# Genomic Surveillance for SARS-CoV-2

# In India

# Indian SARS-CoV-2 Genomics Consortium

# (INSACOG)

## Background

Globally, the SARS-CoV-2 virus has posed the biggest public health challenge of the century. However, India, has been able to contain its spread and keep the mortality low through effective diagnosis, appropriate treatment measures and contact tracing. In order to fully understand the spread and evolution of the SARS CoV-2 virus, and to tackle its future spread sequencing and analyzing the genomic data of this novel corona virus would be required. The study of accumulated of mutations in the viral genomes will enable us to compare virus samples and viral lineages in order to understand if local outbreaks are caused by transmission of single or multiple viral lineages. Analysis of SARS-CoV-2 genome sequences would also allow us to study the evolution of the virus and assess whether these mutations influence transmission, clinical outcomes, severity, or if they may impact interventions such as public health intervention measures and vaccines.

Against this background, the sudden outbreak of a new SARS-CoV-2 variant in the UK requires India to increase viral Genomic surveillance in order to understand the spread of the virus in a rapid and robust manner. The proposed **Indian SARS-CoV-2 Genomics Consortium** will help to expand whole genome sequencing of SARS-CoV-2 virus across the nation, aiding our understanding of how the virus spreads and evolves. Any changes to the genetic code, or mutations, can be observed in the samples. The ten (as of now) regional genome sequencing laboratories spread across the country will cater to the nearest states (as detailed in the table below), which will send 5% of the positive samples to these labs for genome sequencing. The viral genome sequencing data generated by the eight regional genome sequencing laboratories will be analyzed by the respective centres and sent to the National Centre for Disease Control (NCDC), Delhi for collation and integration. The Central Surveillance Unit (CSU) under Integrated Disease Surveillance Programme (IDSP) at the National Centre for Disease Control (NCDC) regularly collects data in a decentralized manner from various States/districts. Such data collected with regard to SARS-Cov-2, will be used for selecting the representative positive samples from various regions for genome sequencing. Further, the data from the genome sequencing laboratories will be analyzed as per the field data trends to study the linkages (if any) between the genomic variants and epidemiological trends. This will help to understand super spreader events, outbreaks and strengthen public health interventions across the country to help in breaking the chains of transmission. Linking this data with the IDSP epi data and patient's symptoms will allow us to better understand the viral infection dynamics, morbidity and mortality trends. Further, the data can be linked with host genomics, immunology, clinical outcomes and risk factors for a more comprehensive outlook.

Over the last few weeks, the United Kingdom (UK) has faced a rapid increase in COVID-19 cases in South East England, leading to enhanced epidemiological and virological investigations. Analysis of viral genome sequence data identified that a large proportion of cases belonged to a new single phylogenetic cluster. The new variant is defined by multiple spike protein mutations (deletion 69-70, deletion 144, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H) present

as well as mutations in the other genomic regions. While it is known and expected that viruses constantly change through mutations leading to the emergence of new variants, preliminary analysis (based on epidemiological and mathematical model) in the UK suggests that this variant is significantly more transmissible than previously circulating variants, with an estimated potential to increase the reproductive number (R) by 0.4 or greater with an estimated increased transmissibility of up to 70%. However, there is no experimental evidence or indication at this point of increased infection severity associated with the aforementioned new variant. Further, few cases with the new variant have to date been also reported by Denmark, Netherlands, Australia and, according to media reports, in Belgium.

Also, very recent media report revealed emergene of second variant in UK (contacts with travellers from South Africa) and a third variant in Nigeria suggesting continuous virus evolution.

**Objectives of the Indian SARS-CoV -2 Genomics Consortium (INSACOG)**

The overall aim of the proposed **Indian SARS-CoV-2 Genomics Consortium** is to monitor the genomic variations in the SARS-CoV-2 on a regular basis through a multi-laboratory network. This vital research consortium will also assist in developing potential vaccines in the future.

