**COVID-19 (nCorona) Virus Outbreak Control and Prevention State Cell**
**Health & Family Welfare Department**
**Government of Kerala**

## ADVISORY ON COVID-19 COMMUNITY SURVEILLANCE USING RAPID ANTIBODY TESTS

**No.31/F-2/2020/Health- 5th June 2020**
**Ref: GO (Rt) 709/2020/H&FWD dated 11th April 2020**

### BACKGROUND

As the epidemiological, clinical and virologic characteristics of COVID-19 are still emerging and significant gaps remain, which need to be explored for the effective preventive and control measures, the Department of Health and Family Welfare well in time has initiated action to conduct sentinel surveillance to do monitoring of cases in community. After detailed discussion as per the Government order cited in reference above detailed guidelines were issued.

As the ICMR approved validated Antibody test kits were not available, the Department has started The State of Kerala has built a sentinel surveillance system which uses RT-PCR tests to detect evidence of any community transmission in the State. To supplement the strategy and measure the herd immunity status among specific populations, the state has decided to further strengthen the community surveillance system using antibody test kits which will also help in providing early warning signals and epidemiological information about the the epidemic in the state. With the availability of ICMR approved antibody tests, IgM/IgG lateral flow immunoassay based test will be used for surveillance.

### OBJECTIVE

To identify the community transmission of COVID-19 and herd immunity in specific populations.

### Management of the Community Surveillance Using Antibody Test:

The overall administrative management of the COVID-19 Community Surveillance Using Antibody Test shall be done by the Additional Director (Public Health), Director of Health Services, Govt. of Kerala. The District

surveillance officers (DSO, COVID-19) shall be in charge of the management at the district level and shall report to the Additional Director Public Health, Govt. of Kerala. The DSOs may designate a medical officer as the co-ordinator for the implementation of the COVID-19 Community Surveillance Using Antibody Test.

## METHODOLOGY

The population identified for community surveillance is divided into groups based on potential exposure status. Vulnerable and special groups have also been identified. The details of the groups are enlisted below and tabulated in **table.1.**

**Description of population groups:**

**Group-1: Health Care Workers** (HCW) like Doctors, Nurses and paramedical staff who are involved in patient care in(Government or Private- In Out Patient Departments/ Casualty services / In Patient services).
**1 A.** Health care workers involved in COVID patient care
**1 B.** Health care workers in Non-COVID hospitals.

**Group-2: Government/associated functionaries with maximum public contact and guest workers:**

**2 A.** Policemen on enforcement duty, field level health workers (JPHN, JHI, PHN, HI etc), personnel deployed by the local self-government department (LSGD), ASHA workers & Anganwadi workers, courier agents, food delivery persons & Media Personnel reporting from the field

**2. B.** Persons working at ration shops, food and grocery delivery and personnel running community kitchens, barbers, shops etc.

**2.C** Natives of Kerala without travel history who have come in close contact with Interstate Truck Drivers. These could be Head load workers, Vendors in in the market,  Street vendors, Warehouse- in- charges, People at Vehicle Transit Camps (cleaners, repairmen, tea sellers etc), FSW& MSM.

**2. D** Guest workers residing in Kerala.

**Group-3:** Persons put under **home quarantine/Institution quarantine-**
        **3.A** – persons in Home quarantine

**3.B-** Persons in Institutional quarantine

**Group-4: Vulnerable** sections of the population – persons above **60 years** of age

**Group 5:** Patients from **general population**

**5. A** Patients coming from the general population with **Acute Respiratory Infection** (ARI) with onset within the last 10 days, but **not a COVID suspect** attending Non-COVID Hospitals

**5. B Epidemiological Samples** - These include samples from specific group of people as per recommendations by the epidemiological investigation team from time to time. They should not have a contact history with COVID case or a travel history outside Kerala.

**5. C** Samples of **Expatriates:** These include samples of people who have arrived in Kerala after May 7th 2020 from outside country / state. The samples are to be taken **after 14 days of arrival** in Kerala.

