tr>
<tr>
<td>Punjab</td>
<td>02</td>
</tr>
<tr>
<td>Gujarat</td>
<td>01</td>
</tr>
<tr>
<td>Kerala</td>
<td>03</td>
</tr>
<tr>
<td>AP</td>
<td>01</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>09</td>
</tr>
<tr>
<td>Orissa</td>
<td>01</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>01</td>
</tr>
<tr>
<td>Jammu</td>
<td>01</td>
</tr>
<tr>
<td>Karnataka</td>
<td>01</td>
</tr>
<tr>
<td>Haryana</td>
<td>01</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>
Frequent and regular formal communications about variants and public health response by Union Health Ministry to all States/UTs

States/UTs advised to keep strict surveillance in the districts reporting new Variants of Concern and take up stringent public health measures: Testing, Contact tracing, Genome Sequencing of positive samples, restrictions on crowds and intermingling of people

Information on genome sequencing regularly shared with the States.

- Twice in month of February 2021, 4 times in March 2021, 4 times in April 2021, 6 times in May 2021 and 4 times in June 2021

A weekly Bulletin is released by INSACOG to provide regular updates.
Thank You