In the present scenario, it will be pertinent that an effective genome surveillance is established with the following objectives:

- To ascertain the current status of new variant of SARS-CoV-2 (SARS-CoV-2 VUI 202012/01) in the country
- To establish a sentinel surveillance for early detection of genomic variants with public health implication
- To determine the genomic variants in the unusual events/trends (super-spreader events, high mortality/morbidity trend areas etc.)

**Action Plan**

- In case the UK variant or any other variant mutation is detected in any sample, the virus will be sent to any of the two notified COVID Virus Repositories at RCB-Faridabad or NIV, Pune for isolating the virus and further culturing. This can then be shared as per notified Guidelines for development of assays, which will help in validation of diagnostics and also testing of the vaccines under development. The molecular surveillance will be closely linked with the epidemiological surveillance and clinical specimens will also be collected for relevant clinical correlations. The SOPs, which have been developed for the SARS-CoV-2 Genome Sequencing sample collection, deposit and sharing in May, 2020 will be adopted.
- The relevant case details, travel details, of any sample detected with the new UK variant (or any other found to be of significant from public health perspective) will be

communicated to NCDC (Director) Nodal Unit. No details shall be revealed before due approval by the competent authority.

- NCDC Nodal Unit will maintain a database of all samples of the new variants (of public health significance). The data will be epidemiologically analysed, interpreted and shared with state/district for investigation, contact tracing and planning response strategies.
- All the genomic sequencing data will be maintained in a National database at two sites, NIBMG, Kalyani and IGIB, New Delhi

**Suggested structures:**

1. Centre level**:** A Nodal Unit will be created at NCDC, New Delhi with officers from Division of Bio-technology, Epidemiology and Central Surveillance Unit**.** This unit will act as a pivot and coordinate with the respective State/district surveillance unit and plan the transportation of samples to the designated RGSL**.Samples can also be transported directly to sequencing centers. This unit at NCDC, New Delhi will also act as the Nodal National Hub for all Regional Hubs as detailed below.**
2. Regional level**:** It is proposed that the ten identified RGSL will serve as the regional hub laboratory for genome sequencing of the relevant region**.** Country will be divided into six regions for clearly defining the sample collection/transportation flow, as below**:**

| Regional Hub | Laboratory | State(s)* |
|---|---|---|
| **East and North East** | 1. DBT- National Institute of Biomedical Genomics (**NIBMG**), Kalyani (near Kolkata)<br>Estimated sequencing capacity – 5000 per month | West Bengal, Bihar, Jharkhand, Assam, Tripura, Meghalaya, Manipur, Arunachal Pd, Sikkim, Nagaland, Mizoram Odisha, Chhattisgarh |
| | 2. DBT-Institute of Life Sciences, **(ILS)** Bhubhaneshwar<br>Estimated sequencing capacity –1200 per month | |
| **West** | 3. ICMR-National Institute of Virology **(NIV),**<br>4. DBT-National Centre for Cell Science, Pune<br>Estimated sequencing capacity –1200 per month | Goa, Maharashtra, Gujarat, western part of MP |
| **South** | 5. CSIR-Centre for Cellular and Molecular Biology (**CCMB**) and<br>6. DBT-Centre for DNA Fingerprinting and Diagnostics **(CDFD),** Hyderabad<br>Estimated sequencing capacity – 5000 per month at CCMB) and 1200 at CDFD | Andhra Pd., Telangana, Goa (northern part of Karnataka) |
| | 7. DBT **InSTEM/NCBS**, Bengaluru<br>Estimated sequencing capacity –1200 per month<br>8. NIMHANS, National Institute of Mental Health and Neuro Sciences Hospital (NIMHANS), Hosur Road, Bangalore | Karnataka, Tamil Nadu, Puducherry |
| **Central** | 9. CSIR-Institute of Genomics and Integrative Biology (**IGIB**), Delhi<br>Estimated sequencing capacity – 10,000 per month | Rajasthan, Punjab, Haryana and western part of UP. |

| Regional Hub | Laboratory | State(s)* |
|---|---|---|
| **North & Central** | 10.**NCDC**, Delhi - Division of Bio-technology, Epidemiology and Central Surveillance Unit<br>Estimated sequencing capacity – 3,000 per month | Kerala samples will be sequenced at IGIB<br>Eastern part of MP, Uttarakhand, Delhi, Haryana, Himachal Pd., Ladakh, J&K & Punjab |
| *: SSO of the states may please plan and indicate the practical feasibility to CSU. CSU will further fine tune the regional linkages with RSGL. | | |