Preference need to be given to as per the following:
**5C1-**International expatriates (40%)
**5C2-**Expatriates from outside Kerala (40%)
   **5C3-**Persons with travel history outside Kerala not belonging to above categories (20%)

**Table. 1. Groups Identified for Community Surveillance.**

| Group number | Description | Setting for testing |
|---|---|---|
| 1A | Health care worker involved in COVID patient care | COVID hospitals |
| 1B | Health care worker in Non- COVID hospitals | Non-COVID hospitals |
| 2A | Police, field health workers, LSGD, ASHA, AWW, Media personnel | Local institutions |

| | | |
|---|---|---|
| 2B | Workers in ration shops, food and grocery delivery boys, community kitchen | Local institutions |
| 2C | People in contact with interstate truck drivers | Local camps/truck Parking areas/transit sites/markets/streets |
| 2D | Guest workers | Guest worker camps |
| 3A | People undergoing home quarantine | Place of residence |
| 3B | People undergoing Institutional quarantine | Institutional quarantine centre |
| 4 | Vulnerable persons; >60 years | Place of residence |
| 5A | ARI – onset within last 10 days, not COVID suspect | Non-COVID Hospital OP/ casualty |
| 5B | Epidemiological samples | DSO to decide based on epidemiological gaps |
| 5C | Expatriates, after 14 days of arrival in Kerala since 7th May, 2020. | Place of residence/ COVID care centres |

**Sampling technique:**

The randomisation of the database of people to be tested in all categories will be performed by DHS using the tool developed by IT Mission and pushed to the login of all DSOs (https://healthmon.kerala.gov.in/rapidtest/). If the random sample pushed through the system is not feasible due to some reason, a buffer list can be requested from DHS.

In the case of category 1B, the list of Non covid hospitals in Government sector will be randomised and such list will be sent to DSOs. The DSO/ sample collection team shall request from these hospitals the list of all **eligible HCWs** present on the day of the visit and use **simple random sampling method** (using calculator/ lottery method / random number generator mobile application) to

select the subjects from each hospital. The Medical officer in the team shall do this process.

For all other categories, randomised list of persons whose samples are to be drawn will be automatically pushed to the Districts and can be viewed by DSO upon login.

If any additional sample is to be taken as per the decision in the District, there is provision in the software for DSOs to enter such new cases.

*The teams may note that for giving guidance the following instructions are issued, in case the randomization of the samples using the software fails*

**Category- 1A:** Out of the COVID hospitals and CFLTCs in the district the sample allocated is to be equally divided among them. The DSO along with Hospital superintended shall make a list of all the eligible Health care workers in these institutions as per the description of the group mentioned earlier. Simple random sample using lottery method / calculator / random number generator mobile application is to be used for selection of subjects from this list. If the selected person in not available on the day of activity then a replacement person may be selected using the same method.

**Category- 1B:** The DSOs shall prepare the list of all Non-COVID hospitals (government and private) for this category and shall use **simple random sampling method** (using calculator / lottery method / random number generator mobile application) to select **10 Non-COVID** hospitals from the list. The sample allocated to the district under this category shall be equally divided among the ten hospitals selected. The DSO/ sample collection team shall request from these hospitals the list of all **eligible HCW**s present on the day of the visit and use **simple random sampling method** (using calculator/ lottery method / random number generator mobile application) to select the subjects from each hospital. The Medical officer in the team shall do this process.

If the selected subject does not give verbal consent or unable to participate due to work related matters, then the replacement should be made using the same process of random selection.

**Category- 2A& 2B:** The DSO shall obtain the list of Talukas in the district and select 4 talukas one from each zone (East, South, West and North) by simple random sampling methods. The DSOs shall obtain the list of all eligible individuals in this category as per the criteria from the concerned district administration& departments for each of the Talukas selected and select the subjects using simple random methods. These individuals should be communicated regarding the activity and should be requested to attend the designated Hospital/Local institutional/camp collectionsites on fixed date and time. These sites should be planned before and communicated before the activity. A mop-up round if needed should be conducted to cover any deficit in the numbers.

**Category- 2C& 2D:** The DSO shall identify all the truck/lorry drivers parking areas as well as guest worker (migrant) camps. The DSO shall list the parking and migrant camps and select 5 parks/camp sites each using simple random

sampling methods as described earlier. On the designated day the sample collection team shall visit the site and identify the number of persons in each of these sites available and select the subjects using the simple random methods described earlier.

**Category-3A:** The list of person in home quarantine is available at the district level. The DSO shall select health blocks where the persons under home quarantine are more than 50. **Five health blocks** meeting these criteria shall be selected using simple random methods. Once the blocks are selected the allocated samples are to be divided equally among them(refer example below for the proportion of subjects to be taken from home quarantine). The team shall prepare a map(on a road map) of the person in home quarantine in each block and randomly **select a street/road** using "spin the bottle method" for each of the 5 blocks. Instead of the bottle a pen or pencil may be rotated on the map to select the street/road closest to the tip of the pen/pencil. Consecutive persons/samples should be selected from the either end of the street/ road. A maximum of 2 persons under quarantine per household should be selected. When the street/road is covered another street/road may be selected using the same process as mentioned above.

**Category-3B:** Persons in institutional quarantine may be randomly selected according to the number of such institutions in the district. One institutional quarantine facility should be selected by simple random methods. The list of eligible persons should be listed and simple random sampling methods described earlier should be done for selection of the subjects. The number of subjects to be selected from institutional quarantine facility should be according to the proportion of persons in institutional quarantine out of the total persons in quarantine at the time of activity.

 **Example:** If there are 1000 individuals in both home and institutional quarantine in the district and there are 200 in institutional quarantine, then the number of subjects to be selected from institutional quarantine is (200/1000)x 100 = 20% and home quarantine will be 80%.

The number of samples allocated to this category should be proportionately divided.

**Category-4:**

The DSO shall select **5 health blocks** randomly from the district using methods described earlier (calculator, lottery method, mobile app). Place the road map of the blocks on a table and apply the "spin the bottle method" for each of the 5 blocks. Instead of the bottle a pen or pencil may be rotated on the map to select the street closest to the tip of the pen/pencil. Consecutive persons/samples should be selected from the beginning of the street / road. A maximum of 2 persons meeting the criteria per household should be selected using the home collection method.

**Category: 5A**

The DSO shall make a list of all NON-COVID hospitals in the district and select 10 such hospitals using simple random methods and the divide the samples allocated equally. The sample collection team shall enquire about the peak

timing of patients to each of hospitals and visit them at that time and select patients meeting the criteria consecutively until the required number is met.

## Category: 5B

The DSO shall identify and do purposive sampling based on the epidemiological gaps existing in this category.

## Category: 5C

The list of expatriates who have completed 14 days of arrival since May 7th 2020 are available at the district level. The DSO shall select health blocks where the expatriates are more than 50. **Five health blocks** meeting these criteria shall be selected using simple random methods. Once the blocks are selected the allocated samples are to be divided equally among them. The team shall prepare a spot map (on a road map) of expatriates in each block and randomly **select a street/road** using "spin the bottle method" for each of the 5 blocks. Instead of the bottle a pen or pencil may be rotated on the map to select the street closest to the tip of the pen/pencil. Consecutive persons/samples should be selected from the beginning of the street/ road. A maximum of 2 expatriates' persons per household may be selected. Once the street/road is exhausted the next one should be selected using the same method above. (this preparation may be done before the start of the activity)

**Sample Collection Teams:** District level sero-surveillance teams shall be formed for each category. DMO shall be responsible for constitution of the teams. Each team will consist of doctor (1), Nurse (1), Laboratory technician (1), Assistant (1) and Driver (1). The team shall be provided mobility support (vehicle) and PPE kits by the DMO for the purpose of surveillance. The route map for sample collection, processing and result entry should be identified and visited accordingly. DSO can customise the sample collection plan suited to the local settings.