## Implementation strategy

### Part A: Detecting the possible existence of new variant in the Country

Standard Operating Procedure (SOP) for Epidemiological Surveillance and Response in the context of new variant of SARS-CoV-2 virus detected in United Kingdom has already been issued by the Ministry of Health & Family Welfare, Government of India. The purpose of this initiative is to ensure proper screening of International travelers arriving in India for early detection of any person having the new SAR-CoV-2 variant. Further, Epidemiological Surveillance of the passengers, who have arrived in India since 23rd November, 2020 will be conducted in the community through active follow up.

### Selection of samples for genome sequencing:

1. All the positive persons detected through screening of International travelers arriving in India (including those having traveled from or transited through UK) by RT-PCR **(**MOH&FW guidelines for screening of passengers, community tracing is placed at Annexure 5**).** (100%)
2. a) All positive samples from people who are either participating in vaccine trials or have been vaccinated, b) All positive samples from people with a prior history of infection and confirmed re-infection should be included.
3. Samples of all the international passengers (100%), who have arrived in India since 23rd November, 2020 and tested positive by RT-PCR to be collected from the relevant lab and transported /referred for genome sequencing**.** (List of arrivals to be reviewed by all Airport health offices (APHOs) from the portal and list to be shared with CSU and respective SSOs, SSOs will then in coordination with DSUs identify the positives to be sent to respective designated RSGL**.**
4. All the international passengers who have arrived in India during last 14 days (from 9th December to 22nd December, 2020), if symptomatic and tested positive will be subjected to genome sequencing. Others will be followed up by the respective state/district surveillance officers and will be tested as per ICMR guidelines (even if asymptomatic)

between 5th and 10th day and found positive by RT-PCR. (list to be provided by APHO/BOI).

5. Representative positive specimens ( randomly sampling 5% of the positive specimens) – approximately 5% of the specimens detected positive since 23rd November, 2020 will be sent to the designated Regional Genome Sequencing Laboratory (RGSL) (to be provided by CSU in discussion with the respective sate SSOs) – details of the cases reported from various States since 23 November, 2020 is in the annexure 4. It is pertinent to mention that there have been variations in the States/districts with regard to prevalence and incidence. Prioritization can be done for COVID labs/hospitals in urban regions and tertiary care health facilities at district level. Hence, CSU will ensure a proper representation particularly from the metro cities where there is high probability of importation of new SARS-CoV-2 variant.
6. A brief socio-demographic, clinical and travel information (not more than 15 items) containing sheet should accompany all randomly drawn samples collected at the two above sites.

**Part B:**

CSU will monitor the trends in various States/districts with regard to identifying super spreader events / outbreaks. A representative sample of all the positive cases in such events will be sent to the designated lab for genome sequencing (to be provided by CSU).

**Challenges:**

1. The genome sequencing for assessing the current status from the samples tested positive during past months (September 2020 onwards) will depend on the availability of aliquots of positive samples in Government/private labs as, it has come to the notice that many of the labs are not storing the positive samples. **While specimens collected in the past will have such limitations, prospectively collected specimens can be used on a weekly basis for 5% random draw based representative sampling.**
2. Proper transportation of samples from the labs to the designated RSGL.
3. There may be limitation with regard to the number which can be processed in each RSGL for genome sequencing and hence, there may be issues when there is surge in any of the State/Country in future.

**Part C:**

Establishment of sentinel surveillance: It is proposed that 5% of the positive specimens (the representative number from each district/State to be decided by the CSU) detected daily will be referred to the designated RGSL for genome sequencing. CSU will coordinate with the State units for taking a representative sample from all the positive cases detected on the previous day for sending to the designated RSGL. Each lab will communicate the genome sequencing data to the

nodal unit where this will be correlated with the epidemiological trend by the nodal unit in coordination with the respective CSU officer responsible for the State**.**

**Selection and location of sentinel sites:** As per the laid down epidemiological criteria sentinel sites will be selected in each district/state for collecting positive samples **(**as decided by CSU and SSU**).** Following will be the broad criteria**: -**

1. Feasibility and sustainability
2. Representativeness
3. Disease burden

**Work Flow:**

Regional genome sequencing laboratories (RGSL) – list placed at Annexure 3 (1-6) spread across the country will cater to the samples sent by relevant states and UTs. Every state will send representative (5%) of the positive samples tested by public or private laboratories to the RGSL for whole genome sequencing and identification of the strain/variant/clade of SARS-CoV-2 as per the ICMR guidelines and directives. The RGSL upon sequencing the whole genome will share the annotated data with NCDC, Delhi for further analysis and compilation (taking help from NIBMG and IGIB sequencing analysis team). The report will be sent periodically to the ministry and also shared with the relevant RGSL and CSU/SSU for necessary action.

According to the capacity of each in the initial part (7 to 15 days), the priority will be the genome sequencing of the samples positive for RT-PCR during past 2 months and those detected positive among the arriving international passengers. Subsequently, part B and part C will be focused.

**SOP for sample collection with regard to genome sequencing are placed at annexures 1 & 2.**

**Indian SARS-CoV-2 Genomics Consortium (INSACOG)**

As a long term goal, the detailed proposal for establishment of **Indian SARS-CoV-2 Genomics Consortium** will be developed in discussion with experts from relevant institutes. As a first step a Nodal Unit with officers from Division of Bio-technology, Epidemiology and IDSP at National Center for Disease Control, Delhi will assign the responsibility for proposing a technical resource group. This group will firm up the detailed proposal including participating Public Health Institutes, genome sequencing labs, HR including IT professionals, bio-statisticians for data analytics including uploading of relevant data on consortium portal. An estimate regarding the recurring and non-recurring budgetary components will also be incorporated.

Annexure 1

**Specimen Collection, Packaging and Transport Guidelines for SARS-CoV-2 positive samples for genome sequencing**

To be used by the laboratory personnel from Government or private health authorities/ hospitals/ involved in diagnosis of SARS-CoV-2by RT-PCR for further genome sequencing.

**Purpose**: Specimen packaging and transport of clinical specimens to regional genome sequencing laboratories (RGSL) for genome sequencing.

**Sample collection:**

a) Within country from clinics
b) Travellers tested at the airports. All positive samples from airport based tests should be sequenced

**Data sheet:**

A brief socio-demographic, clinical and travel information (not more than 15 items) containing sheet should accompany all samples collected at the above two sites.

**Roles and Responsibilities:** The laboratory in-charge will collect, package & transport SARS-CoV-2 positive samples.
Only those samples which are positive for SARS-CoV-2 by RT PCR preferably with a Ct value of 30 or less should be packaged & transported.

After carrying out the RT-PCR test the remaining samples (within 72 hours of collection, stored at 2-8°), which are RT-PCR positive (Ct value <30), will be transported in VTM with cool pack (4-8 degree) or in ice.

Alternatively, remaining RNA samples may be stored and aliquoted in the 1.5 ml microcentrifuge tubes followed by proper labelling and sealing with the parafilm (stored at -70degree). RNA placed together in plastic/ cardboard cryobox and packed in the thermocol box with dry ice should be shipped to the respective RGSL for sequencing.

Samples should be packaged and transported with all biosafety precautions and should be accompanied with line list and details of samples including the Ct values of all the target genes detected as per the annexure 2 in standard triple packaging.
The packaging consists of three layers as follows.

1. **Primary receptacle:** A labelled primary watertight, leak-proof receptacle containing the specimen. The receptacle is wrapped in enough absorbent material to absorb all fluid in case of breakage.