**Table 2: Group wise kit allocation of available 10,000 rapid kits to each district**

| Kits allocation in each group for each district | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISTRICTS | 1A | 1B | 2A | 2B | 2C | 2D | 3 | 4 | 5A | 5B | 5C | Buffer |
| PALAKKAD | 100 | 100 | 100 | 50 | 25 | 50 | 200 | 200 | 50 | 25 | 50 | 50 |
| KANNUR | 100 | 100 | 100 | 50 | 25 | 50 | 200 | 200 | 50 | 25 | 50 | 50 |
| KASARGODE | 100 | 100 | 100 | 50 | 25 | 50 | 200 | 200 | 50 | 25 | 50 | 50 |
| MALAPPURAM | 100 | 100 | 100 | 50 | 25 | 50 | 200 | 200 | 50 | 25 | 50 | 50 |
| THRISSUR | 100 | 100 | 100 | 50 | 25 | 50 | 200 | 200 | 50 | 25 | 50 | 50 |
| TRIVANDRUM | 100 | 100 | 100 | 50 | 25 | 50 | 200 | 200 | 50 | 25 | 50 | 50 |
| KOZHIKODE | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |
| ALAPPUZHA | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |
| KOLLAM | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |
| ERNAKULAM | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |
| PATHANAMTHITTA | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KOTTAYAM | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |
| WAYANAD | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |
| IDUKKI | 50 | 50 | 50 | 25 | 12 | 25 | 100 | 100 | 25 | 13 | 25 | 25 |

Buffer kits shall be used only if any kits fail in the internal control or are damaged. Proper documentation is required for the same. The remaining unused buffer kits are to be returned to DHS office.

## SAMPLE COLLECTION

a. **For Hospital/Local institutional/camp collection**: Dedicated COVID-19 sample collection corners in preidentified local institutions/camps are to be provided by DSO. These areas should be identified where there is plenty of natural cross ventilation (ideally 6-10 air exchanges per hour). Air conditioned rooms or areas are **NOT** to be used for this purpose. There should be a proper queue management to avoid overcrowding and to maintain social distancing as well as reduce the chance of transmission along with hand sanitisation protocols. Health education should be given to the people coming to the collection centres.

b. **Home collection:** Sample collection from homes. This method ensures that the samples are collected at the point where the patient/person is residing (home). A trained field team nominated by the DSO as per the needs to be constituted for home collection from each testing centre. Prior communication needs to be established before field collection. All standard safety precautions and Bio-Medical waste management protocols should be ensured. Stigmatization of persons should not be done.

**Blood sample collection**- Blood sample has to be collected by the trained personnel of the sero surveillance team wearing PPE as per guidelines (refer annexure 1). Subject selection shall be as mentioned in the above table. Additionally 10 names from each group should be given to each team to complete up in case of any unforeseen situations/ not able to trace/not able to locate the people in the list. The doctor in the team should ensure the filling of annexure 2.

**Sample labelling:** The sample ID shall be given as per the following:

SAMPLE ID NO: **ABT-** ____/ ____ /_____ (DISTRICT /DATE/SAMPLE NO.)

(Example **ABT- KSG/12.05.20/001**)

Surveillance form must be filled up by the team doctor by logging into the software using the credentials created by the DSO for each team. If there is any network connectivity problem, then the data can be filled in the surveillance form given in annexure 2, manually and entered later once connected to the network.

The samples have to be collected strictly as per instructions. The DSO shall ensure that adherence to the guidelines are being followed.

**Sample transport:** The samples collected by the teams shall be brought to a common health care facility where data entry, performance of laboratory test, and biomedical waste management shall have adequate provision and can occur without any hindrance. The lab results shall be promptly uploaded with the data by the doctor in the team. The disposal of the used PPE, and the waste generated during the test should be taken care of by the lab technician and the assistant.

**Sample processing, testing, interpretation &reporting** should be as per **annexure 1.**The storage of all positive serum should be at -20C in one or two pre-decided central laboratory facilities with provision of -20C, for each district.

**Results and follow up:**
The DSOs shall create a profile and register themselves and login on the digital platform https://healthmon.kerala.gov.in/rapidtest/ The DSOs shall create login credentials for each team to enter surveillance data.. The data entry should be done at the testing place using separate logins (created by the Admin-DSO) as soon as the results are ready. The DSO also can login on the digital platform and view the results of the samples real time. The follow up action (isolation, contact tracing, admission, treatment and discharge) shall be as per the existing guidelines. Confidentiality, privacy and security of the data should be ensured.