2. **Secondary receptacle:** A second durable, watertight, leak-proof receptacle to enclose and protect the primary receptacle(s). Several wrapped primary receptacles may be placed in one secondary receptacle. Sufficient additional absorbent material must be used to cushion multiple primary receptacles.
3. **Outer shipping package**: The secondary receptacle is placed in an outer shipping package which protects it and its content from outside influences such as physical damage and water while in transit

Personal protective equipment (apron, hand gloves, face shield, N95 Masks etc.) need to be used and all biosafety precautions should be followed while carrying out sample packaging and transport.

Annexure 2

| **Name of the COVID-19 positive sample referral lab/health care facility:** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Date:** | | | | | | | | | | |
| | | | | | | | | | | |
| **Sr. NO** | **SRF ID** | **Name** | **Age** | **Gender** | **Address** | **Patient Mobile** | **Type of Specimen** | **Date of collection of sample** | **Ct Value of all target genes detected by RT PCR test for SARS-CoV-2** | **Status (Symptomatic/ Asymptomatic)** |

Annexure 3

**List of Regional genome sequencing laboratories (RGSL)**

1. CSIR Institute of Genomics and Integrative Biology (IGIB), Delhi
   Estimated sequencing capacity – 10,000 per month using
2. CSIR Centre for Cellular and Molecular Biology (CCMB), Hyderabad
   Estimated sequencing capacity – 5000 per month using Illumina Novaseq
   Analysis by Dragen server
3. DBT National Institute of Biomedical Genomics (NIBMG), Kalyani (near Kolkata)
   Estimated sequencing capacity – 5000 per month using Illumina Novaseq and MiSeq,
   Analysis by Dragen Server
4. DBT- Institute of Life Sciences (ILS), Bhubaneshwar
   Estimated sequencing capacity –1200 per month
5. DBT InSTEM/NCBS, Bengaluru
   Estimated sequencing capacity –1200 per month
6. DBT-Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad
7. National Institute of Virology, Pune
8. DBT National Centre for Cell Science, Pune
   Estimated sequencing capacity –1200 per month
9. National Centre for Disease Control, Delhi - Division of Bio-technology, Epidemiology and Central Surveillance Unit
10. NIMHANS, National Institute of Mental Health and Neuro Sciences Hospital (NIMHANS), Hosur Road, Bangalore

Annexure 4

Cumulative case load (Between 23rd November 2020 and 22nd December 2020): a total of 9,35,251 new cases from the Country. The State wise distribution of these 9,35,251 cases is as under:

| **State** | **Cases** | **State** | **Cases** |
|---|---|---|---|
| Kerala | 146597 | Madhya Pradesh | 39275 |
| Maharashtra | 119144 | Gujarat | 38847 |
| Delhi | 87945 | Tamil Nadu | 37967 |
| West Bengal | 81982 | Karnataka | 37195 |
| Rajasthan | 55973 | Himachal Pradesh | 18296 |
| Uttar Pradesh | 48841 | Telangana | 18219 |
| Chhattisgarh | 45041 | Punjab | 17032 |
| Haryana | 40897 | Bihar | 17024 |
| Andhra Pradesh | 16724 | Chandigarh | 2457 |
| Uttarakhand | 15509 | Meghalaya | 1919 |
| Odisha | 12635 | Ladakh (UT) | 1347 |
| J&K (UT) | 11947 | Nagaland | 1081 |
| Jharkhand | 5729 | Puducherry | 1069 |
| Manipur | 4284 | Sikkim | 854 |
| Assam | 3997 | Tripura | 754 |
| Goa | 3317 | Arunachal Pradesh | 591 |
| Mizoram | 473 | A&N Islands | 247 |
| Dadar and Nagar Haveli and Daman and Diu | 42 | | |

Annexure 5

**MOH&FW guidelines for screening of passengers, community tracing**

**(https://www.mohfw.gov.in/pdf/SOPforSurveillanceandresponseforthenewSARSCov2variant.pdf )**

22nd December, 2020

**Government of India**

**Ministry of Health and Family Welfare**

**Standard Operating Procedure for Epidemiological Surveillance and Response in the context of new variant of SARS-CoV-2 virus detected in United Kingdom**