**Principal Secretary**

**Annexure 1:**

**SAMPLE COLLECTION:**

Blood sample collection should be undertaken by a trained phlebotomist (at a blood collection centre) wearing all standard PPE as per the guidelines ( Ref: Sample Testing, Collection and Transportation Guidelines for laboratory Diagnosis of Novel Coronavirus infection- 1st February 2020, Health & Family Welfare Department, Govt. of Kerala) and maintaining adequate social distancing. 5 ml of blood is to be collected in vacutainers. Both serum and plasma are acceptable for testing. Clot activator tubes/red cap vacutainers to be used for serum collection. EDTA tubes (purple cap vacutainers) are to be used for plasma collection.

The needle used for collection has to be disposed as per Bio-Medical Waste management guidelines.

**SAMPLE PROCESSING:**

After sample collection , the tubes should be allowed to stand for 30 minutes. Use the serum/plasma which has separated for the test. Separate the serum or plasma of positive cases into pre-labelled cryovials/serum vials for transport central facilities which are decided at district level. All standard precautions are to be taken by the lab technician while testing.

**SAMPLE TESTING:**

Samples are to be tested as per instructions in the kit insert accompanying the testing kit.

**SAMPLE REPORTING AND INTERPRETATION:**

After the recommended incubation period as per the kit insert, all kits have to be interpreted and reported by the doctor. All positive serum/plasma samples are to be preserved at 4-8 $^0$C for 7 days or at -20$^0$C for up to 90 days.

## Government of Kerala
## COVID-19 COMMUNITY SURVEILLANCE ACTIVITY USING RAPID ANTIBODY TEST

**SAMPLE ID NO: ABT_____/ _____ /_____ (DISTRICT /DATE/SAMPLE NO.)**

| | | |
|---|---|---|
| **Name:** | | |
| **Age:** | | **Gender: Male/ Female/ Other** |
| **Address** | | |
| **District** | | **Phone Number:** |
| **Name of LSG** | | |
| **Occupation** | | **Designation:..........................** |
| **Travel history outside Kerala since** | **Yes/No If yes mention................................** | |

1. Is the subject Symptomatic?  YES  / NO
2. If Symptomatic; data of onset of first symptoms: ____/____/_____

3.Which Out of the FIVE groups the sample belongs to? (**Please CIRCLE the relevant box and circle the exact sub section**)

| Group | Description | Sub Categories |
|---|---|---|
| Gr -1 | Health Care Workers in Non-COVID settings | **1A**-HCW directly handling COVID patients **1B**- HCW in non COVID hospitals |
| Gr- 2 | A.Police, field health workers, LSGD,ASHA, Media personnel | **2A1**- Police Personnel, **2A2**-Health Staff at Field (JHI, JPHN etc), **2A3**- LSG volunteer. **2A4**- ASHA workers **2A5**- AWW.  **2A6**- Media persons **2A7**- Others |
| | B.Workers in ration shops, food and grocery delivery boys, community kitchen | **2B1**-Ration Shop worker **2B2**- Food and grocery shop owner **2B3**- Community kitchen volunteers **2B4**-Others |
| | C. People in contact with interstate truck drivers | **2C1**- Head load workers.    **2C2**- Vendors **2C3**- Cleaners/ repairmen **2C4**- Tea sellers   **2C5**-  FSW or MSM. |
| | D. Guest workers residing in Kerala. | **2D**.Guest workers |
| Gr- 3 | Persons under home quarantine | **3A**- Persons in Home quarantine **3B**- Persons in Institutional quarantine |
| Gr- 4 | Vulnerable persons; >60 years of age | **4**- >60 years of age |
| Gr- 5 | Personnel from general population: **5A**- ARI but not a COVID suspect **5B**- Epidemiological Samples | **5A**- ARI but not a COVID suspect **5B**- Epidemiological Samples. **5C1**- International expatriates |

| | | **5C2-** Expatriates from outside Kerala |
|---|---|---|
| | **5C- Expatriates** after 14 days of arrival in Kerala since 7th May, 2020. | **5C3-** Persons with travel history outside Kerala not belonging to above two sub-categories |

Whether this subject was taken from the **same household/institution where another sample was taken for antibody test in the same survey: Yes / No.** (encircle)