**Introduction**

A new variant of SARS- CoV 2 virus [Variant Under Investigation (VUI)-20212/01] has been reported by the Government of United Kingdom (UK) to World Health Organization (WHO). This variant is estimated by European Center for Disease Control (ECDC) to be more transmissible and affecting younger population. This variant is defined by a set of 17 changes or mutations. One of the most significant is an N501Y mutation in the spike protein that the virus uses to bind to the human ACE2 receptor. Changes in this part of the spike protein may result in the virus becoming more infectious and spreading more easily between people.

**Scope**

This Standard Operating Procedure (SOP) describes the activities to be undertaken at the point of entry and in the community for all International passengers who have travelled from or transited through UK in the past 4 weeks (from 25th November to 23rd December 2020). Any reference to testing in this SOP implies RT-PCR testing only.

**Part A**

**Actions to be taken at International Airports**

All international travelers as described in the scope above will be required to declare as per existing procedure, their travel history (of past 14 days) and fill up the Self Declaration Form to be screened for COVID-19.

The flights from UK stand suspended temporarily from 23rd December till 31st December 2020 or till further orders. All the passengers coming from UK during the intervening period from 21st to 23rd December 2020 shall be subjected to the following process:

1. Respective State governments shall ensure that all passengers travelling from or transiting through airports in UK and disembarking in India would be subjected to RT-PCR test on arrival. In case of a positive sample, it is recommended that spike gene-based RT-PCR test should also be performed by an appropriate laboratory.
2. Passengers testing positive shall be isolated in an institutional isolation facility in a separate (isolation) unit coordinated by the respective State Health Authorities. They would earmark specific facilities for such isolation and treatment. Necessary action to send the samples to National Institute of Virology (NIV), Pune or any other appropriate lab for genomic sequencing will be initiated at the facility level.
    a. If the report of the sequencing is consistent with the current SARS-CoV-2 virus genome circulating in the country; the ongoing treatment protocol including home isolation/treatment at facility level as per case severity may be followed.
    b. If the genomic sequencing indicates the presence of new variant of SARS-CoV-2 then the patient will continue to remain in a separate isolation unit. While necessary treatment as per the existing protocol will be given, the patient shall be tested on 14th day, after having tested positive in the initial test. In case the sample is found positive on 14th day, further sample may be taken until his two consecutive samples taken 24 hours apart are tested negative.
3. Those who are found negative on testing with RT-PCR at the airport would be advised quarantine at home and followed up as detailed in Part-C.
4. The concerned airlines shall ensure that prior to check-in, the traveler is explained about this SOP. In-flight announcements must also be made explaining the relevant information to the passengers. Relevant information in this regard shall be prominently displayed in arrival area and waiting area of the airports.
5. Adequate arrangements for passengers waiting for their RT-PCR test results duly following effective isolation may also be made at the airports in conjunction with the airport authorities.

**Part B**

**SOP for Bureau of Immigration (BOI)**

1. The State-wise passenger manifest of the flights from UK landing at various International airports in India for the past 4 weeks (from 25th November 2020 to 23rd December 2020) shall

be conveyed by the Bureau of Immigration to State Government/Integrated Disease Surveillance Programme (IDSP) so that this data would be provided to the surveillance teams.

2. Bureau of Immigration shall share these manifest at the idsp-npo@nic.in and designated e-mails provided by the respective State Governments.
3. The data of manifests provided by Bureau of Immigration will be supplemented by the online Self-declaration Forms available on 'AIR SUVIDHA' portal.

**Part C**

**SOP for Surveillance by State Governments/ Integrated Disease Surveillance Programme (IDSP)**

1. All the contacts* (without any exception) of those travelers who arrived at various airports on 21st -23rd December, 2020 and tested positive would be subjected to institutional quarantine in separate quarantine centers and would be tested as per ICMR guidelines (or earlier if the passenger develops any symptoms suggestive of COVID-19) as per Clause 1 in Part A. Contacts testing positive shall be subjected to activities mentioned in Clause 2 of Part A.

   (*Contacts of the suspect case are the co-passengers seated in the same row, 3 rows in front and 3 rows behind along with identified Cabin Crew)

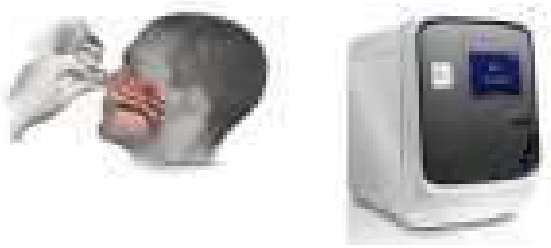
2. The list of travelers (travelling between 21st -23rd December) who are found RT-PCR negative at airport testing shall be shared with the respective States by the Central unit of IDSP (facilitated by APHO/ BOI). They shall be advised for quarantine at home and tested as per ICMR guidelines (or earlier if the passenger develops any symptoms suggestive of COVID-19) as per Clause 1 of Part A. Their monitoring would be ensured by respective State Governments/IDSP. Those found positive shall be subjected to activities mentioned in Clause 2 of Part A.
3. Those international travelers from UK who arrived in India from 25th November to 8th December 2020 (1st & 2nd week from 25th November) will be contacted by District Surveillance Officers and advised to self-monitor their health. If anyone amongst them develops symptoms, they will be tested by RT PCR as detailed in Clause 1of Part A.

- If tested positive, genetic sequencing will be done. If the results are consistent with current circulating SARS-CoV2, action as contained in Clause 2(a) of Part A will be followed.
- If the results of genomic sequencing are consistent with new variant, then action contained in Clause 2(b) of Part A will be followed.

4. The list of international travelers who arrived in India, as described in the scope above, between 9th December to 23rd December (3rd & 4th week) will be shared with respective State / District Surveillance Officers for daily follow up till 14 days after their arrival in India.
5. Passenger will be provided following advice during first visit / contact by health care provider:
    a. You will also receive daily calls/visit from State health officials to ask your health status for the day, kindly cooperate with them.
    b. You are requested to self-monitor for development of symptoms suggestive of COVID-19 i.e. Fever, Cough, Difficulty in breathing for 28 days from the date of arrival from UK.
    c. In case you develop symptoms (fever, cough, difficulty in breathing), put on a mask immediately, isolate yourself at home, and inform District Surveillance Officer or contact National (1075) or State Helpline.
6. District Surveillance Officer has to ensure daily follow up of passengers under observation for 28 days starting from date of arrival.
7. For all travellers, listed in Para 4 above, District Surveillance Officer shall facilitate testing (irrespective of previous testing at the place of origin or at the airport of arrival) with RT-PCR. In case the passengers have moved to locations outside the city of arrival, intimation should be sent to the concerned District/ State for needful as above.
    a. Those who test positive shall be isolated in an institutional isolation facility in a separate (isolation) unit by the respective State health authorities and necessary action as in Clause 2(a) Part A will be followed.
    b. If the genomic sequencing indicates the new variant of SARS-CoV-2 then action as in Clause 2 (b) Part A will be followed.

8. All the community contacts (without any exception) of those travelers who have tested positive would be subjected to institutional quarantine in separate Quarantine Centers and would be tested between 5-10$^{th}$ day as per current ICMR guidelines using RT-PCR as in Clause 1 of part A (or earlier if the passenger develops any symptoms suggestive of COVID-19). Community contacts testing positive shall be subjected to activities as in Clause 2 of Part A.

9. Information regarding any passenger covered within the scope of this SOP, who travels to another State will be immediately notified to the concerned State Health Authority. If any passenger is not traceable initially or during any duration while being followed up should be immediately notified to Central Surveillance Unit of IDSP by the District Surveillance Officer.

Screening at international airport arrivals, samples of positive cases sent for viral genome sequencing

samples of positive cases sent for viral genome sequencing